THE INTERSECTION OF CONFLICT, SUBSTANCE USE, TRAUMA, AND HIV:
EXPLORING THEIR COMPLEX INTERPLAY AMONG CONFLICT-AFFECTED
POPULATIONS IN A RAPIDLY CHANGING NORTHERN UGANDA

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
(Healthcare and Epidemiology)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

December 2017

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Abstract

Background: Epidemiologists have long noted a paucity of research addressing the role of substance use in conflict and post-conflict settings especially as it interacts with mental health and HIV vulnerability in affected populations. Such is the case in northern Uganda where after two decades of conflict the region is rapidly changing, and where community leaders are expressing concerns as to perceived rapid increases in substance use and its impact on the population and growing HIV epidemic.

Methods: This multidisciplinary research explored the intersection of mental health, substance use, and HIV in the context of conflict. This project was conducted in partnership with the “Cango Lyec Project” a five-year cohort project exploring HIV risk among Acholi people aged 14-49 in the Gulu, Nwoya, and Amuru districts of northern Uganda. The quantitative analyses began with a confirmatory factor analysis of the structure and underlying validity of the AUDIT alcohol scale. Next, multivariable regressions explored factors associated with hazardous drinking in the population. Qualitative analyses used an interpretive and interpretive description (ID) thematic approach to analyze 30 in-depth interviews and explored within the context of the quantitative analyses.

Results: Quantitative findings indicated strong validity for the AUDIT scale. Overall, rates of drinking were much lower than the rest of Uganda, and women were significantly less likely than men to consume alcohol or have hazardous use behaviors. After adjustment neither post traumatic stress disorder (PTSD), depression, nor HIV were significantly associated with problematic drinking though there were significant associations with many sexual behaviors, and
abduction was protective against problematic drinking among men. Qualitative findings highlighted participants’ views that substance use remained a large and growing problem in the region that was closely tied to HIV. Use was highly stigmatized especially as it pertained to perceptions that it constituted a rejection of Acholi traditions.

**Conclusion:** This research highlights the need to integrate rigorous and population-level epidemiological evidence within community perspectives and understandings of risk. While at times the results appeared to contrast, underlying both were clear areas for intervention that acknowledge the profound trauma inflicted by the conflict and areas to support community-driven change.
Lay Summary

This dissertation sought to contribute to the noted under-researched topic of substance use disorders (SUD) in conflict and post-conflict settings. It explored the interplay of SUD with conflict-associated trauma and HIV through in the context of northern Uganda, now rapidly developing after more than two decades of civil war. The study balanced population-level data from over 1700 participants with 30 qualitative in-depth interviews to critically examine deeper understandings community-driven needs and risk perceptions. Clear areas for meaningful intervention are presented. Despite widely-held perceptions, substance use reported in this study is much lower than previously found in the region. While alcohol use was associated with risky-sexual behaviors it is not currently presenting as a risk factor for HIV infection. The incorporation of both methodologies complement each other allowing for evidence-based programming to be implemented in a way that is culturally engaged and relevant, ultimately increasing the potential for beneficial interventions.
Preface

This dissertation and the work presented herein is the work of Alden Hooper Blair (A.H.B). The research occurred in partnership with the “Cango Lyec Project” (C.L.P.) under the guidance of his dissertation supervisor Dr. Patricia M. Spittal (P.M.S.) and committee members Dr. Martin T. Schechter (M.T.S.), Dr. Herbert Muyinda (H.M.), and Dr. Achilles Katamba (A.K.). A.H.B. identified the areas of inquiry for the study, established the objectives and hypotheses, oversaw the collection of all data, conducted all analyses, and wrote each chapter. The quantitative data presented in Chapters 4 and 5 were collected by CLP research staff in northern Uganda, with A.H.B. requesting the inclusion of the AUDIT scale to measure substance use following Baseline interviews. A.H.B was responsible for the cleaning, merging, and preparation of all Baseline, follow-up, and Round 2 quantitative data and associated blood-test results for all 2400 CLP participants under the guidance of Dr. Samuel S. Malamba (S.S.M.). A.H.B. relocated fulltime to northern Uganda for a period of one year to supervise Round 2 data collection and the qualitative interviews that comprise the primary data component of the dissertation. While participants in the qualitative portion of the study whose narratives are presented in Chapter 6 were recruited from the CLP, the research team was independently recruited, trained, and supervised by A.H.B with guidance from the dissertation committee and members of the Ugandan Community Advisory Board (CAB) led by Dr. Martin Ogwang (M.O.) of Lacor Hospital and Lillian Tebere (L.T.) of the Northern Uganda Youth Development Centre. The analysis and interpretation of the qualitative findings were conducted by A.H.B with invaluable insight from the Ugandan CAB team and methodological assistance from P.M.S. and Dr. Margo E. Pearce (M.E.P).
This project received ethical approval in Canada from the Providence Health Care and University of British Columbia Research Ethics Board (REB certificate number: H13-02011). It also received ethical approval in Uganda from the School of Public Health Higher Degrees and Ethics Committee, Makerere University College of Health Sciences (Protocol 016, 17 March 2014), the Ugandan National Council for Science and Technology (HS 1523). As per Ugandan law, the candidate also received approval to conduct research from the Office of the President of Uganda.

Portions of the quantitative findings of this dissertation have already been presented in northern Uganda through knowledge translation activities within the community and to CAB members. Following this the results were prepared for submission to academic journals:


Chapter 5 has been submitted in its entirety for review to the peer-reviewed journal Alcohol and Alcoholism.

The results of Chapter 6, comprising the qualitative findings have yet to be presented to study participants through formal knowledge translation activities in Uganda and will not be submitted for publication until this has occurred and their input can be incorporated within the findings.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>95% CI</td>
<td>95% Confidence Interval</td>
</tr>
<tr>
<td>AOR</td>
<td>Adjusted odds ratio</td>
</tr>
<tr>
<td>CAB</td>
<td>Community Advisory Board</td>
</tr>
<tr>
<td>CHA</td>
<td>Cessation of Hostilities Agreement</td>
</tr>
<tr>
<td>UPC-KY</td>
<td>Uganda Peoples’ Congress – Kabaka Yekka</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme-linked immunosorbent assay test</td>
</tr>
<tr>
<td>GoU</td>
<td>Government of Uganda</td>
</tr>
<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>ID</td>
<td>Interpretive description</td>
</tr>
<tr>
<td>IDP</td>
<td>Internally displaced person</td>
</tr>
<tr>
<td>IPV</td>
<td>Intimate partner violence</td>
</tr>
<tr>
<td>LRA</td>
<td>Lord’s Resistance Army</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
</tr>
<tr>
<td>NRM</td>
<td>National Resistance Movement</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post-traumatic stress disorder</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually transmitted infection</td>
</tr>
<tr>
<td>SUD</td>
<td>Substance use disorder</td>
</tr>
<tr>
<td>UNLA</td>
<td>Ugandan National Liberation Army</td>
</tr>
<tr>
<td>UOR</td>
<td>Unadjusted odds ratio</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acholi Luo word</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boda-boda</td>
<td>A motorcycle taxi</td>
</tr>
<tr>
<td>Nero</td>
<td>Uncle</td>
</tr>
<tr>
<td>Rwot, Kweri, and Koro</td>
<td>Titles for traditional leaders</td>
</tr>
<tr>
<td>Waragi</td>
<td>A generic name for distilled spirits</td>
</tr>
<tr>
<td>Wayo</td>
<td>Aunt</td>
</tr>
</tbody>
</table>
Acknowledgements

I am forever indebted to the men and women of northern Uganda who participated in this research and supported me as both colleagues and friends. Your resilience and courage continues to inspire me and this work would not be possible without you.

I owe immeasurable gratitude to Dr. Patricia Spittal who since inviting me to join her research team in 2007 has gone above and beyond to create opportunities to further my career, education, and research skills. More so, she has helped to teach me to be an effective advocate for what I believe in, for I will be forever grateful.

This project would also not be possible without the guidance of Dr. Martin Schechter, Dr. Herbert Muyinda, Dr. Achilles Katamba, and Dr. Samuel Malamba who mentored and encouraged me over these many years. My research team, Samuel Lakor Lony, Akot Alice, and Paul Oprong went above and beyond to see the success of this project and are amazing researchers and caring individuals. The Cango Lyec Project team provided immeasurable help not only with the research but also as friends who would kindly teach and correct my Luo. Apoyo matek to the Directors, staff, and community at St. Mary’s Lacor Hospital, who welcomed us into your family, especially Dr. Martin Ogwang and Brother Carlo Torri. To my friends and colleagues who kept me sane and provided endless encouragement, your names could fill every page of this dissertation and I can never say thank you enough. The amazing Dr. Margo Elaine Pearce bears special note from originally introducing me to Dr. Spittal, to helping me through quals, to reading every draft I sent along the way. To my parents Margo and Frank and my sister Aga (who made me promise to include her name here when I started my PhD), thank you for cheering me on and for your unfaltering support. Finally, to Lisa, Aoife, and our unnamed soon to be, words cannot express my thanks and love for all you have done to help me achieve this milestone and for making me a better person.
Dedication

For Lisa, who flew around the world and back: you encourage and inspire me more than I will ever be able to say
CHAPTER 1: Background, Rationale, and Objectives

1.1 Background

Little is known globally about the health changes that occur in populations during post-conflict transition periods as they move from periods of conflict towards relative stability and the reconstruction of their societies. In sub-Saharan Africa there has been a great deal of speculation regarding HIV infection risk factors among conflict-affected populations, including those related to mental health and substance use, yet empirical data on this matter is sorely lacking (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; S. H. Patel et al., 2012; Roberts & Ezard, 2015; Weaver & Roberts, 2010). This study is one of the first comprehensive studies to utilize both qualitative and quantitative techniques in seeking to address the substantial gaps in current epidemiological knowledge regarding the effects of civil war on the population of northern Uganda and elucidate the lingering impact of those effects. The scope of this research extends beyond the borders of northern Uganda by contributing to the under-researched field exploring the connections between substance use, mental health, and the determinants of HIV in post-conflict settings. Unfortunately, the numbers of refugees and internally displaced people in such settings are growing throughout the world, but knowledge about many of their health related vulnerabilities remains limited even as they transition into more stable environments (de Jong et al., 2001; Hanson, Wodak, Fiamma, & Coates, 2008; Spiegel, 2004; Summerfield, 1999). For reintegration to be successful, there is a desperate need for comprehensive programs that address population-wide risks and are grounded in an understanding of the lived experiences and cultures of those most affected.
The protracted conflict in northern Uganda between the Lord’s Resistance Army (LRA) and Government of Uganda (GoU) forces ravaged the region from 1986 until 2006, ultimately resulting in the displacement of over 1.8 million people, 90% of the region’s population (Fabiani, Nattabi, et al., 2007; Liebling-Kalifani, 2007; World Health Organization & Republic of Uganda, 2005). This civil bush war left in its wake a legacy of countless deaths, child abductions, widespread violations of human rights, and the destruction of the social and economic fabric of society (Annan, Blattman, Mazurana, Carlson, & Horton, 2006; Survey of War Affected Youth (SWAY), 2007). The chilling effects of the war continue to reverberate in the Acholi sub region of northern Uganda (Gulu, Nwoya, and Amuru districts). In the aftermath of the war, many are now returning to what remains of their ancestral homes, and government and other support organizations are challenged in terms of their ability to provide comprehensive aid (Republic of Uganda & Government of Uganda, 2007; Roberts, Odong, et al., 2009).

1.1.1 The conflict in Northern Uganda

Uganda is no stranger to internal conflict and outright civil wars. Since its independence from Great Britain in 1962 power has rarely changed hands peacefully (Dolan, 2011; Kibanja, Kajumba, & Johnson, 2012). The regional divisions and foundations for the conflict in the north are complex and have been explored in great ethnographic detail elsewhere (Finnstrom, 2008; Gersony, 1997; Kibanja et al., 2012; Vlassenroot & Doom, 1999). Therefore, these aspects of the conflict will only receive brief accounting in this dissertation, with a special focus on the aspects crucial to the current context in northern Uganda.
The British capital for the Protectorate of Uganda (1894-1962) was situated on the shores of Lake Victoria, a defensible position in an area with a moderate climate from which goods and resources could easily be shipped to other colonies and then on to Europe. As in many cases, the few Europeans on the ground were able to control wide swaths of land through strategic partnerships with local tribes, using one to keep the other in check while working to prevent alliances that would threaten colonial rule. For Uganda, this meant that while much of the economic and political power lay in the South of the country with the Bagandan and their King, the Acholi and other northern tribes made up the bulk of the armed forces (Atkinson, 2015; Finnstrom, 2008; Kibanja et al., 2012). This division persisted following independence in 1962, with the King of Buganda becoming head of the new state, backed by the Democratic Party (DP). A loose alliance of non-Baganda peoples and other Ugandan-nationalists formed the Uganda Peoples’ Congress – Kabaka Yekka (UPC-KY) – and their leader, Milton Obote, became Prime Minister (Center for International Development andConflict Management, 2004).

In 1964, just two years later, a military mutiny and its subsequent quelling with British support provided Obote with the opportunity to consolidate his power. He eventually suspended the government and ordered the army, now led by his protégé and newly appointed commander named Idi Amin, to shut down any and all unrest. This period marked the first appearance of a formalized refugee settlement in northern Uganda, which was called the Acholi-Pii camp and began housing the first of those who would be displaced by conflict in the region; sadly, the settlement remains today (Bagenda & Hovil, 2003). The alliance between Amin and Obote did not last long, and in 1971 Amin staged a military coup while Obote was away on a state visit. Fearing a reciprocal coup, Amin’s forces immediately massacred Acholi and Langi soldiers thought to be loyal to Obote and Amin maintained repressive measures against the northern
tribes throughout the course of his career (Center for International Development and Conflict Management, 2004; Kibanja et al., 2012). When Tanzanian and Ugandan dissident forces eventually overthrew Idi Amin in 1979, his forces retreated through the north of the country, pillaging all that they could on their way out (Corti & Odong, 2010). With Uganda now lacking a strong central government, a power vacuum ensued and numerous armies and resistance movements emerged that were often divided across regional and ethnic lines. The nominal government, headed by Milton Obote who had recently returned from exile, continued to draw much of the Ugandan National Liberation Army’s (UNLA) fighting strength from tribes in the north, though discontent was arising. In 1985, Acholi members of the UNLA staged a successful military coup against Obote and installed one of their own, Tito Okello, as the declared new President of Uganda (Finnstrom, 2008; Kibanja et al., 2012). This new government was also short lived, like those which had come before, as the opposing National Resistance Movement (NRM) forces, led by Yoweri Museveni, soon came up from the south and routed the UNLA, which fled north. The NRM captured Kampala, Uganda’s capital, and on January 26th 1986 declared Museveni the new President of Uganda, a role that he holds to this day. However, the conflict was far from over as the north-south divide that characterized much of Uganda’s history since independence had laid the groundwork for yet another civil war and this war would engulf northern Uganda and southern Sudan for the next few decades.

The new GoU and its army, having been renamed from the Uganda People’s Defense Force (UPDF) to the National Resistance Army (NRA), were dominated by southern tribes. In the north, many Acholi feared repression and reprisals similar to those they endured under Idi Amin for actual or perceived resistance to the NRM (Finnstrom, 2008; Soto, 2009). This resulted in the
formation of a series of Acholi nationalist movements around which the remnants of the UNLA coalesced, adding experienced fighters to rebellions that were characterized by increasing levels of violence and religious fanaticism in support of their leaders (Center for International Development and Conflit Management, 2004; Refugee Law Project, 2004; M. J. Westerhaus, Finnegan, Zabulon, & Mukherjee, 2007). The LRA was the most notorious and enduring of these rebel movements and would soon be known worldwide.

1.1.2 The rise of the LRA

The LRA emerged from this turmoil in 1987. Its leader, Joseph Kony, drew upon Christian-spiritual traditions, claiming he had a divine mandate to save the Acholi people from the apocalypse while seeking to establish a new Acholi-led nation ruled according to his interpretation of the Ten Commandments (Finnstrom, 2008; Refugee Law Project, 2004; Vlassenroot & Doom, 1999). However, by this point much of the population was tiring of the continual fighting against the GoU and the often-brutal reprisals against the civilian population that followed. In addition, Kony lacked the backing of key actors such as the Ṛwot (traditional chiefs) and other civic and religious leaders in the community (Refugee Law Project, 2004; Vlassenroot & Doom, 1999). The already limited support for Kony and the LRA’s aims further diminished during Operation North in 1991 when the NRA moved in force seeking to eradicate all traces of insurgency. Reports suggest that civilians were terrorized from both warring parties with torture, rape, and murder utilized to punish suspected collaborators and force cooperation from the populace (Soto, 2009; Vlassenroot & Doom, 1999). When 1994 peace talks between the GoU and LRA failed, Joseph Kony denounced the Acholi people and their elders for what he deemed a lack of support. In response, the LRA began increasingly focusing its efforts on
vulnerable civilian targets. These events also marked the beginning of one of the most heinous legacies of the conflict: the LRA’s widespread abduction of children to bolster their ranks, forcing them to serve as soldiers, porters, and forced brides (Finnstrom, 2008; Vlassenroot & Doom, 1999). In 1996, the GoU responded to this by ordering large portions of the population to move to ‘protected camps’ in an attempt to contain the LRA and remove the support of potential civilian sympathizers (Dolan, 2011; Refugee Law Project, 2004).

Despite a lack of support from the population, and the military efforts of the GoU and NRA, the conflict persisted. Joseph Kony and the LRA continued their increasingly violent guerilla style attacks from the relative safety of their bases in southern Sudan, with direct support and protection from the Sudanese government. The Sudanese government saw the active support of the LRA as a way of countering a growing rebellion in its own country by the Sudanese People’s Liberation Army (SPLA), a military independence movement that was itself being actively backed by the NRA and the GoU (Dolan, 2011; Finnstrom, 2008; Gersony, 1997; Refugee Law Project, 2004). In recognition of the support from the Muslim Sudanese government, Joseph Kony further advanced his spiritual governing beliefs to incorporate Islamic religious tenets into those of the LRA, including prohibitions against the raising or eating of pigs and the consumption of alcohol or cigarettes (Vlassenroot & Doom, 1999). Having a protected base of operations and training facilities in Juba in southern Sudan as well as a stable supply of medical, food, and military supplies from the Sudanese government enabled the LRA to redouble its efforts in northern Uganda. Terror attacks and child abductions increased and the population began moving into internally displaced persons (IDP) camps around urban and trading centers, often directly pressured to do so by the GoU.
As was the case for conflicts in much of the world, the course of the conflict in northern Uganda drastically changed after the terror attacks in the United States on September 11th 2001. The GoU shifted its framing of the conflict from that of an internal civil war to a fight against Islamic-associated terrorism. It quickly succeeded in having the LRA placed on the U.S. State Department’s Terrorist Exclusion List (US Department of State, 2001). Now that Uganda had the support of the U.S. Government, which was cracking down on Islamic states thought to be sponsoring terrorist organizations, Uganda was able to pressure Sudan to suspend all aid to the LRA (Spittal et al., 2008). Soon after, in March of 2002, the GoU launched Operation Iron Fist (OIF) to resolve the conflict with the LRA once and for all. Under U.S. pressure, the Sudanese government suspended its no-fly zone around Juba and GoU aircraft and gunships quickly bombarded the previously protected LRA camps and supply depots, backed by thousands of soldiers on the ground. Civilians now living in contested areas were often given only 48 hours warning to relocate into IDP camps unless they were willing to be considered LRA supporters (IDMC & Norwegian Refugee Council, 2008).

1.1.3 The last violent throws of the conflict
The LRA responded to OIF by moving back into northern Uganda, increasingly targeting IDP camps with violent acts of revenge against a population which it felt betrayed by and seeking to abduct more children to replenish its ranks (Dolan, 2011; Refugee Law Project, 2004). It is estimated that by the end of the conflict, the total number of child abductions by the LRA ranged from 25,000 to 66,000, and most of the children were 6-13 years old (Annan et al., 2006). Both academic literature and Non-Governmental Organization (NGO) reports describe scenarios in which young boys and girls were indoctrinated into a culture of violence in which torture,
killing, and rape were utilized as weapons of war against civilian populations and GoU forces (Annan et al., 2006; Fabiani, Nattabi, et al., 2007; Soto, 2009; Temmerman, 2001; M. J. Westerhaus et al., 2007). The majority of the abductees were boys, who were used as soldiers and for manual labor, while the young women who were also taken were used as porters, camp workers, and brides for senior LRA commanders. It is believed that LRA rebels specifically targeted premenstrual girls for the latter purpose, because they considered older girls an HIV risk (S. Patel, Schechter, Sewankambo, Atim, Lakor, et al., 2014; Spittal et al., 2008).

As the conflict intensified, almost 90% of northern Uganda’s population – some 1.8 million people – would be displaced (Annan & Brier, 2010). The relocations were both voluntary and involuntary, as some northern Ugandans sought safety in numbers, while others were essentially forced to move as the GoU attempted to eliminate any sympathetic pockets of support for the LRA. The majority of the displaced found their way into the overflowing IDP camps as they abandoned their ancestral homes to the advance of GoU forces and LRA raids. In Gulu district, known as the Amuru, Nwoya, and Gulu districts during the time in which this study takes place, almost half a million people, who constituted over 80% of the population, ended up living in IDP camps (World Health Organization & Republic of Uganda, 2005). However, while the camps offered a modicum of greater safety from the conflict itself, they also led to new vulnerabilities for the housed populations. Diseases spread rapidly and mortality rates reached alarming numbers due to a lack of access to health facilities and crucial medicines – especially for the most vulnerable, such as children under five, who experienced an excessively high mortality rate of 8,000 to 12,000 deaths in the first half of 2005 alone (World Health Organization & Republic of Uganda, 2005). Amidst the ongoing conflict and the sheer scope of displaced people’s needs,
NGOs and the GoU often struggled to provide basic necessities like food, clean water, shelter, and sanitation facilities (Dolan, 2011; S. H. Patel et al., 2012; Soto, 2009; Vinck, Pham, Stover, & Weinstein, 2007; World Health Organization & Republic of Uganda, 2005). As the conflict wore on, some of the camps managed to establish health facilities and schools, but these were inadequate to meet the needs of the population (Dolan, 2011).

As civilians moved into displacement camps, its physical impacts on their health were compounded by the ongoing breakdown of the Acholi cultural principles that fostered and reinforced physical, emotional, mental and spiritual health within the community (S. H. Patel et al., 2012; Spittal et al., 2008). Throughout the colonial and post-colonial periods, northern Uganda had remained largely undeveloped, which meant that agriculture was not only the primary economic driver of the region, but also intrinsically tied to the Acholi identity (Atkinson, 2015; Spittal et al., 2008). With most of the population confined to IDP camps from which it was almost impossible to leave, the economy collapsed, leading to widespread poverty and food shortages. Traditional roles within the family were upended as there was no land to cultivate, no livestock to tend to, or no food to prepare, and daily survival was dependent on distributions from the government or NGOs. Though health reports from IDP camps during this period often overlooked mental health indicators to instead focus on more immediate causes of morbidity and mortality, later studies would note that the loss of occupation, identity, structure, and traditions resulted in widespread depression and PTSD among the population (McElroy, Muyinda, & Atim, 2012; Mugisha, Muyinda, Malamba, & Kinyanda, 2015; Spittal et al., 2008).

Relocation to IDP camps frequently separated children from their parents and elders, which
further exacerbated the breakdown of the Acholi culture and traditional support structures. Given that young people in IDP camps were being targeted for abduction, families started sending their children to sleep in large urban centers or other semi-protected sites such as hospitals and churches that were thought to be better protected (Falk, Lenz, & Okuma, 2004; S. H. Patel et al., 2012; Spittal et al., 2008). At the peak of the conflict, up to an estimated 40,000 unaccompanied child ‘night commuters’ would often travel many kilometers to these areas at dusk, then make the journey back in the morning. NGOs eventually responded by building large organized sleeping shelters in the protected urban centers (Falk et al., 2004). However, the shelters and their relative safety did not fully protect these young people, and in many cases exposed them to new risks. Young people traveling unsupervised, or with a slightly older sibling, were vulnerable to robbery, assault, early sexual debut, and exposure to substances during their journey and while they were alone at night in an urban center. Young women were especially at risk, as older men would coerce them into transactional or survival sex (T. Allen, 2006; S. H. Patel et al., 2012; Spittal et al., 2008). It is particularly distressing to note that these young people were being exposed to these risks at the time of day when traditionally Acholi elders would be teaching cultural, sexual and social norms around the family hearth, which would help the youth prepare to face their vulnerabilities to such risks (Spittal et al., 2008). Prior to the war, male and female elders, usually an auntie ‘Wayo’ or uncle ‘Nero’ who lived in the family compound, would pass along traditional knowledge and morals to younger generations. These key members of the extended family would also live with the younger generation during the transitional period when children left their parents’ huts but were not ready to start families of their own. This provided a safe framework in which young people could come of age with a clear understanding of sexual norms, boundaries, and behaviors, but that framework became increasingly absent during the
conflict and night commuting (Spittal et al., 2008).

1.1.4 The end of the conflict

Operation Iron Fist encompassed four years of some of the most intense direct fighting and attacks on civilians of the entire civil war in northern Uganda. By 2006, the cumulative damage to the LRA, forced them to acquiesce to a restart of peace negotiations. In July, negotiators from the LRA and GoU began meeting in Juba, eventually signing a breakthrough Cessation of Hostilities Agreement (CHA). The CHA allowed for the expansion of the scope and reach of humanitarian aid across northern Uganda and laid the groundwork for subsequent negotiations on monitoring protocols, accountability for actions during the conflict, and the gradual disarming and reintegration of LRA forces. However, Kony was noticeably absent from all stages of these negotiations and refused to be present for the final signing of peace documents in April 2008 (IDMC & Norwegian Refugee Council, 2008). Despite his absence, many members of the LRA abided by the peace agreement and the situation in northern Uganda gradually began to move away from conflict and towards rebuilding. For the most part, this marked the end of the LRA’s physical presence in northern Uganda, though its legacy lives on. Despite coordinated efforts by many African governments and the active support of the U.S. military, Kony remains at large and remnants of the LRA continue to attack government and civilian populations in the Central African Republic (CAR), South Sudan, and the Democratic Republic of the Congo (DRC) (Human Rights Watch, 2010; IDMC & Norwegian Refugee Council, 2008; One Hundred Eleventh Congress of the United States of America, 2010).
1.2 Post-conflict and rebuilding in northern Uganda

After 20 years of conflict, a semblance of peace began appearing in northern Uganda. Following the CHA, the GoU issued an official Peace, Recovery and Development Plan 2007-2010 (PRDP) that outlined four strategic objectives: 1) the consolidation of state authority; 2) rebuilding and empowering communities; 3) revitalizing the economy; and 4) peace-building and reconciliation (Republic of Uganda, 2007). The lifting of restrictions on the population’s movement was one of the first major steps towards these goals and efforts were made to begin closing the many IDP camps, allowing civilians to return to their ancestral homes. Although this plan was hindered by a lack of national or international funding and many civilians’ reluctance to return to areas where infrastructures had been all but completely destroyed, by August of 2009 around two-thirds of the IDPs had left the camps (IDMC & Norwegian Refugee Council, 2008; IDMP & Norwegian Refugee Council, 2009). With the cessation of hostilities and relocation of IDPs, international organizations that had provided the backbone of much of the emergency support structure in northern Uganda began pulling out, often outpacing their replacement by government programs and development-oriented NGOs (IDMP & Norwegian Refugee Council, 2009).

The transition to returning home was far from smooth as the population began dispersing from the IDP camps, and unexpectedly new issues soon arose. One of the most pressing problems that families faced when they attempted to return home was that of land disputes, with the most basic issue being where one’s home was and who had rights to it. Approximately 90% of the land in northern Uganda is governed under Customary Tenure laws that do not include formal documentation of ownership, plot boundaries are often delineated by environmental landmarks, and land use and transfer are determined by oral traditions or unwritten agreements overseen by
tribal elders (Mabikke, 2011; URI & ARLPI, 2012). During the conflict, many families abandoned properties that would then be resettled and re-abandoned numerous times, while others chose to share land with those who had been misplaced in more protected areas. This laid the groundwork for disputes over ownership, which were exacerbated by the breakdown of historical knowledge bases caused by the death and displacement of elders and community groups as well as the destruction of official records of transfer deeds, terms of land gift usage, and ownership documents (IDMP & Norwegian Refugee Council, 2009; IRIN, 2012; Mabikke, 2011; URI & ARLPI, 2012). The formation of mediating bodies of local and national actors to help settle ongoing land disputes met with some success, although many disputes persist to this day (URI & ARLPI, 2012). In many ways, irreparable damage had been done, as after years of dispossession many who sought the grounding of returning to ancestral family lands were told those lands no longer belonged to them. This further eroded the population’s ties to the land and agriculture and removed access to one of the only sources of wealth and livelihood left to many families after the war. Consequently, families were deprived of the opportunity to regain their self-sufficiency and independence after being reliant on aid for so long. This in turn further compounded the breakdown of agriculturally rooted Acholi culture and traditions that helped to define gender roles, ethics, and a sense of self within the community, which had already been diminished during the conflict (IDMC & Norwegian Refugee Council, 2008; Mabikke, 2011; Spittal et al., 2008).

The neglect and outright destruction of the region’s infrastructures during the conflict and the slow implementation of the PRDP continued to complicate reconstruction, resettlement and development across northern Uganda. By the late 2000s and early 2010s, most of the region
continued to lack access to stable supplies of foods and water and basic services, including sanitation facilities, health centers, and educational opportunities. Hospitals and schools remained clustered around the few urban centers, especially the largest central town of Gulu. The lack of year-round passable roads hindered the delivery of supplies, and those facilities that were being built often lacked adequate housing for staff and were characterized by high levels of staff absenteeism (IDMP & Norwegian Refugee Council, 2009; Republic of Uganda & Government of Uganda, 2007; United Nations: OCHA, 2009). As a result, many families would leave their children, elders, and sick family members close to the more developed urban areas while they returned to their ancestral villages in order to rebuild their homes and lives. While living near urban areas potentially allowed some of the population better access to higher quality services, it also exacerbated the breakdown of family structures and opportunities to pass along cultural learning between generations.

In addition to the delayed agricultural development caused by land disputes, the pace of cultivation of lands left fallow and overgrown for years was slow. Further, the fact that food-aid programs were withdrawn made daily survival a continued critical focus, and created conditions that were ripe for predation, food-insecurity, and disease epidemics (IDMP & Norwegian Refugee Council, 2009; Mabikke, 2011). The most vulnerable segments of the population – the elderly, the disabled, children, and women who households – were hit particularly hard. These groups were also increasingly the targets of crime, assault, gender-based violence (GBV), rape, and sexual assaults, as the GoU lacked a sufficient police force to cover the region, and the police that were in place were often characterized as ineffective or corrupt (Annan & Brier, 2010; IDMP & Norwegian Refugee Council, 2009).
1.3 Ten years on

Though over a decade has passed since the cessation of hostilities between the GoU and LRA, the rebuilding process for northern Uganda still faces many challenges. Recently, many international donors have rescinded or redirected funds due to reports stating that the GoU had acted insufficiently by engaging in fraud and theft and mismanaging funds allocated to rebuilding efforts. There have been widespread reports that members of the Prime Minister’s Office could not account for over $13 million dollars of PRDP funds and significant portions of Global Fund dollars (IDMC, 2014; The Global Fund, 2009). As a result, poverty remains a critical issue in the region, which has led to increased vulnerabilities for mental and physical health issues among the population (IDMC, 2014; IDMP & Norwegian Refugee Council, 2009; Spittal et al., 2008).

Despite these challenges, northern Uganda continues to develop and integrate into the rest of Uganda and a rapidly changing sub-Saharan Africa. While this has helped to create jobs and other opportunities in towns and trade centers, it has also led to an influx of high-risk groups, such as truckers, agricultural traders, and transactional sex workers, which has potentially contributed to the spread of diseases like HIV (McElroy et al., 2012; H Muyinda, Seeley, Pickering, & Barton, 1997; Spiegel et al., 2007). Even for those engaging in the resettlement process, land evictions have also been on the rise within the past few years in northern Uganda. Wealthy financial partnerships and corporations from both inside and outside of Uganda are capitalizing on the GoU’s desire for development and investment, as well as exploiting continued uncertainty as to property ownership, in order to gain control of large swaths of land for agricultural plantations, environmental conservation projects, and resource extraction (IDMC,
Those who are evicted often lack the political and financial capital to defend their rights. Additionally, threats and acts of violence are both becoming more common practices in intimidating land owners from their right to claim their property (IDMC, 2014).

Crime and especially GBV (including rape, forced and early marriage), interpersonal violence (IPV), and sexual assault continue to remain problems in the north as well (IDMP & Norwegian Refugee Council, 2009). The all-encompassing efforts towards rebuilding have often separated families, leaving many struggling to make ends meet. As a result, little time can be dedicated towards the reemergence of Acholi traditions. This trend will only continue as the older generation passes away, leaving behind what has been termed a ‘lost generation’ of young Acholi young people to characterize those who grew up in or after the IDP camps and lack a cultural identity (S. H. Patel, 2012; Spittal et al., 2008). There are growing concerns among district leaders and tribal elders that this younger generation, especially young women and girls, are already experiencing harm as a result of post-conflict circumstances. Living in larger towns and trading centers during the school year has increasingly made these young people targets for predation (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008). At the same time, the urban centers are developing faster than rural regions, and these young people are being exposed to corollaries of this development, such as western media, drugs, and alcohol without the help of a framework in which to situate their experiences. The potential impact of these cumulative and compounding changes are of great concern, as evidenced by recent studies in the region that identify high levels of alcohol use and other substance use disorders (SUD), depression, PTSD and HIV among young people in the north (Betancourt et al., 2013; Bolton, Bass, & Betancourt, 2007; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et
al., 2014; S. H. Patel et al., 2012; Roberts, Damundu, Lomoro, & Sondorp, 2009; Roberts, Ocaka, Browne, Oyok, & Sondorp, 2008).

1.3.1 HIV in Uganda

Sub-Saharan Africa remains the epicenter of the global HIV/AIDS epidemic, accounting for almost three-quarters of all HIV related deaths world-wide. Only half of the HIV-positive population in these countries know their status. Eighty-seven percent of those are receiving antiretroviral therapy (ART), and 76% of this population have achieved viral suppression (UN Joint Programme on HIV/AIDS (UNAIDS), 2014b). While these figures mark an improvement from years past, it is still far from the 90-90-90 goal that UNAIDS set to contain HIV in the region by 2030 (UN Joint Programme on HIV/AIDS (UNAIDS), 2014a). In the early years of the HIV/AIDS epidemic in sub-Saharan Africa, Uganda was lauded for leading the way in the fight against the disease. However, after these early successes, HIV is on the rise again in Uganda. In fact, Uganda and Angola are the only two countries in sub-Saharan Africa where HIV rates are increasing. Furthermore, Uganda now accounts for 7% of all new infections globally and 10% of all new infections in sub-Saharan Africa; although these percentages are lower than those in South Africa and Nigeria, the incidence of new infections in those two countries is declining (Ugandan Ministry of Health, CDC, USAID, & WHO, 2011; UN Joint Programme on HIV/AIDS (UNAIDS), 2014b). The prevalence and new case incidence of HIV among young people is central to this issue, particularly as they are one of the highest risk populations for HIV infection and their risk is significantly increased when they are exposed to conflict and displacement (Nations, 2001; Spiegel et al., 2007). Young women in sub-Saharan are especially
at risk and account for 71% of all the new HIV infections in young people, which equals over 1000 new infections each day (UN Joint Programme on HIV/AIDS (UNAIDS), 2014b).

Stigma remains a significant barrier to HIV testing and treatment-seeking across Africa, including Uganda. People often rightly fear that if they are found to be HIV positive, they will be ostracized from their communities, lose their jobs, be denied access to credit, and be excluded from development programs (Republic of Uganda & UNAIDS, 2015; UNAIDS & NAFOPHANU, 2013; UN Joint Programme on HIV/AIDS (UNAIDS), 2014b). In northern Uganda, the GoU’s inadequate resource allocation to HIV programs, which provide support, protection and stigma-reduction, often results in these fears becoming a reality (Republic of Uganda & UNAIDS, 2015; UNAIDS & NAFOPHANU, 2013). This reality can be further exacerbated by additional levels of stigma that derive from circumstance related to the conflict, including a history of abduction, engagement in survival sex work, association with GoU forces, and other perceived links to HIV (S. Patel et al., 2013; Spittal et al., 2008). While recent studies have noted that there is in fact no association between abduction and HIV, NGOs and the GoU continue targeting former abductees for HIV treatment programs, does little to address the ongoing stigma (Malamba et al., 2016).

The most recent (2011) Ugandan National AIDS Indicator Survey (UAIS) reported an increase in overall HIV prevalence from 6.4% in 2005 to 7.4% in 2011. Prevalence percentages vary significantly across the country, ranging from 4.1% in the mid-eastern region to 10.6% in the central region. The survey cited an HIV prevalence of 8.3% in the north, almost double the average national rate of 4.7% for all rural areas (Republic of Uganda & UNAIDS, 2015;
Ugandan Ministry of Health et al., 2011). These numbers demand scrutiny. The UAIS estimates are based on sero-prevalence and antenatal care (ANC) sentinel surveillance data from large testing centers and therefore may not accurately reflect true population rates, especially in the post-conflict north, where people may have less access to such centers or a compromised ability to seek care due to situational factors. ANC data also requires a woman to be pregnant in order for HIV to be captured by the surveillance mechanisms. They may lead to a potential underestimation of HIV prevalence, as HIV-positive women are often less likely to become pregnant. ANC methods would therefore only reflect the portion of women becoming pregnant, not all those who are sexually active (T. Allen, 2006; Gregson et al., 2005; Mock et al., 2004; M. J. Westerhaus et al., 2007). ANC data similarly omits all HIV-positive men from being represented. In northern Uganda, large health centers remain few and far between, while rural facilities are often lacking in supplies and skilled staff, which may affect record-keeping and testing quality (when tests are available and not stocked out). In rural areas where poverty remains endemic, people who are HIV-positive may eschew going to the health centers due to an inability to pay and/or due to imagined or accurate perceptions that the centers provide poor quality care.

New reports, including those from the Cango Lyec Project (CLP) on which this dissertation is based, suggest that concerns about the applicability of UAIS indicators in the north are valid, and that the extent of HIV significantly more dire than previously reported (Malamba et al., 2016; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). These recent studies recorded a HIV sero-prevalence of 12.2% in the north, well above the 8.3% figure reported in the 2011 USAIS, which had 95% confidence intervals (95%CI) that do not overlap. The HIV rates
reported by the studies for women in the 30-34, 35-39, and 40-44 year age groups were even more startling, as all of them were above a prevalence of 20%.

Overall, while the studies did not associate HIV with a history of abduction, they did find that it was associated with residence in more urbanized areas, depression, being in a female-headed household, and the presence of other sexually transmitted diseases (STI). Although increased prevalence could suggest that treatment efforts were successfully helping people with HIV to live longer and their HIV was thus less a cause of concern, this appears not to be the case. Currently unpublished data from subsequent rounds of the CLP suggest an HIV incidence of 1.4%, which is almost double the 0.74% figure reported in the most recent (2014/2015) HIV/AIDS Uganda Country Progress Report (Republic of Uganda & UNAIDS, 2015). This clearly demonstrates that current HIV prevention efforts in the region are falling short, and that the HIV-related issues the region is facing are unique and require special attention.

### 1.3.2 The mental health legacy of the conflict

The physical impacts of the conflict in northern Uganda and its aftermath are numerous and well documented, and include direct morbidity and mortality rates, villages abandoned, land left uncultivated, and health centers destroyed (Republic of Uganda & Government of Uganda, 2007; USAID, 2010). Subsequent to the signing of the CHA in 2006 and the decades of reconstruction that followed, much of the development effort in Uganda has focused on addressing these more tangible wounds. The more intangible legacies of the war, from the breakdown of societal norms and traditions to individual psychological issues, are no less critical but are all too often cast aside. There is increasing recognition that when left unaddressed, these issues can hinder
attempts towards reintegration and rebuilding just as severely as more tangible problems (IDMC & Norwegian Refugee Council, 2008; Report, Odokonyero, Psych, Laker, & Alderman, 2014; Roberts, Damundu, et al., 2009; Spittal et al., 2008).

Recent studies have noted extremely high levels of depression and Post-Traumatic Stress Disorder (PTSD) within populations living in northern Uganda (Derluyn, Broekaert, Schuyten, & De Temmerman, 2004; S. H. Patel, 2012; Roberts et al., 2008). At the end of the conflict, depression and PTSD rates identified among former abductees reached some of the highest global levels, with up to 97% of former child soldiers aged 12 to 28 meeting the criteria for a PTSD diagnosis (Derluyn et al., 2004; Vindevogel et al., 2011). However, this was on one extreme end of the spectrum, and the reported prevalence of PTSD and depression varies greatly in the region, with studies having little consistency in the use of psychometric measurement tools, sample sizes, and sampling methods. For PTSD alone, epidemiological studies have reported rates in the Northern Ugandan population that range from 27% to 99% (Bayer, Klasen, & Adam, 2007; Derluyn et al., 2004; Klasen & Oettingen, 2010; Ovuga, Oyok, & Moro, 2008; P. N. Pham, Vinck, & Stover, 2009). Such discrepancies make it difficult to understand the situation on the ground, or to offer meaningful healthcare interventions. This is highly problematic as it is clear that experiences of trauma are ongoing and occurring within permanent, transient, and resettlement settings in Uganda, and can result in heightened vulnerabilities to HIV, sexual assault, and IPV (S. Patel, Schechter, Sewankambo, Atim, Lakor, et al., 2014; Roberts, Damundu, Lomoro, & Sondorp, 2010). Evidence detailing the prevalence of sexual violence in both conflict and post-conflict settings is equally problematic and remains scarce due to small sample sizes and non-representative populations (Hanson et al., 2008; UNICEF, 2009).
These issues are complicated by increasing concerns about the impact of substance use in post-conflict settings where drugs, alcohol, and inhalants are often used as coping mechanisms for stressors such as boredom, poverty, depression, loss of culture, and PTSD (Naomi Breslau, 2003; Johnson, 1996; Read, Brown, & Kahler, 2004; Sacco, Bucholz, & Spitznagel, 2009; UNHCR, WHO, & World Health Organization, 2008). However, to date most of the reports on substance use in the region are anecdotal or limited by non-representative samples and are thus unable to successfully capture the types and pervasiveness of substance use in settings such as north Uganda (Roberts & Ezard, 2015). Meaningful interventions are therefore all the more difficult to derive and implement.

Recent attention has been given to the role of PTSD and other trauma-related disorders as risk factors for HIV infection that enhance specific vulnerabilities and can be further enhanced by substance use [see Chapter 2]. However the interplay of these factors, especially in their relation to abduction, have not been examined in northern Uganda specifically or post-conflict settings in general (Brief et al., 2004; Cohen, Alfonso, Hoffman, Milau, & Carrera, 2001; Gore-Felton & Koopman, 2008; R. Jewkes, Morrell, Sikweyiya, Dunkle, & Penn-Kekana, 2012; Leserman, 2008).

1.4 Rationale
The potential of trauma to be cyclically passed from one generation to the next makes it essential to understand and offer solutions to the existent problems in northern Uganda today. Displaced persons are expected to take active roles in rebuilding their communities and homes, but this will not happen if appropriate and culturally sensitive treatment that recognizes and addresses their
lived experiences is not provided. For reintegration to be successful, comprehensive programs that address population-level trauma and the consequent risks are desperately needed. One of the main points of concern on this front has been the impact of substance use and its interplay with trauma, displacement, and HIV risk in post-conflict settings is particularly troubling (Roberts & Browne, 2010; Roberts & Ezard, 2015; Weaver & Roberts, 2010). The results of this dissertation will begin to directly address the above-mentioned concerns. In addition, the study will begin to elucidate the types of substances that are used post-conflict settings. Such an enquiry is crucial, given that little is known about this matter.

As northern Uganda moves from emergency and post-emergency scenarios into resettlement and repatriation processes, district officials are concerned that the drivers of the HIV epidemic are changing rapidly. Since the CHA agreement in 2006, much has changed; a strong trade corridor has been established to Southern Sudan, north Ugandans have been encouraged to move out of primary camp settings either to transit camps or back to their traditional homesteads, and there is increasing concern and some evidence suggesting that young Acholi women are transitioning directly into sex work (S. H. Patel et al., 2012). This highlights a clear and growing need for an aggressive and deliberate approach to evidence-based research and program design as the previously encamped resettle. The impact of this research extends beyond the borders of northern Uganda by contributing to the under-researched field exploring the interplay of conflict-related mental health, substance use, and HIV in post-conflict settings, as little is known globally regarding the health and behavioral changes that occur in populations during post-conflict transition periods.
1.4.1 Objectives and hypotheses

The overall goal of this research is to create a foundation from which to begin untangling the complex interplay between substance use, trauma, and the determinants of HIV among conflict-affected populations in northern Uganda. Further, it seeks to contribute to emerging evidence regarding the mental and physical health of conflict-affected populations in order to inform sound and culturally sensitive interventions. The specific objectives of this mixed-methods research are listed below and explored in the subsequent chapters:

- **O1:** To determine the prevalence and types of substances used among conflict-affected populations aged 13 – 49 years in Northern Uganda.

- **O2:** To assess the effects of war-related trauma on substance use in conflict-affected populations aged 13-49 (former abductees, sexual assault survivors, and displaced persons) in northern Ugandan districts of Gulu, Amuru, and Nwoya, which are the districts in the country most affected by the civil war.

- **O3:** To assess the association between substance use and HIV risk behaviors among conflict-affected populations in northern Uganda.

- **O4:** To identify the socio-cultural aspects of substance use and misuse and their interplay with trauma and HIV.

With respect to these objectives, the following hypotheses are proposed:

- **H1:** Substance use patterns among conflict-affected persons aged 13 – 49 in northern Uganda will be apparent in distinct population groupings.
  - H1.1: Males will have higher reported levels of substance use than females.
  - H1.2: Levels of substance use present in the study population will be higher than
that found in the general adult population in Uganda.

- H1.3: Age will be significantly associated with substance use among both men and women.

- **H2**: Those who experienced higher levels of (1) trauma in conjunction with (2) depression or (3) PTSD will be more likely to report substance use.

- **H3**: More frequent substance use will be associated with increased participation in risky sexual behaviors.
  - H3.1: Substance use will be associated with a higher likelihood of participating in transactional sex.
  - H3.2: Increased substance use will be associated with increased numbers of sexual partners.
  - H3.3: Substance use will be associated with a lower likelihood of knowing a sexual partner’s HIV status.
  - H3.4: Substance use will be directly associated with HIV infection.

- **H4**: No specific pre-supposed hypotheses were generated for objective 4 in order to limit any potential bias in the approach to the qualitative portion of the dissertation.

### 1.5 Overview of dissertation

This dissertation is written to partially fulfill the requirements for a PhD. at the University of British Columbia’s (UBC) School of Population and Public Health (SPPH). It employs a mixed-methods approach to balance the quantitative results from a large cohort study with local qualitative narratives expressing the beliefs and lived-experiences of those who participate in the research. The dissertation itself is comprised of 7 chapters. Chapter 1 presents the background of the study, the region in which the research took place, the rationale for the project, and the
specific objectives to be addressed with corresponding hypotheses. Chapter 2 is a review of the current literature examining substance use, mental health, and HIV in post-conflict settings. It also explores what is known about their biological and cultural interplay across sub-Saharan Africa. Chapter 3 lays out the methods used in the collection and analysis of data and the recruitment of participants, and addresses ethical considerations. Chapters 4, 5, and 6 are the main body of the dissertation. They are written with the intention that they will be published in peer-reviewed journals. Consequently, some repetition occurs at the start of these chapters with regard to detailing the overall study background and methods. Chapter 7 presents the conclusions of the results from Chapters 4 to 6 in order to discuss overarching thematic trends, acknowledges the strengths and limitations of the research, and offers final conclusions and recommendations for future research and culturally-informed, evidenced-based health interventions.
CHAPTER 2: Literature Review

2.1 Introduction to the literature

Globally, the number of people forcibly displaced from their homes is reaching unprecedented levels. The most recent available estimates from 2014 suggest that over 59.9 million people are displaced globally due to conflict, persecution, and natural disasters. This is a staggering increase of 8.3 million from 2013 and one that disproportionately affects people in low- and middle-income countries (LMIC) (Norwegian Refugee Council & IDMC, 2017; Norwegian Refugee Council & Internal Displacement Monitoring Centre, 2015; UNHCR, 2015). This is equivalent to almost 23,000 people being uprooted per day over the course of one year. Broadly categorized, displaced persons and families fall into one of two categories: refugees who cross international borders and internally displaced persons (IDPs) who remain within the boundaries of their home country. Despite the fact that the estimated 38 million IDPs counted in 2014 outnumbered refugees by almost 2:1, they receive far fewer legal protections and aid from international policy makers than the latter (Norwegian Refugee Council & IDMC, 2017). The lack of focus on these populations and the unstable regions in which they often reside has subsequently limited the scope of epidemiological evidence illustrating their unique health burdens and vulnerabilities. Thus, when aid is given to them, it is usually administered through an ad hoc approach in which risks and disease burdens are assumed, limiting the overall effectiveness and reach of the aid. This in turn creates the potential for harmful legacies of conflict and displacement to persist long after the cessation of hostilities, and unaddressed physical and mental health concerns may therefore continue to re-manifest in a population. In recent years, aid organizations and epidemiologists have recognized the importance of understanding the interplay of conflict-associated trauma and HIV risks within a population, especially in the presence of comorbid substance use behaviors, as this understanding is key to...
providing meaningful support during and following conflict (Devakumar, Birch, Osrin, Sondorp, & Wells, 2014; Perngparn, Assanangkornchai, Pilley, & Aramrattana, 2008; Roberts & Ezard, 2015; Weaver & Roberts, 2010).

Such is the case in northern Uganda. After more than two decades of civil war, the region is now at peace. However, the region is reintegrating into a country in which HIV is on the rise and alcohol consumption levels are one of the highest-per capita in sub-Saharan Africa (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Republic of Uganda & UNAIDS, 2015; Spittal et al., 2008; WHO, 2014). In the north, recent evidence has described HIV prevalence to be upwards of 12.2%, which is significantly higher than the 8.3% reported in the most recent 2011 UAIS and nearly double national averages for rural areas (Malamba et al., 2016; Ugandan Ministry of Health et al., 2011). This corresponds with high rates of screening for post-traumatic stress disorder (PTSD) and depression in the population, which are especially pronounced amongst those with a history of conflict-associated abduction (Malamba et al., 2016; S. Patel et al., 2013). It is critical to understand the current intersectionality of the mental and physical health burdens faced by the population in order to offer appropriate, actionable public health interventions and ensure that post-conflict rebuilding efforts are successful.

2.2 Substance use behaviors in sub-Saharan Africa

According to the most recent global estimates from 2014, roughly 1:20 adults used at least one drug over the course of the past year, with approximately 29 million people experiencing a drug-related disorder (United National Office on Drugs and Crime, 2016). However, the numbers and the types of substances used vary significantly by country, region, sex, and age. Likewise, vastly
different legal structures and social norms affect not only use behaviors, but also potential biases in reporting. Of all substances, alcohol abuse, while often underreported, is thought to be the most damaging. It contributes to between 4.0% and 6.0% of the global disease burden and disproportionately affects the citizens of LMICs (Beaglehole et al., 2009; Benegal, Chand, Obot, Ahtinen, & Alho, 2009; Jürgen Rehm, 2016). Both alcohol use and the use of other substances are thought to occur concurrently with and be potentially exacerbated by mental health disorders and HIV infection (T. Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Naomi Breslau, 2003, 2009; PHAC, 2009; Room et al., 2002; Sacco et al., 2009).

2.2.1 Non-alcoholic substances

One of the most commonly cited sources of information on global trends in substance use disorders (SUD) is the United Nation’s Office of Drugs and Crime (UNODC) World Drug Report (WDR). However, the neutrality and accuracy of these reports are often questioned as they are primarily based on government agencies’ responses to annual questionnaires and are not consistent with population-level statistical evidence (Carrier & Klantschnig, 2012). Therefore, the responses may be just as likely to reflect governmental policies and agendas as they are to represent realities on the ground (Carrier & Klantschnig, 2012; Thoumi, 2005). Nonetheless, the WDR is a useful initial area of inquiry if only because it provides a preliminary standardized metric that can be used to compare global and regional trends. Evidence from the WDRs note significant variations in approaches to monitoring and addressing SUD in LMICs. These variations have largely been attributed to the constraints experienced by under-resourced public health systems in high need settings, which has necessitated a focus on SUD treatment rather than prevention efforts. However, this focus is limited in that SUD treatment is only provided in
extreme cases (Benegal et al., 2009; Perngparn et al., 2008). For the developing regions of sub-Saharan Africa, assessing and addressing SUD is difficult at best, and particularly challenging in conflict and post-conflict settings.

Socioeconomic conditions also play a significant role in global substance use patterns, and in LMICs, substance use rates are significantly higher for those drugs that are less costly and can be locally cultivated (Carrier & Klantschnig, 2012). In Africa, this has traditionally meant a much higher prevalence of cannabis use (7.6%) than opioids (0.33%), cocaine and derivatives (0.4%), amphetamines and methamphetamines (0.87%), or ecstasy (0.18%). Within East African countries, Uganda reports some of the lowest rates overall and cannabis use (4.2%) is higher than opioid use (0.17%), and there are no reportable levels of any other substance groupings (United National Office on Drugs and Crime, 2016). It is important to note that the drugs for which usage is measured and reported in Africa do not include the stimulant khat, a naturally grown plant grown in the Arabian Peninsula and East Africa that has deep historical traditions in the region (Carrier & Klantschnig, 2012). Finally, the numbers of drug users and types of use behaviors are rapidly changing as the result of increasing wealth among urban elites in major African cities, the global production of illicit substances, and the use of Africa for drug transit routes to Western Europe (Carrier & Klantschnig, 2012; United National Office on Drugs and Crime, 2016).

2.2.2 Alcohol use

Despite the significant potential health and economic burdens of alcohol use in sub-Saharan African countries, its use and misuse remain under-studied. Research often focuses on non-
representative population subsets and there is little standardization of assessment tools (Johnson, 1996; S. C. Kalichman, Simbayi, Kaufman, Cain, & Jooste, 2007; Roberts, Kaducu, Browne, Oyok, & Sondorp, 2011; Weaver & Roberts, 2010). There is particularly scant knowledge regarding the pervasiveness and potential health impacts of alcohol consumption during post-conflict transition periods in which populations move towards relative stability and reconstruction (Reinert & Allen, 2007; Roberts & Ezard, 2015; WHO, 2014). The research that does exist consistently record that across cultures and regions, men consume greater quantities of alcohol than women, and therefore suffer more of the physical harms directly related to the hazardous consumption of alcohol (Isidore S. Obot & Room, 2005; WHO, 2014). The consequences of such gendered dynamics extend beyond the individual consumer, and often exacerbate problems that are already pervasive in post-conflict settings, such as high levels of intimate-partner violence (IPV), the increased transmission of HIV, and family-level economic instability (Ezard, 2012, 2014; Gottert et al., 2017; Tumwesigye, Kyomuhendo, Greenfield, & Wanyenze, 2012). These problems can in turn hinder rebuilding processes, extend challenges within the post-conflict period and cyclically contribute to the drivers of alcohol and other substance consumption (Dunnegan, 2011; Weaver & Roberts, 2010).

The issue of accurately assessing alcohol use is complicated by the inconstancy in the assessment tools and the way in which they are used to measure consumption and related hazards in these settings. Few studies have explored the factor structures and internal or external validity of commonly used assessment tools in the varying cultural, ethnic, and linguistic groupings in sub-Saharan Africa –fewer still when these groupings are located in post-conflict settings (Cherpitel & Clark, 1995; Reinert & Allen, 2007; Rumpf, Hapke, Meyer, & John, 2002). The AUDIT has
been one of the mostly commonly used measurement tools for alcohol use research in sub-Saharan Africa, as it has been demonstrated to have greater sensitivity and specificity when assessing problematic use than the CAGE and MAST, especially in cases involving varying ethnic groups and adolescents (Cherpitel & Clark, 1995; Knight, Sherritt, Harris, Gates, & Chang, 2003). The AUDIT has also been recognized to be consistent with and predictive of the ICD-10 and DSM-IV criteria for alcohol use, dependence, and abuse (included hazardous and harmful use) (Reinert & Allen, 2007). A shortened version of the AUDIT, the AUDIT-C, that is comprised of only the first three questions of the test, has recently been introduced to provide a more rapid assessment tool for hazardous drinking and has been found to be applicable in various settings where the AUDIT is not appropriate (Reinert & Allen, 2007). Although the use of the AUDIT and AUDIT-C has increased in recent years, there has been little consistency in the application of the cutoffs scores used to define hazardous drinking, especially in sub-Saharan African populations. As a result, researchers and even the AUDIT guidelines suggest that further research is needed to investigate the use of the AUDIT and AUDIT-C in previously unstudied or under-studied populations (J. P. Allen, Litten, Fertig, & Babor, 1997; S. C. Kalichman et al., 2007; Tumwesigye & Kasirye, 2005; Woolf-King & Maisto, 2011).

2.2.3 Substance use in Uganda

As is the case for much of Africa, information on drug and alcohol use behaviors in Uganda is fairly limited. However, reports indicate that drug and alcohol use is increasing in Africa in general due to increased economic mobility amongst certain sectors of the population, a limited and underfunded drug/alcohol use enforcement mechanisms, and with international trafficking networks’ use of the continent as part of their routes to other markets (Carrier & Klantschnig,
2012; United National Office on Drugs and Crime, 2016; United States Department of State, 2016). The numbers that do exist for Uganda show that as is the rest of East Africa, the use of drugs other than alcohol in Uganda is low compared to global averages, though internal data is unavailable, particularly at the district level (United National Office on Drugs and Crime, 2016).

Though overall SUD information remains limited, more robust data is available for alcohol consumption behaviors in Africa than for behaviors associated with the use of other drugs. This data demonstrates that Uganda is currently experiencing the highest per-capita rates of alcohol consumption in all of sub-Saharan Africa (T. Babor et al., 2001; WHO, 2014). The total average consumption of 15.8 liters per person per year in Uganda is on par with some of the highest global consumption rates, which are seen in Eastern Europe. Even more concerning, these already extreme levels do not represent the full extent of hazardous drinking behaviors among the African population, as they are artificially lowered due to gender imbalances in consumption behaviors and high levels of abstinence among the population. Among the adult Ugandan population who reported drinking alcohol, total consumption levels spiked to 31.5 liters, ranging from 19.1 liters for women to 44.0 liters for men (Shield et al., 2013). Attempts to address this epidemic are hindered by a scarcity of epidemiological evidence exploring the specifics pertinent to drinking behaviors, comorbid conditions, and the consequences of alcohol use. The studies that have been conducted within Uganda are often limited by non-standardized assessment approaches, non-representative samples, or small sample sizes (Bonnie Wandera et al., 2015; Woolf-King & Maisto, 2011). Much of this research has focused on people living with HIV/AIDS (PLWHA), given that HIV rates are increasing in the country and that the global allocation of funding for HIV is often disproportionate to that of other health burdens. Even
within this small set of studies, there is a great discrepancy in the assessment tools used, which has an impact on the resulting findings. One large study of PLWHA at Mulago Hospital in Kampala, Uganda found that only 33% of the study population reported any alcohol use, and among those, misuse was reported by 18.6% and hazardous drinking behaviors were reported by 5.2% (B. Wandera et al., 2016; Bonnie Wandera et al., 2015). Another cross-sectional study conducted in Mulago found that over half of the sample (53%) had consumed alcohol in the prior three months, but this study used lower cutoffs to delineate hazardous use, and reported hazardous use rates of 40% and 30% for men and women respectively (Hahn et al., 2014). The rates of both use and misuse likewise vary significantly in studies conducted outside of Kampala. While only 21.5% of participants reported alcohol use in a large study conducted in the western town of Mbarara, a staggering 62% of these reported hazardous levels, even cutoffs were conservative (Santos et al., 2014).

2.3 HIV and conflict in sub-Saharan Africa

Sub-Saharan Africa continues to carry a disproportionate burden of the global HIV epidemic, and 70% of new infections globally still occur in the region, even though the annual rate of these infections have declined by a third since 2001 (UNAIDS, 2013). Many of the continual drivers attributed to this incidence, as well as the proposed solutions to it, are steeped in structural factors such as limited healthcare facilities and staff to test and treat patients; shortages and/or unequal distributions of anti-retroviral drugs (ARVs), and; limited economic opportunities at the country-to-individual level (UNAIDS, 2013; UN Joint Programme on HIV/AIDS (UNAIDS), 2014b; WHO, 2016). Still, some researchers argue that although gains have recently been made in efforts to address the disease, these efforts have a limited ability to make meaningful progress.
due to a continued reliance on standardized, top-down approaches that do not recognize important cultural and social difference across the massive continent and within its countries themselves (Epstein, 2007). Further Fritz et al. [2010] argue that current HIV paradigms all too often neglect the potent role of SUD, particularly that of alcohol, despite its wide use and known strong associations with HIV-related risk behaviors (Fritz, Morojele, & Kalichman, 2010). For Uganda, it is critical to better understand the scope of HIV and its related drivers, especially given that despite the meaningful progress that has been made in addressing the disease in recent years, Uganda is one of only two countries in sub-Saharan Africa where the HIV is again on the rise (Republic of Uganda & UNAIDS, 2015; UNAIDS, 2013).

In sub-Saharan Africa there has been a great deal of speculation regarding the association between armed conflict and HIV infection. However, there has been scant research about the association, so it fails to meaningfully inform evidence-based programming efforts (Hanson et al., 2008; Mock et al., 2004). Aid organizations and conflict epidemiologists have expressed concerns about this and increasingly asserted that the lack of a sound evidence base hinders programs aiming to address the needs of affected populations, particularly those who are substance users (Horyniak, Melo, Farrell, Ojeda, & Strathdee, 2016; Johnson, 1996; UNHCR et al., 2008; Weaver & Roberts, 2010).

Due to the challenges of conducting longitudinal research studies amongst populations in conflict settings, the directionality and full extent of the effect of conflict on HIV risk remains unclear (Mock et al., 2004; Spiegel, 2004). A recent study of 36 countries in sub-Saharan Africa from 1990 to 2012 found no direct link between increased HIV and times of conflict, but did note that
HIV rates tended to rise in the years preceding structural changes (Bennett, Marshall, Gjelsvik, McGarvey, & Lurie, 2015). Epidemiological research and hypothetical models suggest that there is potential for both protective and harmful associations between armed conflict and HIV risks (Hanson et al., 2008; Kerridge, Saha, & Hasin, 2016; Mock et al., 2004; Spiegel, 2004). Studies conducted in Angola after its civil war, in Uganda after the fall of Idi Amin, and in Rwanda after genocide, all reported that HIV increased subsequent to conflict-associated displacement. This was attributed to both the densification of populations and the dissemination of HIV among populations that had high rates of infection and were highly mobile (Santos-Ferreira et al., 1990; Smallman-Raynor & Cliff, 2004; SMEC, 2005). These studies were further supported by results from a decade long analysis of over 40 sub-Saharan countries that found significant associations between conflict and increased HIV prevalence (Iqbal & Zorn, 2015). Problematically, similar studies found no associations within the same countries when adjusting for different confounders (Spiegel, 2004; Spiegel et al., 2007). The contradiction in the research reflects conflicting narratives regarding the association between conflict and HIV prevalence, which mirror the complexities of country-level data from across sub-Saharan Africa that report HIV prevalence to be higher in countries with relatively peaceful recent histories (i.e. South Africa, Botswana, and Lesotho) than in those with recent or ongoing conflict (i.e. the DRC, Sierra Leone, and South Sudan) (UNAIDS, 2013). Thus, conflict epidemiologists have increasingly proposed that there is an indirect relationship between conflict and HIV infection wherein changes wrought by the former mediate potential risk factors for the latter (Hanson et al., 2008; Kerridge et al., 2016; Mock et al., 2004). As will be explored in detail below, these risk factors not only directly include comorbid substance use and mental health disorders, but also indirectly include factors which have relationships with HIV that are mediated by the presence of one or both.
2.4 Interplay of substance use, mental health and HIV in conflict settings

2.4.1 Conceptual frameworks

The impact of conflict on the intersection of SUD, HIV/AIDS, and mental health is complex, particularly given that these conditions have a highly intertwined nature in any setting. A framework developed by Mock et al. (2004) to explore the relationship between HIV and conflict provides a helpful conceptual grounding that can be applied to SUD and mental health disorders. Mock et al. propose that HIV is intrinsically intertwined with and predicated upon both specific vulnerabilities within a population and actionable opportunities for exposure. Vulnerabilities such as increased malnutrition, comorbid STIs, and diminished health infrastructures are unlikely to result in significant changes to HIV patterns without increased exposure to the disease through changes in sexual behavior or greater interaction with high-risk groups. Likewise, the presence of opportunities for exposure are unlikely to meaningfully impact a population that is not vulnerable to acting upon them. Therefore conflict- and post-conflict-associated HIV risks result from situational changes that simultaneously elevate both vulnerabilities and opportunities for exposure (Mock et al., 2004).

Mock et al.’s (2004) framework can conceptually be extended to encompass changes in alcohol and other SUD use in conflict-affected populations. A setting with strong social and legal structures for substance use would be less likely to witness increased use or problematic use even if substances became more widely available, and susceptibility to substance use cannot manifest unless there are opportunities for use. As will be explored below, economic, social, and individual changes during and after conflict can directly and simultaneously increase
opportunities for exposure to HIV/SUDs and vulnerabilities for HIV/SUD. These opportunities and vulnerabilities can in turn have an impact on each other. This is particularly the case when experiences of trauma subsequently manifest as depression and PTSD. However, there is currently a recognized paucity of evidence fully describing the impact of these links in northern Uganda as well as sub-Saharan Africa in general, despite their potential significance (Kerridge et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010).

Kerridge et al. (2016) expand on the work of Mock et al. (2004) and colleagues in arguing that approaches to addressing these interconnections need to not only take into account the complex ways in which conflict-associated vulnerabilities interact with each other, but also consider issues related to temporal changes. Kerridge et al. (2016) propose that structural equation models (SEM) be used to contrast pre-existing risk factors with risk factors that change over the course of the conflict and assess the ability of each factor to mediate or moderate the others (Kerridge et al., 2016). This recognizes the baseline risk factors present in a region as well as the risk factors introduced by conflict and delineates the conflict-specific trajectories of each factor. Such an approach is critical in many ways because it acknowledges that varying conflicts may manifest as unique HIV risks and vulnerabilities, as well as unique opportunities for exposure to HIV. This approach moves away from a monolithic description of ‘conflict’ and geographically uniform view of conflict (such as an ascription of something being uniquely ‘African’). In so doing, it facilitates a recognition of regional-level differences and the lived realities of those most affected by the conflict. This in turn informs and improves the design of culturally appropriate and sensitive interventions. A visual representation of this framework is presenting in the qualitative findings in Chapter 6 in Figure 6.1.
2.4.2 Breakdown of regional infrastructure

During times of conflict, many of the pillars that support the wider health of society fall away, and families and aid organizations often struggle to obtain for the most basic of necessities. In conflict settings, previously existing deficiencies within health infrastructures are quickly highlighted and exacerbated as increasing demand strains the constantly decreasing supply of essential medicines, equipment, and trained staff (Corti & Odong, 2010; Levy & Sidel, 2008; Mock et al., 2004). When need is high and resources are limited, health systems focus is on the immediate treatment of disease, often for only the most severe cases. Health programs may be entirely absent in conflict settings, and if programs are in place, they will be severely diminished. This creates conditions ripe for the spread of HIV and other communicable diseases, especially among tightly packed populations such as those living in IDP and refugee camps (Becker, Theodosis, & Kulkarni, 2008; Connolly et al., 2004; Hanson et al., 2008; Iqbal & Zorn, 2015).

The challenges that education systems face during conflict are similar to those faced by health programs and involve the outright destruction of schools, the loss of teachers who are uprooted along with the rest of the population, and a lack of basic educational resources in IDP or refugee camps. The resulting impacts can disproportionately affect women and girls, as the benefits of increasing their educational opportunities are well-known. These benefits have been demonstrated to be instrumental in helping to decrease risk factors for HIV and mental health disorders, including those commonly associated with conflict, such as IPV, early sexual debut, and the negotiation of safe sex practices (Gallant & Maticka-Tyndale, 2004; Sani, Abraham, Denford, & Ball, 2016; Spittal et al., 2008).
Health and educational limitations in conflict-affected regions are intensified due to the concurrent neglect of wider infrastructures, including transportation networks, power grids, and water delivery and treatment systems. Health and education facilities themselves are often perceived as ‘legitimate’ targets of war during conflict and are directly attacked. This has been noted to be especially true in conflicts associated with issues of ethnic or cultural heterogeneity, which has arguably been the case for northern Uganda (Buhaug, Cederman, & Gleditsch, 2014; Esteban, Mayoral, & Ray, 2012).

As conflicts intensify, local health systems are often bolstered by the increasing presence of international aid organizations and NGOs, although the support these entities can provide is often hindered by conflict-related instabilities and limited coordination between governmental and non-governmental actors (Kerridge et al., 2016) During conflict and post-conflict periods the provision of aid which is already difficult to administer due to endemic baseline instability may be further affected by an unequal distribution of resources among warring factions seeking to support or target specific subsets of the population (Esteban et al., 2012; Mamdani, 2001).

2.4.3 Displacement driven socio-cultural changes

Large-scale, ongoing population displacement and resettlement are central to many of the vulnerabilities and risk factors related to HIV, SUD, and mental health disorders during conflict. The separation of families and the breakdown of traditional social frameworks during the displacement process upends the dissemination of behavioral norms and adherence to those norms. As established social structures, cultural traditions, and legal frameworks fall apart during
conflict, behaviors which were previously restrained or rejected can become normalized, which compounds the existing risks that affected populations face (Marsh, Purdin, & Navani, 2006; Salama & Dondero, 2001). Young people may be particularly vulnerable in conflict settings, as their exposures to new sexual and substance related risks coincide with limited prior knowledge regarding appropriate substance use, appropriate sexual behaviors, and/or and the dangers related to inappropriate behaviors in both cases – knowledge are unlikely to attain in while displaced (Goldson, 1996). The resulting development of HIV-related vulnerabilities is well-documented by findings noting increases in serial and concurrent sexual partners, diminished condom use, and early sexual debut in conflict settings (Hanson et al., 2008; Khaw, Salama, Burkholder, & Dondero, 2000; Mock et al., 2004). These events combine with high HIV prevalence, a high level of mobility, risky sexual activity, and the intermingling of populations to heighten the introduction of the disease to vulnerable populations that are growing in number (Beyrer et al., 2013; Morris & Kretzschmar, 1997).

As people and families confronted by conflict flee their homes for the relative safety of larger urban centers or IDP camps, they leave behind valuable assets, including lands that are often key to their livelihoods. In subsistence-based agricultural settings, this not only upends regional economies, but simultaneously creates conditions of malnutrition and famine. These conditions can be critical factors in the spread of HIV, as they impair immune functions, increasing the likelihood of diseases being acquired and progressing (Cunningham-Rundles, McNeeley, & Moon, 2005; de Waal & Whiteside, 2003; Devakumar et al., 2014; Kimbrough, Saliba, Dahab, Haskew, & Checchi, 2012; Mock et al., 2004). The conditions also contribute to the development of SUD in displacement settings because they cause people to turn to alcohol and other drugs as
a mechanism for coping with the loss of social support, poor living conditions, idleness, uncertain futures, and diminished self-esteem (Ezard et al., 2011; Roberts & Ezard, 2015; United National Office on Drugs and Crime, 2016). The limited healthcare infrastructures in displacement settings and particular lack of facilities equipped to address mental health needs exacerbates this situation, as people may not have access to treatment for using alcohol or other drugs as a form of self-medication for conflict-associated trauma (de Jong et al., 2001; Ezard, 2012; Weaver & Roberts, 2010). All of the above factors combine to make populations highly vulnerable to direct, individual-level, substance use-related harms (e.g. risk for STIs, overdosing, and the development of chronic health issues), and communities vulnerable to more indirect, diffuse harms (e.g. spread of HIV, IPV, limited economic growth) (Ezard, 2012; Jurgen Rehm et al., 2009).

2.4.4 Women and girls at risk

2.4.4.1 Sexual assault, IPV, and HIV

The large-scale upending of society and behavioral norms that occurs during conflict and displacement disproportionately affects young women and girls. This is the result of the limited social and political capital they have through which to advocate for their needs in conflict settings, which exacerbates sex- and conflict-related incidences of rape, sexual assault, and intimate partner- and gender-based violence (GBV) (Marsh et al., 2006; Shanks & Schull, 2000; M. J. Westerhaus et al., 2007). Women and girls in displacement settings are often directly targeted by men seeking to exert social control and power in order to ameliorate feelings of helplessness about their loss of identity and traditional roles (Ezard et al., 2011; Sigsworth, 2008). Women and girls already carry a disproportionate burden of HIV risk across sub-Saharan
Africa, and this risk is heightened during conflict (UNAIDS, 2013).

Global findings continue to demonstrate a strong association between occurrences of IPV and HIV positivity in at least one of a couple’s partners. Within sub-Saharan Africa, a systematic review found a strong relationship between both physical and emotional IPV and HIV incidence and prevalence (Dillon, Hussain, Loxton, & Rahman, 2013). The directionality of this association is somewhat less clear, as studies have shown that people who are HIV-positive are more likely to have partners who display IPV and instances of IPV, especially sexual assault, increase the likelihood of HIV transmission from one infected partner to another (Brief et al., 2004; Dillon et al., 2013; Hansrod, Spies, & Seedat, 2014). Women are more likely to be victim to IPV than men, which is another factor that heightens their HIV risk. Further, the non-consensual sexual debut and early sexual debut of young women and girls are significant predictors of HIV infection, as HIV may be acquired during the initial sexual act or acquisition may be facilitated by another chronic STI that may increase vulnerability during subsequent acts of intercourse (Jejeebhoy, Shah, & Thapa, 2005; Koenig et al., 2004; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). Evidence suggests that victims of sexual violence are less likely to engage in sexually protective behaviors such as negotiating condom use, knowing partner(s) status, seeking STI testing or care, or using contraception (Gottert et al., 2017; Maman, Campbell, Sweat, & Gielen, 2000; Watt et al., 2016). These sexual practices are only heightened by the use of alcohol use or other SUD, through clearly established links between alcohol use and domestic aggression (Catani, Jacob, Schauer, Kohila, & Neuner, 2008; Ertl, Saile, Neuner, & Catani, 2016; Fals-Stewart, 2003).
2.4.4.2 Transactional and survival sex

The societal changes wrought by conflict impact gender roles within affected populations. Women who are displaced often take on increased responsibility to provide for their families due to the breakup of prior support networks, the absence of men who are fighting in the conflict, or the marginalization of their traditional means of livelihood. There has been increasing recognition that frequent deprivation of basic necessities coupled with limited economic opportunities within displacement settings enhance sex- and gender-related vulnerabilities for women and girls as they seek to provide for and protect their families – often, this may require participation in survival or transactional sex (Hatcher et al., 2012; R. Jewkes, 2007; Khaw et al., 2000; Mock et al., 2004; Spiegel, 2004). Due to the acuteness of their needs, girls’ and women’s agency and ability to negotiate aspects of physical, mental and sexual safety are diminished (Ezard, 2014; Fritz et al., 2010). Though transactional sex often occurs at a lower frequency and with fewer partners than sex for prostitution, women who participate in it are nonetheless at greater risk of HIV-infection, IPV, and other traumas than women who do not participate in it (Dunkle et al., 2004a, 2004b; R. Jewkes et al., 2012). HIV risks are often further exacerbated by the disproportionate power held by men in situations of conflict. These men have better access to capital than women, which couples with conflict-driven losses of appropriate social norms and expectations to increase their likelihood of engaging in inappropriate and non-consensual sexual actions (Annan & Brier, 2010; Gottert et al., 2017; Reveiw, 2010). Substance use likewise increases this likelihood. Substance-serving venues have long been linked to increased transactional sex work, with findings reporting that women who brew, sell, or work with alcohol are more likely to engage in sex with clients (Fisher, Cook, Sam, & Kapiga, 2008; Fritz et al., 2010). Finally, substance use and the subsequent diminishment of decision-making abilities and
alterations of behavior have been tied to occurrences of sexual assault, IPV, and rape, especially in the presence of other stressors (Brief et al., 2004; Gottert et al., 2017; Hansrod et al., 2014).

2.4.5 Associations with high-risk groups

Large-scale population migration and resettlement into camp settings during conflict settings go hand-in-hand with increased interactions between groups known to be at high risk for both HIV and substance use. Members of the military and other armed forces, who have a pronounced presence in conflict settings, have consistently been demonstrated to have significantly higher rates of HIV than the general population (Becker et al., 2008; Harbertson et al., 2013; Mock et al., 2004; Roberts & Ezard, 2015; Sagala, 2007). Reports also indicate that trans-national conflicts and/or conflicts involving foreign soldiers further increase risk for HIV and STIs within affected populations when there are significant discrepancies in country baseline seroprevalence (Salama, Laurence, & Nolan, 1999). These risks are often disproportionately experienced by women and girls who may be the direct targets of armed soldiers who see sexual violence as a tool of war, especially those steeped in issues of ethnic or cultural identity (Mamdani, 2001; Shanks & Schull, 2000). Even when civilian populations are not directly targeted by armed forces, when soldiers (ostensibly as a form of protection) are close to condensed populations, it creates ample opportunities for the spread of HIV and other STIs. Further, in insecure settings characterized by limited economic opportunity soldiers are often one of the only sectors of the population with a stable income (Khaw et al., 2000; Mock et al., 2004; Salama & Dondero, 2001). While the transmission of HIV is not always unidirectional from soldiers to displaced populations, soldiers’ mobility amongst populations in situations of conflict can couple with high levels of either consensual or non-consensual sex to rapidly spread HIV. The acquisition of HIV
by soldiers can potentially lead to country-wide changes in disease prevalence as they demobilize back to their home regions or move on to other conflict-affected areas, further spreading the disease (Mendelson Forman & Carballo, 2001; Sagala, 2007).

Similar vulnerabilities may be experienced by conflict-affected populations through their interactions with relief workers, civil servants, and international peacekeeping forces who represent a fundamental imbalance in social and economic power, just as armed forces do. When the members of conflict-afflicted communities seek to access the support networks provided by these parties, the subsequent interactions render them vulnerable to financial and sexual exploitation. It is distressing to note that the United Nations, one of the most predominant actors in conflict settings, only specifically laid out rules regarding sexual exploitation in 2003, after being put under significant pressure to do so. And while these rules forbid sexual relationships being exchanged for assistance, in general they only “strongly discourage” such with “beneficiaries of assistance”, which is a difficult distinction for those wholly dependent on aid to make (United Nations, 2003). In fact, there is ample evidence that when varying aid organizations put forth restrictions of this kind, it only has a limited effect. This is indicated by epidemiological research and agency reports that note the persistence of sexual exploitation and abuse in settings characterized by conflict (Beber, Gilligan, Guardado, & Karim, 2017; United Nations, 2017). Even if relief workers and peacekeepers are not the source of HIV transmission, their acquisition of the disease can spread it not only within the conflict settings, but also internationally, when they return to their homes (as is the case for soldiers).
2.4.6 Role of conflict-associated trauma

For populations living in situations of open conflict, trauma, violence, and hardship are frequent occurrences. While conflict-associated traumas are expected to rise when a conflict is characterized by warring factions, during civil conflicts and insurgencies such events may be intentionally inflicted upon civilian populations as a tool of war by both sides and may be influenced by perceptions of real or imagined allegiance. The associated actions can range from direct, personalized violence, to witnessing violence inflicted upon others, to imposing short or sustained periods of deprivation, all of which can subsequently manifest in lifelong mental health disorders such as depression and PTSD (American Psychiatric Association, 2000; de Jong et al., 2001; Richard F Mollica & Caspi-Yavin, 1991; Porter & Haslam, 2005; Steel et al., 2009). The links between conflict-associated traumas and subsequent occurrences of PTSD and depression within affected populations are well-documented (Agaibi & Wilson, 2005; de Jong et al., 2001; P. Pham, Weinstein, & Longman, 2004; Silove, Steel, McGorry, Miles, & Drobny, 2002). While these occurrences may arise as the result of a single traumatic event, research increasingly suggests that they more commonly occur due to a number of traumatic exposures. When a single traumatic event is identified as the source of a diagnosis, it is often part of a chain of traumatic experiences that interact with each other to heighten overall vulnerability to PTSD and depression (Naomi Breslau, 2009; N Breslau, Peterson, Poisson, Schultz, & Lucia, 2004). Therefore, when civilians are subject to prolonged periods of conflict and displacement, their increased likelihood of experiencing increasing numbers of traumatic events would heighten their risk of developing depression or PTSD. When trauma(s) ultimately manifests/manifest as depression or PTSD, treatment may be limited due to breakdowns of health infrastructures and/or sequelae of the disease resulting in isolation and an ultimate persistence of symptoms. These
symptoms can include, but are not limited to, hyper-arousal to real or perceived threats in daily life, a re-experiencing of traumatic events via intrusive memories and thoughts, disassociation from daily experiences, anxiety, depression, and a general distancing from/distrust of family and friends (Brief et al., 2004; Ehlers & Clark, 2000). Assessing the full extent of mental health needs within conflict-affected populations is complex as there is the potential for the prevalence of mental health issues to be underestimated due to differences in cultural perceptions and acceptance of manifestations of grief, trauma, and depression. This complexity is further heightened when mental health issues are explored via the varying tools developed for use in significantly different populations (R F Mollica et al., 1992; P. N. Pham, Weinstein, & Longman, 2004; Wirtz et al., 2013).

2.4.6.1 Trauma and substance use

Research into the results of complex and/or numerous trauma(s) has found commonalities regarding the concurrent development of mental health and substance use disorders (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Schilling, Aseltine, & Gore, 2007). This occurs through the uptake of substance use following trauma as well as significant increases in existing patterns of substance use after exposure to real or perceived cues of traumatic events, especially among those already diagnosed with PTSD (Brief et al., 2004; Coffey, Stasiewicz, Hughes, & Brimo, 2006; Stewart, 1996). Recognized associations between clinical diagnoses of PTSD, depression and comorbid alcohol or other drug use patterns are often viewed as a form of self-medication or as a mechanism for coping with the stressors related to the diagnoses (Naomi Breslau, 2003, 2009; Brief et al., 2004). The majority of evidence suggests that SUD develop subsequent to trauma and is linked to mental health diagnoses through forms of self-medication.
At the same time, it has also been suggested that the inhibited decision-making and risky behavior associated with SUD predisposes behavior(s) that may result in trauma(s), potentially leading to the development of mental health disorders (Naomi Breslau, 2003; Brief et al., 2004; Chilcoat et al., 1998).

Dual diagnoses of SUD and mental health disorders are frequently seen in populations that are at high risk for HIV and HCV infection (Bell & Britton, 2014; El-Bassel et al., 1997b; Meade et al., 2009; Strehlau, Torchalla, Kathy, Schuetz, & Krausz, 2012) However, in sub-Saharan Africa, these associations are often explored only in pairs of trauma and HIV, substance use and HIV, and substance use and trauma. There is little recognition that the presence of the unaccounted for third variable amid the binary relationship has the potential to mediate or moderate the pairings, especially in conflict or post-conflict settings (Braithwaite et al., 2014; Brief et al., 2004; Kerridge et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010). Existing literature suggests that that poor mental health, including depression and PTSD, can enhance HIV related vulnerability in three ways. First, people with PTSD are more likely to engage in higher risk sexual behaviors such as not using condoms and having numerous sexual partners, which may increase their risk of infection (Leserman, 2008; Leserman et al., 2007; Rosenberg et al., 2001; Spiegel et al., 2007). These behaviors are quite similar to those found among substance users globally and in sub-Saharan Africa, where the use of alcohol and drugs has been recorded to increase HIV risk through impaired decision-making, unprotected sex, and the likelihood of multiple partners (Ezard, 2012; S. Kalichman, Simbayi, Cain, & Jooste, 2007; Strathdee et al., 2010; Whetten et al., 2012; Zablotska et al., 2006). Second, when PTSD develops as the result of exposure to trauma, it has been found to have a negative impact on immune function among
people with HIV (Brief et al., 2004; Gore-Felton & Koopman, 2008). Finally, evidence has displayed that the behavioral changes associated with mental health disorders interfere with adherence to medication regimes, simultaneously and directly resulting in an increase of morbidity and mortality due to rapid disease progression as well as increasing the potential for HIV transmission to others (Cohen et al., 2001; Leserman et al., 2007; Nakimuli-Mpungu et al., 2012). This mirrors the sequela of substance use, and is known to be highly correlated with non-adherence to antiretroviral medication regimes, especially in the presence of a comorbid mental health disorder (Tucker, Burnam, Sherbourne, Kung, & Gifford, 2003).

2.4.7 Young people and prolonged conflict

In cases of prolonged conflict ever-increasing vulnerabilities and exposure to events that compound them disproportionately affect young people (Connolly et al., 2004; Kerridge et al., 2016; Mock et al., 2004). Many young people will have been born into conflict and have little or no memory of life without it, which will shape the values and social norms that they experience during their displacement (Goldson, 1996; UNICEF, 2009). The potential consequences of this are as significant as any experiences of abuse or trauma during childhood have been recorded to include an increased likelihood of partaking in high-risk sexual behavior and a decrease in health-seeking behaviors, which in turn cause an increase is lifetime HIV risk (Hansrod et al., 2014; Jejeebhoy et al., 2005; Maman et al., 2000; Rosenberg et al., 2001; Spies et al., 2012). Childhood abuse is also associated with early, frequent, and problematic drug and alcohol use, which lead to or exacerbate risk factors for trauma, IPV, HIV, and revictimization (Brief et al., 2004; Spies et al., 2012). These conditions are likely to persist long after the war, especially if they not understood and addressed in a way that is accessible to those who are affected by them.
2.5 Post-conflict

2.5.1 Transition phases

The nebulous transition period often referred to as ‘post-conflict’ is one of great activity during which military forces demobilize, displaced populations resettle, and rebuilding efforts commence. Unfortunately, limited research has been conducted during such periods, as it could elucidate the lasting impacts of war on affected populations and how these impacts fundamentally alter risk factors for HIV and opportunities for exposure to the disease. It is clear that many of the challenges faced by populations during periods of conflict persist well after the cessation of hostilities. Even if direct conflict between warring factions may have ended, the fundamental changes that conflict has wrought to a region, its society, its infrastructure, and its economy endure (Kerridge et al., 2016; Mock et al., 2004; Spiegel, 2004). These changes include the normalization of sexual and substance use behaviors that increase risk factors for HIV infection at both the individual and population levels (Mock et al., 2004; Roberts & Ezard, 2015). Many of the challenges associated with these changes can be exacerbated by events and conditions inherent to post-conflict transitions as populations disperse and begin to resettle far away from supportive health, education, and economic infrastructures that are already limited (R. Jewkes, 2007; Mock et al., 2004; Porter & Haslam, 2005). At the same time, the provision of post-conflict aid is often dictated by the winners of the conflict, and may be unevenly distributed, with only limited support allocated to those perceived to have sympathy for the losing side (Buhaug et al., 2014; Kerridge et al., 2016).

Although there are many problems associated with IDP camps, they do provide large international aid organizations with an easy intervention point for reaching affected populations.
After the cessation of fighting, many of these organizations significantly reduce their presence, having the understanding that local and national support will increase. However, the prolonged neglect or outright destruction of health services and infrastructures severely limit local and national organizations’ ability to provide meaningful interventions in order to address endemic HIV and mental health and substance use problems in the immediate post-conflict period (Ghobarah, Huth, & Russett, 2004; Levy & Sidel, 2008). Where services are available, they may be inaccessible to large portions of the population due to economic barriers (e.g. hidden fees, transportation costs, informal payment demands) or institutional insufficiencies (e.g. medicine stockouts, equipment shortages, and absenteeism among qualified staff who are likely to live some distance from remote, underserved settings). Reports have also noted that the national and international actors are often severely lacking in terms of coordinated efforts to address HIV in post-conflict settings, which leads to ineffective and often ill-aligned prevention and treatment programs (IDMC & Norwegian Refugee Council, 2008; Kerridge et al., 2016).

International, national and local organizations must acknowledge the challenges to aid provision in order to develop meaningful approaches to understanding and addressing them. If this acknowledgement does not occur, it will hinder the capacity of programmatic responses to pursue meaningful positive change and top-down expectations for rebuilding may not be consistent with realities on-the-ground (Becker et al., 2008; Ghobarah et al., 2004). Crucially, the needs of women are often overlooked during this stage due to their often limited political capital and all too frequent marginalization from the decision-making process regarding resource allocation (R. K. Jewkes, Levin, & Penn-Kekana, 2003).
2.5.2 **Young people at risk**

Young people are particularly vulnerable during the post-conflict period, just as they were during conflict. Among them, orphans and other deemed vulnerable children (OVCs) are at especially high risk for HIV and other diseases (Gregson et al., 2005). Many OVCs have never known life without conflict or displacement, and have limited skills with which to participate in rebuilding processes and earn livelihoods (UNICEF, 2009). At the same time, they are expected to take active roles in the rebuilding processes and support their families, which lead them to feel stressed and helpless. Based on the previously mentioned evidence obtained from studies of IDP camps, young people’s vulnerability have the potential to increase substance use behaviors, which contributes to a cyclical process of increased isolation. Their willingness or ability to engage with the rebuilding process and adjust to a rapidly changing society may likewise be inhibited by unaddressed mental health disorders that have resulted from conflict-associated traumas (Devakumar et al., 2014; Goldson, 1996). Further, their ability to deal with these unmet needs is hindered by participation in rebuilding processes because it can directly limit their ability to reengage with education systems or allocate time for health-seeking behaviors. As a result, their underlying symptoms and HIV risk behaviors are prolonged or exacerbated (Devakumar et al., 2014; Ghobarah et al., 2004; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). Reports indicate that this scenario is indeed occurring, as SUD and concurrent sexual violence tend to rise sharply among young people in initial post-conflict or post-civil war years (Fahmy, 2017; Spiegel, de Jong, & UNHCR, 2003).

2.5.3 **Post-conflict substance use**

The potential impact of widespread or developing SUD during the post-conflict stage is deeply troublesome. In other settings, SUD has been found to contribute to socio-economic instability,
undermine sustainable development, and hamper efforts to reduce poverty and crime (Fahmy, 2017; Roberts & Ezard, 2015). Even so – and despite increasing concern – the impacts of changing SUD patterns in post-conflict periods are largely unknown as reestablishing health systems have limited resources to allocate to substance use assessment or treatment programs (Kerridge et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010). Unaddressed, established patterns of use are therefore likely to persist from the conflict to post-conflict stage. Mental health disorders resulting from the conflict may also result in new SUD through established self-medication patterns (Dutton, Adams, Bujarski, Badour, & Feldner, 2014; Room et al., 2002). The myriad of stressors seen as potential drivers of use because they provide a coping mechanism during conflict (e.g. impoverishment, acculturation, limited social support, displacement) are also likely to persist in the post-displacement period (Johnson, 1996; Weaver & Roberts, 2010).

In post-conflict years, improved security, the removal of restrictions on the movement of people and goods, and increased economic opportunities may drive up substance use through increased availability and an associated decrease in cost. However, reports suggest that to the contrary, the combination of widely dispersed populations and all too frequent delays in development has had a protective effect by hindering alcohol distribution networks. Even when alcohol is available, limited economic growth results in financial barriers that reduce its consumption (Bryden, Roberts, McKee, & Petticrew, 2012; Weaver & Roberts, 2010). It is also possible that the return and resettlement processes may inhibit use by directly diminishing the drivers of SUD; providing new sources of livelihoods; reducing feelings of helplessness; and reforming family and community level support structures that promote and disseminate healthy norms and behaviors,
especially to younger generations (Dutton et al., 2014; P. N. Pham et al., 2009; Porter & Haslam, 2005; Roberts, Odong, et al., 2009; Roberts & Browne, 2010; Spittal et al., 2008). These factors therefore may mitigate self-medication and dose-response connections that are otherwise associated with the traumas of conflict (P. J. Brown & Wolfe, 1994; Leeies, Pagura, Sareen, & Bolton, 2010). This creates unique opportunities for meaningful interventions that can inhibit the dangerous potential for SUD to expand rapidly in subsequent years.

2.6 Current risk in post-conflict northern Uganda

Over a decade of peace in northern Uganda has resulted in significant changes to the country. The 1.9 million IDPs currently reported to be living in East Africa do not include any who have been newly displaced in Uganda. Further, only an estimated 29,800 IDPs remain in the country out of an estimated 1.8 million at the height of the conflict (Norwegian Refugee Council & Internal Displacement Monitoring Centre, 2015; Republic of Uganda, 2007). Unfortunately, as is common to other conflict-affected areas around the world, mental health, HIV/AIDS, and substance use research has not been a high priority in northern Uganda due to the many demands of the demobilization and reconstruction processes (Republic of Uganda & Government of Uganda, 2007; Spittal et al., 2008; M. J. Westerhaus et al., 2007). While exposure to war related violence in the region has been well-documented in NGO reports and on human rights forums, little epidemiological evidence is available to characterize the lasting mental and physical health impacts of the conflict, and even less is known about the specific challenges that may be faced by specific sub-sets of the population (Annan et al., 2006; Liebling-Kalifani, 2007; Republic of Uganda & Government of Uganda, 2007; Spittal et al., 2008; M. J. Westerhaus et al., 2007).
2.6.1 Mental health and HIV in northern Uganda

The most recently available UAIS 2011 estimated HIV prevalence in the north at 8.3%, which is significantly lower than 10.3% estimate determined at the end of the conflict in 2006 (Fabiani, Nattabi, et al., 2007; Fabiani, Yoti, et al., 2007; Ugandan Ministry of Health et al., 2011). However, these rates were still almost double the average prevalence of 4.1% for all rural areas in Uganda. Further, their validity in representing the burden of HIV in the regions has increasingly been called into question due to the complexity of accurately assessing HIV prevalence in rapidly developing post-conflict settings (Mock et al., 2004; Shannon et al., 2008; Ugandan Ministry of Health et al., 2011). These concerns gain credence from recent studies in northern Uganda suggesting that the scope of the HIV epidemic in the region is much larger than previously thought, with prevalence reaching 12.2% in a representative sample of the population (Malamba et al., 2016; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). These studies likewise note a pervasive gendered dynamic for the disease, with an 8.5% average prevalence in men compared to 14.4% in women, and those living in female-headed households having more than twofold higher odds of having HIV (Malamba et al., 2016).

The most recently available data on prevalence levels for (11.9%) and depression (14.9%) are consistent with prior studies in the region in the years since the end of the conflict (Ertl et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Roberts et al., 2011). This is worrisome, as it suggests that despite significant research and reporting, efforts to meaningfully address the mental health needs of the population have not met with widespread success. It is possible that this is in part due to a lack of focus on the potential
role of comorbid SUD, which have been clearly linked to HIV prevalence in similar settings (Ezard, 2012; Stappenbeck, Hellmuth, Simpson, & Jakupcak, 2014; Weaver & Roberts, 2010).

2.6.2 Substance use in northern Uganda

Despite the potential interplay of substance use, mental health, and HIV-related burdens in northern Uganda, there remains a paucity of data on problematic substance use in the region (Drumright, Gorbach, & Holmes, 2004; Hanson et al., 2008; Morris & Kretzschmar, 1997; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). It is therefore no wonder that since the cessation of conflict, NGOs and community leaders have continually expressed concerns about the impacts of substance use behaviors in the region and the potential for substance use to increase (Johnson, 1996; Mutto et al., 2010; SMEC, 2005; UNHCR et al., 2008; Weaver & Roberts, 2010). These concerns are particularly grave given that rates of post-traumatic stress disorder (PTSD), depression, and HIV are already high and can be exacerbated by problematic substance use (T. Babor et al., 2001; Brief et al., 2004; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; WHO, 2014). There have only been a few studies that have been conducted in the region which include a focus on alcohol and these studies often paint conflicting pictures. Immediately following the cessation of the conflict in 2006, Roberts et. al [2011] utilized the AUDIT scale and found that roughly a quarter (25.9%) of adults living in IDP camps consumed alcohol more than once a month, with men significantly more likely to drink than women (42.5% vs. 14.8% respectively). Of those, 32.4% of men and 7.1% of women were categorized as having an alcohol related disorder (Roberts et al., 2011). In recent years, few studies have provided evidence from which to explore potential changing patterns of alcohol use in the north, even though there have been drastic shifts in population
dynamics as people return to their ancestral villages amidst rapid modernization after decades of conflict. As is the case for the rest of Uganda, those previous studies which have been conducted often treated alcohol as a secondary variable of interest, limiting their ability to generate meaningful information about specific levels of use or the consequences of use. Only one recent study by Ertl et al. (2016) used a validated scale of alcohol use (the AUDIT). In contrast to Roberts et al. (2011), their findings reported significant changes in use overall and by sex. They reported that current drinking among men had increased by 67.7%, while current drinking among women had remained fairly consistent at 14.0%. Among those who currently drank, alcohol related disorders were seen in 46.0% of men and only 1.0% of women. Caution should be taken in extrapolating from these numbers, however, as the study population – adult guardians of second graders – was significantly older than the regional average, had much higher rates of reported abduction, and reported extremely lower rates of PTSD and depression in the sample than any other regional study, potentially biasing their ultimate results (Ertl et al., 2016; Malamba et al., 2016; Mugisha et al., 2015; Roberts et al., 2011; Room et al., 2002). However, if the study population is in fact representative of alcohol users in the region, it suggests that the concerns about increased use voiced by NGOs and community leaders may be driven by the changes occurring in men, which could potentially mask positive changes in women’s use of alcohol. Therefore, more research is clearly needed to further understand the relationship between patterns of alcohol use and related comorbidities in northern Uganda, especially since these patterns potentially interact with mental health issues and the risk of HIV infection in the region.
2.6.3 Role of the LRA in current risk

The relationship between mental health, HIV, and SUD in northern Uganda is made further complex due by the ideological tenets of the LRA, as noted in Chapter 1. In stark contrast to the heightened levels of substance use reported among soldiers in GoU forces, members of the LRA in IDP camps were prohibited from any use during the conflict, often on the pain of death (S. Patel et al., 2013; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008; Vlassenroot & Doom, 1999). This had the potential to interrupt the direct, immediate connections between HIV, SUD, and trauma as well as those subsequently experienced by the wider conflict-affected population. However, such assumptions have been largely anecdotal and have not been explored in a representative sample of the population.

The association between conflict and HIV is likewise complex when viewed within the context of the LRA, as their strictly enforced tenets with respect to sexual behavior had the potential to significantly reduce HIV risk. Reports and personal accounts of women who were abducted during the conflict note that the LRA specifically targeted young women due to the perception that they would be less likely to be HIV positive (T. Allen, 2006; Annan & Brier, 2010; Soto, 2009; Spittal et al., 2008). Once abducted, these young women were rarely sexually assaulted unless they were assigned to be the ‘bride’ of a single senior officer in the LRA (Annan & Brier, 2010; Mckay & Mazurana, 2004; Spittal et al., 2008; Survey of War Affected Youth (SWAY), 2007). Women in these forced marriages would be severely punished or executed if found engaging in extramarital sex, and in the event that their ‘husbands’ died, they would be delegated to the next senior officer in line. Overall this located them in relatively closed sexual networks, which significantly lowered their opportunities for exposure to HIV. Further, women subjected
to these forced marriages in Uganda and elsewhere often described them as protective against many of the vulnerabilities faced by non-abducted women and girls during conflict. This is attributed to relatively stable supplies of food and medicine, which limited the depravation that could lead girls and women to engage in transactional sex (Annan, Blattman, Carlson, & Mazurana, 2008; Park, 2006; S. H. Patel et al., 2012; Spittal et al., 2008). The experiences of forced brides were a stark contrast to the experiences of young women in IDP camps and night-commuting settings, where deprivation, predation, sexual abuse, and multiple partners were much more common, all of which increased vulnerability and opportunities for exposure to HIV and other STIs (Falk et al., 2004; S. H. Patel et al., 2012; Spittal et al., 2008). A similar contrast is identified by findings from conflict settings elsewhere in sub-Saharan Africa, where sexual assault, rape, and prostitution have commonly been reported in overcrowded camps, which heightens HIV related risks and traumas associated with mental health disorders (Marsh et al., 2006; Spiegel et al., 2003). Within the broader confines of the LRA, the sexual encounters (whether conducted willingly or unwillingly) likely had a broader protective effect against HIV by limiting casual sex within a tightly controlled framework, limiting multiple partner concurrency, and thus severely inhibiting transmission networks. However, young women who were sexually abused during captivity were at heightened risk for PTSD and depression as well as not only immediate risk of HIV acquisition, but also subsequent risk through associated behavioral changes (Betancourt et al., 2013; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008).

The post-conflict mental health vulnerabilities faced by women who have been abducted by armed soldiers are also complex to unravel. Research exploring perceptions and experiences of
the stigma faced by women following conflict note that their experiences are highly personalized both at the individual and communal level. Some studies report that feelings of stigma increase for women after they have been associated with armed groups, while others report that female ex-combatants are well-received by their families upon return (Annan & Brier, 2010; Mckay & Mazurana, 2004; Spittal et al., 2008). In northern Uganda alone, some reports on women who were abducted during conflict find that these women subsequently had widespread feelings of isolation and stigma, while other reports find that over 90% of female abductees did not experience insult, blame, aggression or other negative communal responses to their histories (Annan et al., 2008, 2006; Mckay & Mazurana, 2004; S. Patel et al., 2013; Spittal et al., 2008).

Due to the commonly held perception that LRA abductees are at particularly high risk for HIV and psychological traumas, aid organizations’ interventions have often targeted them. However, this approach is not necessarily evidence-based, and may in fact be limiting the effectiveness of prevention programs by ignoring the pervasiveness of vulnerabilities to HIV and psychological traumas in the wider population (Epstein, 2007).

While attention has recently been given to the risk of HIV posed by trauma-related disorders the impacts of these disorders have not generally been examined in relationship to abduction (Brief et al., 2004; Cohen et al., 2001; Gore-Felton & Koopman, 2008; R. Jewkes et al., 2012; Leserman, 2008). The severity of this issue is highlighted by Betancourt and colleagues (2013), who assert that globally, few studies on former child soldiers – a catchall term for young people abducted during a conflict – use validated psychometric measurement tools, comparison groups, or representative population samples (Betancourt et al., 2013). Thus, while it is conceptually...
understandable that those who are kidnapped from their families and in conflict situations at a young age would develop PTSD and depression later in life, the actual extent and severity of these conditions remain largely unknown, especially as they would differ from those experiences of trauma that are associated with IDP camp life. In northern Uganda alone, reports on mental health burdens within the population vary greatly due to the inconsistent use of psychometric measurement tools, sample sizes, sampling methods, and the use of control groups, with estimates of PTSD ranging from 27% to 99% (Bayer et al., 2007; Derluyn et al., 2004; Klasen & Oettingen, 2010; Ovuga et al., 2008; P. N. Pham et al., 2009). In addition, recent studies have reported that there is no significant association between abduction status and HIV prevalence, which challenges the long held beliefs that inform programmatic targeting by aid organizations in Uganda and elsewhere in sub-Saharan Africa (Malamba et al., 2016; S. Patel et al., 2013). This would in turn seem to suggest that the LRA’s strictly enforced tenets with regards to both sexual and substance use practices may have helped to inhibit the spread of the disease, at least among abductees (S. H. Patel et al., 2012; Spittal et al., 2008).

2.6.3 Prospects for northern Uganda

Many challenges persist in northern Uganda that stem from its period of conflict. A strong trade corridor to Southern Sudan has been established, and large-scale hydro- and oil-based developments have begun. While this has spurred economic growth, it has likewise brought infusions of seasonal workers into Uganda, and these workers have often been reported to be one of the groups most likely to transmit HIV in sub-Saharan Africa (Epstein, 2007). In addition, ongoing land disputes and the slow pace of regional community-level investment have hindered economic opportunities at the local level and led to ongoing cases of food insecurity and
persistent poverty (IDMC & Norwegian Refugee Council, 2008; Mabikke, 2011; UN Joint Programme on HIV/AIDS (UNAIDS), 2014b). Schools remain primarily located in the more developed urban centers, and those young people who can access them are often separated from their families. They are exposed to rapidly urbanizing societies while being removed from the family ties and dissemination of cultural traditions that could help protect them from substance use or engaging in risky sexual behaviors. At the same time, comprehensive health facilities likewise remain few and far between and many are characterized by persistent staff absenteeism and drug stockouts (IDMP & Norwegian Refugee Council, 2009; Herbert Muyinda & Mugisha, 2015; The Global Fund, 2009). Finally, instability has returned to the region with the reemergence of civil war in the now independent country of South Sudan. This has resulted in an influx of refugees crossing south into northern Uganda, which has led to the reappearance of significant numbers of armed forces and aid workers, and the risks associated with them. NGOs and community leaders are therefore concerned that women and girls are again turning to transactional sex work - much as they did in the conflict - which would in turn increase their vulnerabilities to HIV, IPV, and GBV (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; S. H. Patel et al., 2012; SMEC, 2005; Spittal et al., 2008). It appears that while the underlying context of life in northern Uganda may have changed, many of the risks face by its conflict-affected population have not. These risks are exacerbated by persistent uncertainty regarding the presence, temporality and interaction of trauma-associated mental health disorders, drug and alcohol use, and HIV risk, which limits the epidemiological evidence from which to build effective interventions.
2.7 Summary

This review sought to provide an overview of the complex ways in which substance use, mental health, and HIV risk are intertwined, especially within the context of conflict and post-conflict settings. It highlighted the persistent calls for research into this subject in noting that current epidemiological evidence remains limited and primarily focuses on bilateral associations, often within non-representative samples and settings. Existent research has demonstrated strong associations between each potential pairing (trauma and HIV, substance use and HIV, and substance use and trauma), often due to experiences or conditions attributed to one or the other of the variables. These include drastic shifts within the underlying physical, economic and socio-cultural frameworks of conflict-affected areas. This chapter additionally explored the even more limited knowledge base regarding risk factors in post-conflict settings, including those factors that are newly developed as well as those that are based on persisting, unaddressed conditions that developed during conflict. Finally, it explored the current impacts of HIV-related vulnerabilities and risks and their intersection in northern Uganda. This provides the basis for the qualitative and quantitative explorations that will be undertaken in Chapters 4, 5, and 6.
CHAPTER 3: Dissertation Methodology

3.1 Summary of methodology

The research contained within this dissertation was conducted in partnership with the Cango Lyec Project (CLP), an ongoing prospective cohort study exploring HIV and mental health sequelae in post-conflict northern Uganda. The dissertation itself is comprised of both secondary analyses of quantitative data from the CLP and a primary analysis of independently collected, qualitative, in-depth interviews. The methodologies for both approaches are detailed below and summarized in the subsequent chapters that present their respective results. The candidate (A.H.B.) joined the CLP following the receipt of grant funding for the project from the Canadian Institutes of Health Research (#219124) and prior to the baseline data collection period. The questionnaires that comprise the CLP datasets were designed by the study investigators, including members of the dissertation committee (P.M.S., M.T.S., H.M, and A.K.), and utilize standardized research tools (e.g. the HTQ and HSCL-25). The candidate requested that additional substance-use associated questions be incorporated into the study following the first year of data collection. Trained Ugandan CLP staff members were responsible for participant recruitment, interviews, and the collection of blood samples. Data entry was overseen by Ugandan members of the research team who compiled and verified the integrity of the databases. The candidate was then independently responsible for the cleaning and merging of all databases and the creation of a final approved ‘frozen’ version for the analysis of all CLP research for the baseline and second year of the study. The candidate likewise independently completed all statistical analyses for the dissertation, the results of which are presented in Chapters 4 and 5. Senior members of the CLP investigator team and the Community Advisory Board (CAB) provided assistance with the interpretation of results and the suggestions of culturally appropriate interventions that were derived from them. The qualitative data reported on in Chapter 6
represents the primary data component of the dissertation, and was independently funded by a grant written by and awarded to the candidate through the National Institutes of Health (NIH) National Institute on Drug Abuse (NIDA). While this component was conducted in collaboration with the CLP, the candidate independently hired and supervised research staff, and oversaw data collection, storage and analysis. The candidate developed topic guides, and coded, analyzed and interpreted all qualitative data under the guidance of senior CAB and CLP senior investigators.

The candidate traveled frequently to northern Uganda during the first and second year of the project to familiarize himself with the setting, meet with CAB members, and engage with research staff during the data compilation process. The candidate then relocated fulltime to the region for a one-year period beginning in September of 2013 in order to conduct the primary research portion of the study, engage in CLP knowledge translation activities, and oversee the third round of CLP data collection. During this time the participant lived a short distance outside of Gulu, at St. Mary’s Lacor Hospital’s guesthouse. The project was based out of the CLP project offices, and the candidate traveled frequently to the field to meet with participating CAB members, local traditional leaders and elected officers, and government ministry officials. The candidate was in the field supervising every qualitative interview that occurred during the study.

The following chapter provides a detailed description of both the qualitative and quantitative data collection methods, including: study design, sampling approaches, analysis and ethical considerations.
3.2 Cango Lyec Project

The subsequent section describes the CLP project methods that lay the groundwork for this research project. It details the overall study design, location, and sampling approach used to recruit the participants who are the subjects for both the qualitative and quantitative data enquiries.

The Cango Lyec Project is a five-year prospective cohort study of conflict-affected populations in northern Uganda. In the Acholi Luo language, “Cango Lyec” translates as “healing the elephant.” The project name was chosen through consultation with community members to reflect the ultimate aim of the project, that of identifying culturally safe and appropriate interventions to support the health of the region. These interventions are represented by the elephant, the spiritual animal of the Acholi people.

To ensure a representative sample for the CLP, all major settlements in the Gulu, Amuru, and Nwoya districts of northern Uganda – the Ugandan districts most impacted by the conflict – were first mapped and enumerated (see Figure 3.1 for a map of northern Uganda). All major settlements were classified as either permanent, transient (community in transition to ancestral home) or displaced (internal displacement camp). In each district, one community settlement was randomly selected from each type using a two-stage stratified sampling method. An additional community was selected as a representative community and used as a pilot site to test study questionnaires. To identify eligible participants, a complete census of the selected communities
Figure 3.1: Map of Uganda with demarcations for the Gulu, Amuru, and Nwoya districts of the northern region.

Images taken and overlaid from GoogleMaps © with permission.
was conducted to enumerate all household residents, socioeconomic indicators, and in- and out-migration patterns during the study period (see Figure 3.2 for an example of the comprehensive mapping used). To meet its stated aims, the CLP estimated that a sample size of 2400 participants was required. Within the selected study communities, a “take-all” approach was used recruit participants aged 13-49 residing in households; this sample was in proportion to the size of the community. In subsequent rounds, further recruitment occurred on an ongoing basis to replace participants lost to follow-up and maintain the cohort size.

**Figure 3.2: Sample of CLP community mapping of the town of Anaka, Nwoya District Uganda**
Prior to data collection, multi-stage community outreach was conducted by CLP research staff. Initially, members of the investigative team and staff met with community leaders as well as elected and appointed government officials to inform them about the purpose and methods of the study. At this stage Community Mobilizers (CMs) were identified within each community to help disseminate knowledge about the project and serve as on-the-ground liaisons between the project and participants. In the weeks before and during data collection, CMs assisted research staff with alerting participants of their presence and finding them for follow-up interviews. CLP research staff traveled to each community in vehicles with the study name and contact information clearly painted on each side of the vehicle and parked in a central location from which they entered communities to recruit participants or conduct follow-up interviews. Once participants were identified, written consent and assent were sought prior to the administration of the questionnaires by trained interviewers in either English or Luo.

A total of 2449 out of 2954 eligible participants (82.9%) consented to participate in the study, completed all survey questionnaires, and provided a blood sample for analysis. In the second year of the study, 736 (30.1%) of participants were lost to follow-up, so 1713 participants returned to complete the second round of questionnaires, which included questions about substance use. Detailed descriptions of the CLP baseline findings have been reported elsewhere in academic journals, are summarized in Chapters 1 and 2, and included as part of Chapter 3 (Blair et al., 2016; Malamba et al., 2016).
3.3 Dissertation methods summary

The use of integrated qualitative and quantitative methods is increasingly being accepted as critical to the investigation of substance use behavioral patterns, experiences, and consequences (Bourgois, 2002; G. Hunt & Barker, 2001). It situates qualitative inquiry within larger epidemiological population-level data and understandings while simultaneously ensuring that modes of quantitative inquiry and their interpretation are located within the lived realities of the populations being studied (Bourgois, 2002; Morgan, 2007). The integrated qualitative/quantitative mode of inquiry was used to complete this dissertation and the specifics of each method are detailed outlined below.

3.3.1 Quantitative approach

The following sections detail the quantitative approaches that encompass the secondary data analysis portion of the dissertation.

3.3.1.2 The Cango Lyec Project questionnaire

After being identified for recruitment, participants were contacted by trained CLP field staff, who explained the study, received consent, and administered all participant questionnaires. Every participant received and completed a baseline questionnaire upon being recruited to the study, and those who returned for subsequent rounds of data collection received a separate follow-up questionnaire and addendums to the previously filled-out questionnaires. The baseline survey collected data on: socio-demographic characteristics; food security issues, and; conflict-related experiences, including abduction, night commuting, living in IDP camp settings. Further questions explored knowledge of HIV/STIs and access to HIV prevention and care services.
Participants who reported having ever had sex received additional questions, including: age of first consensual sex; participation in transactional or subsistence sex; sexual vulnerabilities; power dynamics in sexual relationships; sexually active relationships; HIV/STI prevention behaviors; cultural practices related to sexual behavior, including dry sex and wife inheritance; sex-related issues, abortion, and pregnancy.

Participants’ mental health issues, including trauma, post-traumatic stress disorder (PTSD), and depression, were assessed using the Harvard Trauma Questionnaire (HTQ) and the Hopkins Symptom Checklist-25 (HSCL-25). The HTQ and HSCL-25 have been demonstrated to be both reliable and valid in a number of contexts globally as well as in sub-Saharan Africa (Fawzi et al., 1997; Kleijn, Hovens, & Rodenburg, 2001; Roberts et al., 2008; Scholte et al., 2004; Shoeb, Weinstein, & Mollica, 2007; Silove et al., 2002). Parts I and IV of the HTQ assessed exposure to trauma and PSTD levels. Based on instrumental standards, personally experiencing 12 or more traumatic events was deemed significant, and participants with an average score of 2 or higher in Part IV were considered to have screened positive for PTSD (American Psychiatric Association, 2000; R. Mollica, Massaglia, & Silove, 2004; Palmieri, Marshall, & Schell, 2007; Shoeb et al., 2007). Part II of the Hopkins Symptom Checklist-25 (HSCL-25) was used to screen for depression, with a mean score of 1.75 or greater considered to meet the screening criteria (American Psychiatric Association, 2000; Silove et al., 2007). The HTQ and HSCL-25 have been widely used and demonstrated to be effective and reliable when translated into different languages and utilized in varying cultural settings (Fawzi et al., 1997; Kleijn et al., 2001; Scholte et al., 2004; Shoeb et al., 2007; Silove et al., 2002). They have been successfully used in sub-Saharan Africa as well as in northern Uganda in the Luo language, as demonstrated by Roberts
et. al. (Roberts et al., 2008).

Participants who reported high trauma scores, screened positive for PTSD or depression, or made any mention of suicidal ideation were immediately referred to a local mental health support organization and were offered support that included assistance with scheduling visits and immediate transport to the centers.

### 3.3.1.3 Blood samples

Annual blood samples were collected from every participant to test for the presence of HIV and syphilis. All other STIs were self-reported. CLP project staff received extensive training in the safe collection and storage of blood samples. Following collection, a cold chain was initiated and maintained through to the delivery to testing facilities. The International AIDS Vaccine Initiative (IAVI) tested samples collected during the baseline and part of the second year of the study, after which testing was done by the Ugandan Virus Research Institute (UVRI). In the third year of the study all syphilis tests were conducted with the study partner site, St. Mary’s Lacor Hospital’s laboratory outside of Gulu.

HIV infection was determined by utilizing side-by-side ELISA tests, Vironostika HIV Uni-Form II plus O (Biomerieux SA, Marcy l’Etoile, France), and Murex HIV-1.2.O (Diasorin S.P.A, Dartford, United Kingdom). Discordant ELISA results were resolved with a tiebreaker Western Blot test (Genetic Systems, Bio-Rad Laboratories).

Syphilis screening occurred first via rapid plasma reagin (RPR) tests, and positive screens were subsequently confirmed by a *treponema pallidum haemagglutination* test (TPHA).

Every effort was made to ensure that participants who tested positive for HIV or syphilis
infection were contacted in order to provide them with their test results and/or make referrals to appropriate care. The CLP employed two specifically trained HIV-counselors to disseminate test results to participants. All blood test results were returned to participants in identical sealed envelopes regardless of status to ensure the protection of privacy and reduce the potential for stigma. Participants testing positive for syphilis were immediately offered free treatment using single dose antibiotics. Participants with HIV were referred to the nearest health center and offered guidance on accessing government-supported ARV treatment. CLP counselors remained present to offer further support as needed for participants who had learned of their status for the first time.

3.3.1.4 The AUDIT scale
Alcohol consumption behaviors were explored using the Second Edition of the 2001 Alcohol Use Disorders Identification Test (AUDIT) (T. Babor et al., 2001). In consultation with the CLP Ugandan and Canadian primary Investigators, the candidate sought to include the AUDIT in cohort questionnaires during the second year of the study. This was done to expand the scope of the study’s areas of exploration and to address areas limited by prior epidemiological evidence that potentially touched upon the greater CLP focus on exploring the relationship of mental health and HIV in post-conflict settings. The AUDIT was included as part of the standard follow-up questionnaire and given to all 1713 participants who returned for Round 2 and those who returned for subsequent rounds. As with all other scales used in the CLP, the questions were first translated into the local language, Acholi Luo, by experienced Acholi researchers and then back translated to assess veracity, and were subsequently tested by trained staff in the pilot project community.
The AUDIT was first published in 1989 and subsequently evaluated, refined, and validated in many different settings through its most recent 2001 iteration (Adewuya, 2005; J. P. Allen et al., 1997; T. Babor et al., 2001; Reinert & Allen, 2007). It was originally developed though an analysis and merging of individual country-level tools that assessed and evaluated alcohol use and dependency. The resulting questionnaire was then piloted with patients from Australia, Bulgaria, Kenya, Mexico, Norway and the United States, and were accompanied by blood markers for alcoholism and full patient histories in order to ensure that screening levels were highly sensitive and specific (J. P. Allen et al., 1997; T. Babor et al., 2001). Continuing research has demonstrated the AUDIT to have greater sensitivity and specificity for assessing problematic use than other alcohol measurement screening tools such as the CAGE and Michigan Alcoholism Screening Test (MAST) tools, especially varying ethnic groups and adolescents are the populations under study (Cherpitel & Clark, 1995; Chung, Colby, Barnett, & Monti, 2002; Knight et al., 2003; Reinert & Allen, 2007). Further, AUDIT cutoffs have been demonstrated to be consistent with, and predictive of, ICD-10 and DSM-IV criteria for the use and abuse of alcohol use, including hazardous and harmful use, and alcohol dependence (Reinert & Allen, 2007).

More recently, a shortened version, the AUDIT-C, has been introduced (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). Comprised of only the first three questions of the test, it provides a more rapid assessment tool for exclusively identifying hazardous drinking and has been found to be applicable to different settings where it is not feasible to use the full AUDIT (Reinert & Allen, 2007). In addition to being a globally accepted tool, the AUDIT was chosen for use in this study due to its successful use in research studies in Uganda, including the few
existing studies from the northern regions (See Chapter 2). Its use is therefore more likely to increase the ability to derive meaningful comparisons across the currently limited epidemiological evidence.

The AUDIT questionnaire consists of 10 questions encompassing the three conceptual domains of alcohol consumption (questions 1-3), alcohol dependence (questions 4-6), and the consequences of alcohol use/dependence (questions 7-10). The full wording of the questions and the interviewer prompts are presented in Figure 3.3. Questions 1-8 are scored individually from zero to four and questions nine and ten are both scored individually from zero to three. Higher numbers indicate increased use or more severe impacts of use.

The first level of the questionnaire (questions 1-3), which pertains to problematic alcohol consumption, does not indicate the presence of an alcohol disorder. It identifies signs of patterns that position those at increased risk for as well as current or future potential dependence on alcohol, harmful use, and the associated negative consequences of such usage. The AUDIT suggests using a score of greater than one in questions two or three to identify the presence of potentially problematic alcohol use.

Alcohol dependence (questions 4-6) is characterized by mental, physical, and behavioral symptoms that occur as the result of continuous alcohol use, including: prioritizing use, impaired decision-making regarding use, and withdrawal symptoms when use is limited or stopped. A score of one or greater on any of the questions on this level signal potential alcohol dependence.
**Figure 3.3: List of AUDIT questions and interviewer prompt as used in the CLP follow-up questionnaire**

Interviewer: “Now I am going to ask you some questions about your use of alcoholic beverages during this past year.” Explain what is meant by “alcoholic beverages” and record in standard units (defined as a single beer, shot or sachet of Waragi (generic distilled spirits), or large glass of traditionally brewed alcohol)

<table>
<thead>
<tr>
<th>Questions</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How often do you have a drink containing alcohol?</strong></td>
<td>Never</td>
<td>Monthly or less</td>
<td>2 to 4 times a month</td>
<td>2 to 3 times per week</td>
<td>4 or more times per week</td>
</tr>
<tr>
<td><strong>How many drinks containing alcohol do you have on a typical day when you are drinking?</strong></td>
<td>1 or 2</td>
<td>3 or 4</td>
<td>5 or 6</td>
<td>7, 8, or 9</td>
<td>10 or more</td>
</tr>
<tr>
<td><strong>How often do you have six or more drinks on one occasion?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>How often during the last year have you found that you were not able to stop drinking once you had started?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>How often during the last year have you failed to do what was normally expected from you because of drinking?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>How often during the last year have you had a feeling of guilt or remorse after drinking?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>How often during the last year have you been unable to remember what happened the night before because you had been drinking?</strong></td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td><strong>Have you or someone else been injured as a result of your drinking?</strong></td>
<td>No</td>
<td>Yes, but not in the last year</td>
<td>Yes, during the last year</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?</strong></td>
<td>No</td>
<td>Yes, but not in the last year</td>
<td>Yes, during the last year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Finally, harmful use (questions 7-10) focuses on patterns of consumption that directly affect the physical, mental, and social aspects of an individual’s life. The final two questions of the test pertain to past usage and can indicate if there is a history of problematic usage in the participants’ past, even if they currently abstain from use. A score above zero on any of the questions suggests that alcohol-related harms are currently occurring or have occurred in the past.

Standard AUDIT protocols suggest that the summation score for all 10 questions can be used to assess the presence of potentially hazardous alcohol consumption (T. Babor et al., 2001). Test guidelines suggest a cutoff score of ≥8, recognizing that this cutoff is not clinically defined. Further, the AUDIT acknowledges that a static cutoff may not be appropriate in some cases, and that it can be adjusted in relation to cultural, biological, and linguistic factors (T. Babor et al., 2001; Reinert & Allen, 2007). Within this unidimensional approach, separate levels of use and suggested interventions are suggested based on the summation scores. Scores below eight may still indicate hazardous use, but suggest that it has not yet become harmful. Those whose alcohol usage is at this level may benefit from brief, targeted interventions and educational campaigns. Those scoring 8-15 are deemed to have a medium level of problematic consumption that can benefit from more targeted interventions that are designed to reduce overall alcohol use. Participants scoring 16-20 are seen to be experiencing high levels of alcohol-related harm and potential alcohol dependence. At this stage, direct counseling and ongoing monitoring is suggested. Finally, those scoring 20 or higher are thought to be experiencing a strong likelihood of alcohol dependence and high levels of harm, and should therefore immediately receive diagnostic evaluations and referrals to specialists for treatment.
The expanded use of the AUDIT in global epidemiological research has led to increased scrutiny of its performance in different languages, cultures, and demographic groupings. Concepts within the AUDIT such as a ‘standard drink,’ a ‘typical day,’ or a ‘heavy drinking session’ may vary significantly amongst different groups. Further, biological factors may influence the individual-level physiological and psychological impacts of alcohol use. Many researchers have therefore sought to adjust cutoff thresholds in accepted usages of the test (Reinert & Allen, 2007). As a result, recent meta-analyses and other studies have found significant discrepancies in the cutoffs used, with thresholds as low as a summation score of two or greater based on perceptions about the populations being studied (T. Babor et al., 2001; Reinert & Allen, 2007; Woolf-King & Maisto, 2011).

### 3.3.1.5: Definitions used

Issues of what constitutes a ‘standard drink’ are key to questions two and three of the AUDIT. Guidelines suggest that they be defined as 330 ml. beer at 5% alcohol by volume (ABV), 140ml. of wine at 12% ABV, and distilled spirits of 40ml at 40% ABV (T. Babor et al., 2001). For the purpose of this study, research staff were instructed to explain ‘standard units’ to participants using a broader, but more comprehensible, definition of a single beer, a standard shot, a sachet of Waragi (a generic name for distilled spirits), or a large glass of traditionally brewed alcohol. Concepts of a ‘typical day’ and ‘heavy drinking session’ were not specifically defined for study participants and are based on self-reported and perceived understandings.
Participants’ abduction status was self-reported based on the question, “have you ever been abducted?” If participants answered ‘yes’, they were queried as to the number of times abducted, length of abduction, and specific experiences during their time of abduction. In the literature, young people who experience abduction during a conflict are often referred to as ‘child soldiers’, in line with the Paris Principles’ definition of children taken by armed forces during a conflict (UNICEF, 2007). Given the complexities and different roles that characterized the experiences of participants during their captivity, and given that many did not participate directly in conflict themselves, we use the term ‘abductee’ to refer to any participant who reported ever being abducted over the course of the civil war.

In the CLP questionnaire, participants were asked to state their biological sex with male or female being the available choices. Participants were not queried as to their sexual identity due to the highly sensitive nature of such a question in the region, especially given that the government was heavily criminalizing homosexual acts during the study period. This study thus refers to and analyzes participants according to their reported ‘sex’, rather than self-assigned gender, and uses the terms male and men as well as female and women interchangeably.

3.3.2 Quantitative data analysis

The following section details the methodology underlying the quantitative data analyses reported on in Chapters 4 and 5. All data analyses were completed using the R statistical package version 3.2.4 (R Foundation for Statistical Computing, Vienna Austria), and also utilized the following packages: epiR version 0.9-79, foreign version 0.8-67, ggplot2 version 2.2.1, Gmisc version
3.3.2.1 Power calculations

Power calculations were conducted for each hypothesis prior to the commencement of the study and are listed in Table 3.1. All power calculations used a two-tailed alpha of 5%, and a sample size of 1713 participants who received AUDIT questions as part of the second round of the CLP. Estimations of the prevalence of alcohol use in the region prior to the study are based on work by Roberts et. al. (2011) (Roberts et al., 2011). Prevalence for mental health indicators, abduction status, and sexual vulnerabilities are based and baseline data from the CLP and from a pilot study by Patel et. al (2012) (Malamba et al., 2016; S. H. Patel, 2012). Table 3.1 presents the power to detect odds ratios ranging from 1.25 to 3 for all hypotheses as the prevalence of each risk factor varies. Under most circumstances, there is more than adequate power to detect odds ratios as low as 1.5, with transactional sex being an exception due to its low overall prevalence in the region (Malamba et al., 2016; S. H. Patel et al., 2012).
Table 3.1: Power calculations by minimum detectable odds ratio based on the sample size of 1713 participants completing the AUDIT

<table>
<thead>
<tr>
<th>Hypotheses:</th>
<th>Minimum Detectable Odds Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.25</td>
</tr>
<tr>
<td>H1.1: Males will have higher use than females</td>
<td>68.4%</td>
</tr>
<tr>
<td>H1.2: Levels of use will be the same as or higher than prior studies in the region</td>
<td>72.0%</td>
</tr>
<tr>
<td>H1.3: Age will be significantly associated with use</td>
<td>&gt;99.9%</td>
</tr>
<tr>
<td>H2.1: Use will be associated with trauma</td>
<td>27.3%</td>
</tr>
<tr>
<td>H2.2: Use will be associated with depression</td>
<td>41.3%</td>
</tr>
<tr>
<td>H2.3: Use will be associated with PTSD</td>
<td>35.0%</td>
</tr>
<tr>
<td>H2.4: Use will be associated with abduction</td>
<td>52.8%</td>
</tr>
<tr>
<td>H3.1: Use will be associated with transactional sex</td>
<td>15.0%</td>
</tr>
<tr>
<td>H3.2: Use will be associated with more sexual partners</td>
<td>71.1%</td>
</tr>
<tr>
<td>H3.3: Use will be associated with less knowledge of a partner(s) HIV status</td>
<td>73.1%</td>
</tr>
<tr>
<td>H3.4: Use will be associated with HIV positivity</td>
<td>35.5%</td>
</tr>
</tbody>
</table>

3.3.2.2 Confirmatory factor analysis (CFA)

The expanded use of the AUDIT into previously un- and under-explored settings has led to questions regarding the underlying conceptual framework of the AUDIT and the merits of applying a single summation score in the definition of alcohol disorders (Doyle, Donovan, & Kivlahan, 2007; Shevlin & Smith, 2007; Wade, Varker, O’Donnell, & Forbes, 2012). The most common approach to the AUDIT involves comparing the scores of the 10 questions that constitute the summation score, thus amalgamating the conceptual domains of hazardous use, alcohol dependence, and related harms. This single composite score is more suggestive of a unidimensional model rather than one that accepts the differing potential aspects of alcohol use.
Explanatory and confirmatory factor analyses (EFA/CFA) assessing the construct validity of the underlying structure of the AUDIT have provided mixed results, with evidence supporting one, two, three, and even four-factor frameworks (Chung et al., 2002; Gmel, Heeb, & Rehm, 2001; Peng, Wilsnack, Kristjanson, Benson, & Wilsnack, 2012; Reinert & Allen, 2007; Rist, Glöckner-Rist, & Demmel, 2009). However, the most recent evidence now points towards a two-factor approach for the AUDIT, which was employed in this study with questions 1-3 focusing on the concept of ‘alcohol consumption’ and the remaining questions 4-10 unified into ‘alcohol-related problems’ (Peng et al., 2012; Reinert & Allen, 2007). The general lack of overall uniformity in EFA/CFA findings of the AUDIT may be partially due to differences in the analytical approaches used, but clearly more research is needed to assess the impact that different languages, ethnicities, and cultural settings have on the underlying conceptual framework of the AUDIT (Peng et al., 2012; Reinert & Allen, 2007; Rumpf et al., 2002). Given the under researched nature of the setting and population of this study, the first quantitative stage of this dissertation therefore explored the construct validity of the AUDIT by using CFA at one-, two- and three-factor levels for all participants as well as stratified by sex.

Prior to running the CFA, descriptive univariate statistics were first calculated to assess the characteristics of the overall population and within each commonly used cutoff threshold defining hazardous drinking. Bivariate analyses followed comparing distributions between each level and the assessment of whether there were significant differences in population demographics at the varying cutoff points. Due to the natural inclusion of lower-level hazardous drinkers at each increased cutoff point and thus a lack of independence, Fisher’s Exact Test was used to assess the relationship between participant characteristics and cutoff thresholds. The presence of an alcohol-related disorder was defined at three separate cutoff threshold levels for
summation scores of $\geq 3$, $\geq 5$, and the recommended test standard of $\geq 8$. As the lower cutoff points could lead to the inclusion of those who consume alcoholic beverages regularly but who do not otherwise fit the criteria for disordered drinking, participants were likewise assessed based on the test’s three conceptual levels of ‘hazardous drinking’, ‘alcohol dependence’, and ‘alcohol related harm’. These levels were defined by test guidelines noted for giving greater detail with regard to consumption measurements (T. Babor et al., 2001) Hazardous drinking was potentially defined as any positive score on questions two and three in the AUDIT tool measuring the number of drinks normally consumed in one sitting and the frequency of having six or more drinks. Alcohol dependency likewise was defined as a score of one or more on any of questions four to six in the AUDIT tool. Finally, alcohol-related harm was defined as any score greater than one on the last four questions in the AUDIT tool, which includes an inquiry into historical drinking patterns.

CFA were then run to explore the role of the underlying structural framework of the AUDIT within the study population parameters. In alignment with best practice, a variety of different indices are presented reporting model goodness-of-fit, including both absolute and relative fit models (R. Hoyle & Panther, 1995; Hu & Bentler, 1999): root mean square error of approximation (RMSEA), Tucker-Lewis non-normed fit index (NNFI), Bentler comparative fit index (CFI), and Bentler and Bonnett normed-fit index (NFI). All models utilized a weighted least squares means and variance adjusted estimator (WLSMV) to account for the floor and ceiling effects of the categorical AUDIT data (T. A. Brown, 2006; Peng et al., 2012). Good fit was indicated by common guidelines for each index: RMSEA of less than 0.06, with less than 0.03 indicating ‘excellent’ fit; a CFI $\geq 0.95$; TLI $\geq 0.90$; NNFI $\geq 0.95$; and NFI $\geq 0.90$. Chi-Square
test statistics, degrees of freedom and the associated p-value [are also reported with a 0.05 significance threshold, with a recognition of its potential limitations as an indicator for CFA (Barrett, 2007; Bentler & Bonett, 1980; Kenny, Kenny, & McCoach, 2003). Cronbach’s alpha was also calculated to assess the internal reliability of the test and the internal reliability for each subscale.

3.3.2.3 Regression models

Chapter 5 explores hypotheses two and three through multivariate regression models. The decision was made to stratify all models by participant sex due to the significantly different social, cultural, and tribal norms regarding alcohol consumption between the sexes in northern Uganda (see Chapter 2 and Chapter 6). First, descriptive statistics summarized the responses to the 10 questions comprised within the AUDIT as well as to the respective sub-categories within the questions for both male and female participants. Next, sex-stratified bivariate tests assessed the relationships between hazardous drinking behavior (defined by a ≥3 summary score on the AUDIT) and participant socio-demographic characteristics as well as trauma experiences, sexual behaviors, and health status. The decision to use this summation score cutoff was made based on results from the CFA and its utilization in other studies in Uganda. Dual categorical associations were assessed using Chi-square tests and the Fisher’s Exact test when observed cell counts were zero and/or expected counts were less than five. Continuous and categorical associations were calculated with t-tests, sign-rank, and rank-sum tests where appropriate. Unadjusted odds ratios (UOR) and 95% confidence intervals (95%CI) were calculated to present both the direction and strength of associations. Associations were considered significant when confidence intervals for
odds ratios did not cross parity and when confidence intervals for differences in continuous variables did not span the origin.

Finally, multivariable logistic regressions were built to explore characteristics associated with problematic drinking at the noted \( \geq 3 \) cutoff summary score level for men and women and subsequently applied to subsets specific to those who reported being sexually active. The primary approach to assessing variables for inclusion in the final models was based on their noted importance in the empirical literature. Once the empirically-significant variable was identified, the impact of additional variables that were significant at the bivariate level were assessed to account for sample-specific variability. This assessment was conducted by comparing nested models using the likelihood-ratio test and non-nested models based on the lowest Bayesian Information Criteria (BIC) score. Final models were chosen that included those prior identified variables based on empirical evidence and the additional variables which produced an overall better model fit.

3.3.3 Qualitative methods

3.3.3.1 Study team, background, training, and recruitment

Research staff working on the primary qualitative data collection portion of this dissertation were recruited and trained separately from the CLP study team. Potential staff members who had participated in prior research projects in the region were identified by senior CLP investigators. They were then interviewed independently by the candidate to assess their interest in the study, past experience in qualitative research, and familiarity with the region and its history. Subsequent interviews were conducted in the Acholi dialect of the Luo language by the CLP
Study Coordinator, Alex Oneka, and the Field Team Manager, Stella Atim, in order to ensure that potential staff members had a level of language fluency sufficient for conducting complex in-depth interviews on the topics of interest. Three staff members were ultimately hired: Akot Alice, Samuel Lakor, and Paul Oprong. Both male and female research staff were chosen so that participants could be interviewed by a member of the same sex, which increased participants’ comfort level and thus their openness to share personal information.

Prior to the commencement of data collection, the research team participated in comprehensive training sessions overseen by the candidate for a two-week period. These sessions included detailed discussions on the premise and background of the study, the methods to be employed for data collection, respect for participants’ rights, confidentiality, informed consent, avoidance of bias, the handling of participant data and storage, and the handling of adverse events. Further, all research staff underwent comprehensive training pertaining to the importance and potential negative impact of the stigma associated with HIV, which included a full reading and discussion of the Ugandan *The People Living with HIV Stigma Index (2013)* (UNAIDS & NAFOPHANU, 2013). The training sessions also included round-table discussions, lectures by the candidate/principal investigator (PI) and co-investigators, and role-play mock-interview exercises followed by team debriefings.

Team members traveled at all times in a vehicle that had the CLP study’s name and contact information on the side doors, and parked in central areas of each community in which the research was conducted. At the end of each day the candidate lead debriefing sessions in the vehicle on the way back to the study office. After returning to the office and over tea, a
discussion was held regarding themes, observations, and any comments or concerns that may have emerged during the day. Additionally, once every other week the candidate would take the study staff out for a meal to provide a change of setting, which facilitated more open discussions on the project.

As this study concerns the potential use and misuse of substances there was the potential for study staff to engage with participants who were inebriated or in another substance-induced altered state during the course of the study. Staff were instructed not to commence interviews with any participant they felt was unable to offer informed consent due to being in an altered state, and to terminate interviews if a participant’s mental status became problematically altered during the course of the interview. Interviewers were also trained not to begin an interview and/or to terminate an interview at any time if they felt personally uncomfortable with the status or actions of a participant. *None of these circumstances occurred during the course of the research.*

### 3.3.3.2 Community preparation and introductions

This study continued the CLP’s practice of inviting relevant members of the community and all relevant non-government organizations to participate in the research initiative through the use of a CAB. The community and NGO participants in this study included local actors such as St. Mary’s Lacor Hospital and The AIDS Support Organization (TASO). We also continued to engage with influential members of the community, including traditional leaders and those who previously held leadership roles in the IDP camps. This ensured a level of cultural safety and addressed considerations regarding study
protocols, manuscripts, ethics, and emergent data, as well as any issues related to the needs of the community and knowledge translation. Members of the CAB were engaged throughout the dissertation process and provided suggestions on how best to interpret emerging trends and disseminate them both within local communities and to actors with a more limited knowledge of the region and its history. While the CAB was provided with ongoing study findings, all data were aggregated and did not include any factors that identified individual participants. All quantitative themes and key quotations were presented either by a specific grouping (e.g. by community or abduction status) or though the participants’ randomly assigned alpha-numeric identifiers. Direct quotations were presented without participant names or character specifics that could lead to their identification.

3.3.3.3 Qualitative data collection

The collection and analysis of qualitative components of this study, reported on in Chapter 6, occurred in partnership with the CLP, but represent the collection of new primary data by the candidate. Recruitment for the qualitative component drew participants who were already part of the CLP cohort. This was done to increase the study’s ability to compare and contrast data from the qualitative and quantitative components of the study while minimizing additional instances of bias where possible. Eligibility was based on subjects meeting the following inclusion criteria at the time of study enrollment: 1) participation in the CLP research cohort within baseline or Round 2 of the study; 2) provision of assent from unemancipated minors and their guardian’s consent; 3) provision of consent for emancipated minors and adults. The age range for study participants included was only restricted by the boundaries of the CLP study (individuals in the selected study communities aged 13-49 at recruitment), allowing for narratives to be provided by
both those who clearly recalled their experience of the conflict and those with limited recollection of it. Interview topic guidelines and consent/assent forms for participants are included in Appendix A.

Due to the relatively understudied nature of this subject matter and population of interest, non-random purposeful sampling was used for its qualitative in-depth interview component (Mugisha et al., 2015; Roberts & Ezard, 2015; Spittal et al., 2008; Weaver & Roberts, 2010). This approach was chosen in order to capture a diverse set of narratives across socio-demographic spectrums in a manner that would reflect both wider themes and individual- or group-level sub-themes (King & Horrocks, 2010; Punch, 2014). Specific subsamples were identified through participants’ responses to the quantitative questionnaires at baseline and during follow-up interviews. These groups ensured the inclusion of stories of those residing within each district (Gulu, Amuru, and Nwoya) and setting (permanent, transient, displacement), those with hazardous drinking behaviors, and those who experienced abduction during the conflict. Further, we specifically sought to include people who are HIV-positive within the CLP cohort in order to ensure that their voices were represented. We identified these participants by their yearly blood samples. The life stories of conflict-affected persons who have recently been infected are critical sources of information for better understanding experiences of HIV risk as well as risk minimization and vulnerability in this population. We selected 30 participants (15 males and 15 females) from across the aforementioned different groups and districts for in-depth interviews with the aim of achieving thematic saturation. A summary of participant demographics appears in Chapter 6. Interviewers were blinded as to each participant’s HIV status, substance use, abduction and any other characteristics beyond those which the participant divulged during
the course of the interview. This sought to reduce the potential for bias and stigma.

### 3.3.3.4 Recruitment and consenting procedures

Recruitment for the qualitative component of the study occurred in several stages. After receiving the final ethical approval from the study from the Ugandan National Council of Science and Technology and the Office of the President of Uganda, protocols put forth by the Ugandan national government were followed and study personnel received letters of introduction to be presented to all of the Regional District Commissioners (RDCs) in the study districts. As required, these letters were presented in person to each RDC prior to the collection of any data or additional participant recruitment. Following meetings with the RDCs, the study team approached elected officials at the village and civil level as well as traditional leaders to notify them of the study. Their permission to work in each community was sought and received. Finally, the study team also contacted Local Council chairpersons (LCs) of the various sub-communities in which the study took place and utilized them as mobilizers to spread word about the study within their communities.

Consent procedures at the household level were comprised of two stages and were conducted by the trained interviewer staff with the candidate on hand to answer any study specific questions not covered in the consent forms. Firstly, the head of household was asked for permission to enroll household members if possible. Emancipated minors - defined as those between 15 and 17 years of age who are heads of households or who live independently - were asked to provide individual informed consent. Unemancipated minors (persons aged 13-17 living with a parent or guardian) were asked to provide individual
informed assent, but their enrolment was also contingent on written consent by the parent or guardian. If the parent or guardian consented but the minor did not provide assent, that minor was not enrolled. All subjects were given detailed explanations of their rights as human subjects. Even if a parent/guardian gave informed consent, our research assistants were instructed to carefully evaluate whether or not the youth themselves really wanted to participate in the study and ensure that they fully understood the potential risks and discomforts associated with participation.

Following consent for an interview, project participants received remuneration of ~$2.50 USD (6000 Ugandan Schillings) to compensate them for the time devoted to participation in the study. Remuneration was commensurate with the CLP and was discussed with, and approved by, the CAB. Participants were compensated immediately upon recruitment, and prior to the asking of any questions, to ensure that they did not feel obliged to participate in the interviews for longer than they felt comfortable.

Each interviewer first sought to establish rapport with the prospective participant at the start of the informed consent/assent process. After the study was discussed with all consenting eligible participants aged 13-49 (including minors <18 years who had parental consent in addition to their own assent), the participants were asked by trained research staff to sign two copies of an informed consent form or provide a fingerprint. One copy of the consent form was for the participant to keep and included contact information for the candidate, CLP project, the candidate’s supervisors, and both IRB boards approving this study, should any questions or concerns arise. The other copy was for the candidate, to be stored in the subject’s file and
kept in a secure double locked environment.

The consent/assent forms (Appendix A) were originally written in English and then translated into Acholi Luo, after which a secondary translator evaluated them for accuracy. The forms were explained to all participants by their respective interviewer in order to ensure that they understood the scope of the project, which was particularly important for those with limited literacy. The consent forms outlined all components of the study, including the length of time or the interview process and the duration of the study, and university/investigator contacts were provided should the subjects have any questions. Further, the interviewers clarified that participation was purely voluntary and that participants could refuse to answer ANY questions and/or terminate the interview at any time. Participants were made aware that should they decline to participate it would not affect their membership in the larger CLP cohort or prejudice their rights to healthcare or other social services or referral networks.

Following every interview, participants were asked if they had any questions to ask the research team pertaining to the study or other concerns. Participants were offered the option of discussing any concerns with the candidate, other study staff, or the onsite study nurse. These questions were kept private and omitted from inclusion in field notes or other recordings pertaining to the qualitative process if requested by the participant.
3.3.3.5 Interviewing, transcription, and translation

To respect the sensitive nature of the topics covered, all interviews occurred with an interviewer of the same sex as the participant and took place at a private setting of the participant’s choosing. These locations included participant’s home, outdoor settings away from other members of the community, private offices, and within the study vehicle. The areas of inquiry were intentionally loosely structured to allow for an open dialogue between the interviewer and interviewee and to allow for a more organic, comprehensive understanding of the complex interplay between substance use, trauma, and HIV vulnerability. Researchers began the interviews with broad topic guidelines to help frame the narratives, and these were continually updated during the qualitative analysis process to reflect and capture emergent themes. The initial areas of inquiry included: a) situating those who had survived the conflict in cultural, social, familial and historical contexts; b) unraveling the influence of displacement histories and concomitant experiences of abduction, night commuting and early sexual debut/early marriage on substance use; c) identifying the social and structural vulnerabilities associated with substance use, including partnerships and housing transitions back to villages from IDP camps and transit camps; d) tracing the rationale for risk behaviors; and, f) identifying participants’ perceptions of the risks associated with substance use for themselves and their communities.

All interviews were conducted in the language preferred by the interviewee (English or Luo) and digitally recorded on password-protected devices. Data management of the qualitative interviews is detailed below. Interviews were transcribed verbatim in the language of the interview, either digitally onto a dedicated study computer or by hand into a notebook. Both digital and hard-
copies of the transcriptions were securely locked away at CLP offices when not in use. The initial transcription was done by the same research team member who conducted the interview to increase the fidelity of the narrative and allow for the inclusion of field notes to further enhance the context of the interview. Once transcribed, interviews that had been conducted in Luo and any associated notes were translated by trained staff into English for evaluation by the candidate, due to his limited familiarity with the nuances of the Luo language. Additionally, periodic back-translation was performed by a staff member other than original translator/transcriber to ensure the accuracy of the reporting process. Similarly, a complete translation cycle from the original audio was completed for seven (23.3%) of the interviews by an additional experienced local researcher for purposes of accuracy and to enhance the veracity of the narratives given in Luo.

3.3.3.6 Qualitative data analysis

All participants were given unique random alphanumeric codes, and personally identifying information was removed from transcripts. Once translated, the interviews were analyzed and then coded using NVivo 11 Version 11.1.1 (QSR International Pty Ltd. 2015) software.

The research process began by drawing upon an interpretive approach to help frame the design and execution of this study, which was seen to allow for ongoing thematic generation based on emergent patterns set within the social and cultural norms of participants (Punch, 2014; Starks & Trinidad, 2007). As the research process evolved, through engagement the with CAB and CLP study PIs, the qualitative approach shifted to incorporate interpretive description (ID) methodologies to allow for a more in-depth analysis of the qualitative data for the dissertation. This approach was taken due to the relatively novel nature of the research focus because it allowed for ongoing thematic generation based on the emergent patterns set within participants’
social and cultural norms (Punch, 2014; Starks & Trinidad, 2007; Thorne, 2008). ID originally grew from the field of qualitative research conducted within clinical care settings, and has since grown to encompass other fields of inquiry (Thorne, Kirkham, & MacDonald-Emes, 1997). ID extends beyond the necessity of pursuing a single overarching ‘truth’ to encompass communal experiences, allowing for the identification of the thematic commonalities of participant narratives while at the same time acknowledging variations of the themes at the sub-group and individual levels (M. R. Hunt, 2009; Thorne, 2008). In so doing, ID can better recognize the complexities with which people explore subjective events within their larger lived experiences and locate those events in a more objective framework. Such an approach is especially useful in settings such as northern Uganda, where the complexities of the conflict and post-conflict period have resulted in participants having vastly different personal experiences and interpretations of those experiences. Thus, the use of a consistent ID-informed approach to participant interactions, data collection, and data analyses enables a framework to be created that can recognize both the subjective nature of individual experiences and social structures within the more objective confines of historical knowledge (M. R. Hunt, 2009; King & Horrocks, 2010; Thorne, 2008). Through this type of exploration, commonalities within the knowledge base of participants can be identified that are indicative of meaningful interventions (Thorne, 2008).

An ID methodological approach necessitates that researchers begin situating their inquiry and subsequent interpretation by drawing upon different relevant sources of textual and non-textual data, including knowledge from less traditional sources, in order to create a broad understanding of what is “known” (Thorne, 2008). This first step creates a conceptual structure on which to base the analysis of the collected data. Within this dissertation, the ID approach allowed for
published journal articles, NGO reports, CLP findings, non-fictional accounts of the conflict, and CAB member narratives to be incorporated in the formulation of initial rough areas of inquiry.

Similar to other qualitative methodologies, ID encourages an approach of ‘constant comparison’ in order to draw out emerging thematic trends between and across narratives (LeCompte, Schensul, Weeks, & Singer, 1999; Punch, 2014; Starks & Trinidad, 2007; Thorne, 2008). Unlike many other approaches, ID seeks to delay the process of immediately formalizing coding in the initial stages of analysis. Instead, it calls for alternating periods of immersion in the field with participants collecting data and immersion within the data itself in order to explore emerging conceptualizations and prevent the analysis from being confined within a forced and likely superficial framework of understanding (Strauss, 1987; Thorne, 2008).

Study interviews occurred in five blocks of six respondents each with a pause between each block for complete transcription and translation, as well as exploration and discussion amongst the research team. During each stage the research team held meetings before and after each day of interviews to discuss field notes, the interview process, and any issues that may have arisen. Individual narratives were first read through in their original form without annotation, then followed by subsequent readings in which trends and themes were noted and grouped into general thematic areas. The emergent thematic structures that emerged from individual interviews were then explored in the context of narratives from other participants in order to begin mapping overarching thematic relationships within and between the groups. Subsequently, these larger patterns were then reapplied to all interviews in order to give enhance the context individual level narratives. The process was continually evaluated by study staff through regular
group meetings to discuss the interview processes, challenges, and patterns that emerged from the participant narratives, including a detailed analyses of field notes. Further, after each grouping of interviews, the broader group comprised of the CLP team, the candidate, and members of the CAB discussed emergent themes.

3.4 Ethical considerations

3.4.1 Ethical approvals and IRB processes

The study was been reviewed and approved by the Providence Healthcare Research Ethics Board – Office of Research Services, The University of British Columbia (UBC), Vancouver, Canada (Number: H13-02011). It also received the following required IRB approvals in Uganda: 1) Makerere College of Health Sciences-School of Public Health (Mak-SPH) (Protocol 016: Substance use, trauma, and HIV: untangling the complex web of health vulnerabilities in conflict-affected populations in northern Uganda version 3 dated 09 2014); 2) Uganda National Council of Science and Technology-UNCST (a government mandated body in charge of facilitating and coordinating the integration of science and development) within the Office of the President of the Republic of Uganda (this a national security process, research cannot be initiated in any district of Uganda without this approval). As noted above, following the required approval from the Office of the President, letters were also personally presented to the relevant RDCs by the candidate prior to the commencement of the interviews.

Further, as per guidelines for NIH funded research projects, the candidate and study co-investigators followed all U.S. federal regulations for the protection of human research subjects (45 CFR 46), and were fully compliant with this requirement, with all senior investigators trained
in the Protection of Human Research Participants at authorized institutions.

3.4.2 Ethical training

The candidate and Committee Members in Canada and Uganda have taken and passed applicable institutional training courses in Research Ethics and the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: CORE). All other Ugandan program personnel having contact with participants or participant data received in-house ethics training, based primarily on materials from TCPS 2: CORE) in addition to materials from the aforementioned institutions that provided ethical approvals.

3.4.3 Inclusion of women and minorities

In accordance with US Public Law 103-43, which governs research conducted with NIH funds, women and minorities are to be included in all clinical research studies when appropriate for the scientific goals of the proposed research, as is the case for this dissertation. Women were included in all stages of the study through the recruitment methods detailed above. Purposive sampling ensured that half of all the qualitative interviews were conducted with women in order to ensure that their voices and narratives were represented.

Residents of both Gulu and Amuru districts belong to different tribal affiliations, the majority of which are Acholi peoples, who are thought to have once migrated from South Sudan. The dominant clans in the districts include the Payira, Palaro, Lamogi, Atiak, Pawel and Koc (Atkinson, 2015). Some people from Alur and Madi in the West Nile region and Langi peoples
from the Lira district also reside in the selected study communities as guests or through intermarriage. Recruiting participants from different areas and settings within each district sought to include as many tribal and ethics minorities as possible.

3.4.4 Consideration for the recruitment of minors

This study is designed in accordance with all UBC, MAK-SPH, UNCST, and NIH guidelines governing the inclusion of children (those less than 21 years of age) in all human research. These guidelines also stipulate scientific and ethical reasons to not include children in human research; however the latter reasons did not apply to this study. Purposive sampling for the participants selected for the qualitative portion of the research specifically sought to include younger participants, as their narratives and experiences are crucial to understanding the broader vulnerabilities they face within the contexts of their physical and social communities. The enrollment of children and unemancipated minors is detailed above.

Further, the CLP office space was specifically designed to be open and accessible to young people. The research coordinator for the CLP program, Lilian Tebere, who served as a critical CAB member, has a long and successful professional history of engaging in research with vulnerable young people and works with numerous local non-profit groups that empower young people across the region.

3.5.6 Protection against harm

In order to mitigate potential social harm, program counselors from the CLP study were made available to all interviewees in addition to the medical nurse and the HIV counselor,
who were part of this project’s research team. These counselors have received training on supporting and referring victims of domestic violence. In accord with Ugandan guidelines, we did not disclose any test results to third parties, including spouses. However, couples who voluntarily disclosed to each other were offered referrals to receive couples’ counseling if requested. Our research team has trusted referral networks, including both governmental and non-governmental organizations working in antiviral care and in psychosocial support programs. These include NGOs such as Save the Children and The AIDS Support Organization (TASO), as well as the non-profit St. Mary’s Lacor Hospital and Gulu Regional Referral Hospital. For participants seeking trauma related or other mental health care, referrals were made to the U.S.-based Peter C. Alderman Foundation (PCAF), a non-profit organization that trains doctors to help heal the psychological wounds of war and terrorism. The PCAF opened a new clinic in Gulu in July of 2008, which works extensively in the wider northern Uganda region and is the second PCAF Clinic in Uganda dedicated to the diagnosis, treatment and counseling of people suffering from mental trauma.

Any referrals to care were documented by study staff for review and for potential follow-up, if needed by the candidate or larger CLP investigator team. Referrals were recorded separately from translations/transcripts and quantitative data in order to protect participant privacy. Digital copies were encrypted and hard copies were kept in a secure, double locked room at the office of the CLP.

The training undergone by study staff and the study protocols included measures to mitigate any feelings of stigma felt by participants based on their experiences/statuses.
Protocols were drawn in case this situation arose to both report such instances and offer appropriate care. The candidate was also present on the ground during all interviews to be a point of initial contact for participants who might feel stigmatized during the interview process. Further, as part of the interview process, all consent forms contained local and international contact information for the candidate and CLP senior staff, and the overseeing research institutions from which IRB approval was obtained.

### 3.4.7 Adverse event reporting

For the purposes of this study, an adverse event was defined as an event that caused the study participant to be deemed physically, emotionally, or mentally as the result of participating in the study itself or another experience/event happening prior to or during the interview process. Symptoms of adversity were considered to include indications of direct trauma, a high fever, markedly elevated blood pressure, a change in mental status, and noted emotional distress. In the case that an adverse event arose, the procedure was to immediately notify the candidate, who would arrange an immediate plan of action and subsequently notify the Dissertation Committee. Protocols also accounted for program staff to make necessary arrangements for the participant to see a medical care provider and provide transportation to a local comprehensive health facility if necessary.

In preparing for the rare possibility of an adverse event occurring, we specifically recruited a Registered Nurse (RN) who had specific training as an HIV and mental health counselor as a member of our study team. Although there was no risk of physical harm to participants from this study, the RN was provided with access to a field trauma kit in order to assist any participants
who experienced adverse emotional/mental health events. Our staff RN and research coordinator were trained to deal with such events, as they have extensive experience working with young people who have issues pertaining to the conflict and are familiar with the populations’ special needs.

3.4.8 Data storage and management

The primary data storage and management of all quantitative data from the CLP were governed by that study’s protocols. Participant consent forms included unique alpha-numeric identifier codes. Following consent, the code was written on the associated questionnaire to protect the privacy of the participant. Likewise, all blood samples taken from participants were identified only by the alpha-numeric code. All consent forms and questionnaires were returned to the CLP offices each day, and the latter were then given to the CLP data-entry staff for recording into a digital database. All questionnaires were double entered to prevent transcription errors, and were amalgamated onto a master dataset accessible only to senior CLP staff. The de-identified blood test results were emailed from the testing sites to the senior data manager for linkage to participant information. All digital information was contained within secure, password protected and fire-wall protected servers double-locked in a secure room in the CLP office. Information was accessible only to the candidate, senior investigators and designated staff, and was overseen by the study Data Manager.

The candidate continues to maintain all study documents specific to the primary qualitative data portion of this dissertation. During the field portion of the study, digital and hard-copy forms were stored in a specific locked file cabinet within the CLP offices and were only accessible to the candidate. All digital audio recording, transcripts, and translations were de-identified to only
refer to participants by unique alphanumeric codes and did not include any highly specific information that could be used to identify an individual participant. These codes were separate from the alphanumeric coded used by the CLP. All digital files were stored on two separate encrypted, password protected, self-deleting hard drives maintained by the candidate. All information from the quantitative cohort data is presented as aggregated information or non-identifiable quotations. All qualitative interviews were recorded on digital recorders in the field and then transferred to the master hard drive and password-protected computers for verbatim transcription by a trained staff. The digital recordings were then deleted from the recorders to prevent access by non-study staff, and all recordings were deleted from individual staff computers following transcription. Interview transcripts were completed as word-processing documents on computers that were digitally encrypted with password protection at all times. To ensure confidentiality, only researchers collecting and analyzing the data had access to the password. Hard copies of field interview notes and/or transcriptions were kept in a locked office and were brought back from Uganda in a locked carry-on bag by the candidate. The transportation of digital information from Uganda likewise occurred under the direct supervision of the candidate.

To best protect participant privacy, and in accord with UBC, Uganda Ministry of Health, and NIH policies, participant information was not and will not be divulged to any third party unless express written permission is given by the participant or it is required by law. In order to preserve confidentiality, informed consent documents are retained in a locked filing cabinet in a locked room and are accessible only to the candidate and supervising Dissertation Committee members. All participants in transcripts and translations are
identified by pre-chosen study ID numbers with names removed. All questionnaires are likewise stored in secure, locked facilities accessible only to the candidate and Dissertation Committee. All computerized databases only contain study participant ID numbers. The lists linking study numbers to names are kept separately in a password protected computer, accessible only to study investigators. Digital audio files will be retained for a period of no less than five years to allow for further examination if required.

3.5: Engagement, knowledge translation and community feedback

3.5.1 Cultural Safety and cultural humility

In order to increase the validity, reliability and transferability of the research contained within this dissertation, the entire research processes is approached through a lens of Cultural Safety (Gerlach, 2012; Golafshani, 2003). Originating in New Zealand within the field of nursing, the theory of and approach to Cultural Safety has since been adopted and expanded globally (Mackay, Harding, Jurlina, Scobie, & Khan, 2012; Ramsden, 1992). First and foremost, it recognizes that there are inherent power imbalances in the sectors of healthcare, health policy, and health research deriving from the legacy of colonialism. Within this understanding, Cultural Safety explores current manifestations of inequity resulting from the socio-cultural legacy of colonial rule, but also how derived knowledge, or subconscious stereotyping, can knowingly or unknowingly perpetuate them (Cameron, Andersson, McDowell, & Ledogar, 2010). Through this framework, Cultural Safety proposes that the broader conception of culture is based within individual- and group-level perceptions, experiences, histories and lived environments, which themselves are often affected by internally and externally ingrained stereotypes (Gerlach, 2012; Gray & Thomas, 2006). Left unacknowledged, these biased perceptions can result in significant
imbalances of power in the provision of healthcare and the conducting of health research, potentially perpetuating issues of discrimination and prejudice underlying many health inequities (Gerlach, 2012; Taylor, 2017). Therefore, this study sought to design and ground the process in Cultural Safety through direct engagement with the Uganda CAB to allow the voices and understandings of community members themselves to help frame the entire research process. Likewise, in addition to the required ethical IRB approvals from the overseeing research institutions, we also sought and received approval to conduct research within the study communities from elected and traditional leaders. The study questions and qualitative frameworks were also discussed and piloted prior to their use within the study population and introduction to CAB members to ensure that they were asked and approached in a respectful and culturally safe manner. Additionally, this allowed for the generation of new questions and areas of inquiry based on local knowledge that otherwise may have been omitted.

Cultural Safety also requires moving beyond a simple acknowledgment of disparities and their underlying stereotyping, racism, prejudice, and colonial roots; it necessitates an open dialogue of respect and equity among all parties. Therefore as researchers, we must not only acknowledge and explore our cultural assumptions and biases as they appear, but also present them in a transparent manner (Cameron et al., 2010; Ramsden, 1992). To achieve this, the research process also drew heavily from the practice of cultural humility. Rather than a static approach of seeking “cultural competency” which surmises an endpoint in which one can gain sufficiently mastery in another culture, cultural humility recognizes the need for a lifelong process of active learning and listening based upon self-reflection and self-critique with the working goal of building partnerships devoid of paternalistic power-imbalances (Tervalon & Murray-García, 1998).
Through an open evaluation of one’s own multi-faceted identity, a researcher can more clearly understand how it may influence the design, implementation, analysis, and ultimate interpretation of findings. Cultural humility also requires that this process extend beyond personal introspection, to an engagement of how culture and identity manifest in the direct relationship between the researcher and partner communities (Bourke, 2014; Pillow, 2003). It calls for health practitioners and researchers to work to set aside preconceived notions, seeking ways to respectfully interact with an openness to potential power imbalances (Tervalon & Murray-García, 1998). For the researcher, it enables the recognition of potential biases that may impact the research process and through their subsequent acknowledgment, a greater level of credibility (Foote & Bartell, 2011; Golafshani, 2003). Practically, as it pertains to this dissertation, the approach of cultural safety and cultural humility requires an open personal and documented examination of my positionality; the process by which an investigator locates themselves within their research, and seeks to understand how one’s culture, attitudes, and lived realities consciously or subconsciously impacts the research process (Denzin, 1989; Foote & Bartell, 2011; Sultana, 2007). In addition to the benefits to the research process, an open dialogue with regards to one’s positionality can increase trust between collaborators and study participants especially in the space of global health.

### 3.5.2 Positionality

As a white, cisgendered, heterosexual American male, in the midst of a graduate-level education, I come from a position of power and privilege relative to most of the world. As a researcher in an academic setting, I also directly benefit from the research project in its contribution to my doctoral degree, publications and grant funding, and their ultimate influence on my career.
Likewise, many of the benefits derived from these inherited and achieved characteristics are the result of paternalistic colonial and neo-colonial histories and current policies that themselves are at the root of many of the health inequities under study. I have witnessed this, and perhaps at times unintentionally engaged in a perpetuation of such policies, during my time working within the United States Congress and during what is now over a decade of working with non-profit organizations in Burundi, Cameroon, and Uganda. I have seen how decision-making and allocation processes that underpin large foreign aid programs are dictated by top-down approaches governed by domestic and/or political agendas rather than by the needs and participation of affected communities. Through these experiences in different countries in sub-Saharan Africa, I also came to realize or understand how unique characteristics within a country and as determined at the regional, climatic, religious, linguistic and tribal levels, often required different programmatic approaches. Further, I came to recognize that despite living within the communities where I worked, and often as the only foreigner, that much of the time I remained within an intervention-focused mindset. While I was able to witness the possibility of a vibrant resiliency amidst historic challenges of conflict and deprivation - and how left unaddressed these issues could continue to manifest in persistent social inequities, mental distress, and physical violence - at the end of the day I was a temporary member of the community, able to freely return home to the United States. These realizations influenced my desire to seek out further specialized education that would provide me with the skills and training needed to pursue an evidence-informed approach, one that critically recognizes and incorporates cultural and historical understanding in building partnerships towards meaningful change. This led me to a Masters Degree in epidemiology from the London School of Hygiene and Tropical Medicine,
and the commencement of my work in northern Uganda, where I was recruited to the Cango Lyec Project as part of my doctoral training.

Beyond the theoretical and experiential underpinnings of my positionality, I bring a personal connection to my research and the topics within. During my time in Burundi, I had friends, colleagues, and personal direct experiences with the instability and persisting violence related to the conflict, which I continue to live with and learn from. I have had friends who have died of HIV/AIDS, and others who continue to live with that condition, depression, PTSD, or substance use disorders. Thus, the ongoing collaborative process of this research continues to help me to reflect on my identity, to provide me with context for my personal experiences, and to explore my desire to advocate for positive change in this world, and the overall implications of these for my work as a global health practitioner. Additionally, I believe this grounding helps me approach the research, and results contained within this dissertation, with greater compassion and humility.

With regards to the CLP specifically, my first interactions with the cohort occurred through an initial data cleaning and analyses of the quantitative population-level data, along with the epidemiological and grey literature written on the region and population. This was coupled with frequent trips to the field where I was able to engage with the CAB, study staff, and meet participants. With the desire to approach the project with a greater focus towards cultural humility and Cultural Safety, I relocated fulltime to northern Uganda following my advancement to candidacy. I lived there for a year within a community of Acholi health workers at the St. Mary’s Lacor Hospital, along with my wife who – in her capacity as a nurse midwife – both practiced and taught at the hospital. I received formal and informal training in the Acholi Luo
language, which I was able to use on a daily basis with colleagues, staff, and participants in the field. During my time in Uganda I was able to spend significant time in every community in which research was conducted; this allowed me to engage with, and hear from, our community outreach workers, local representatives, and members of the wider community outside of the formalized interview processes. While in no way does this imply that I seek to, or could, speak for the participants or peoples of northern Uganda, it enabled me to broaden my comprehension of the local understandings of the research topics and therefore to better situate the results.

3.5.3 Conformability

Conformability in the research process includes methods by which researchers collect, present, and retain aspects of the research process with the overall aim of increasing objectivity and replicability to help reduce the impact of the researcher(s) bias on the process and allow for participants to speak for themselves (Golafshani, 2003; Lincoln & Guba, 1985). This study sought to ensure an overall conformability of findings through a process of meticulous record keeping. For the quantitative findings, this involved a detailed process of describing and justifying the tools used for data collection and variables chosen during the analysis. The entire coding and analysis process was captured and retained in script files to allow for a complete re-running of all coding stages from data cleaning through to the final results. For the qualitative data, all audio files, transcriptions, translation, field notes, and coding process have been retained to provide an audit trail detailing the investigative process (see section 3.4.8). The use of forward and backwards translation as well as the complete re-transcription and translation of randomly selected interviews increased the credibility of the English translations used for the qualitative analysis. Finally, the emergent themes were triangulated within the multiple sources noted above
to provide greater context and enhance the overall reliability of the decision-making process. These are traceable through the collection of field notes and correspondences and notations of how and when they were used in the overall research process.

3.5.3 Knowledge translation

The identification and dissemination of actionable, culturally sensitive interventions that address the needs of those living in the region is key to the broader success of this project. It sought to engage stakeholders and allow them to inform the study, from the initial meetings with CAB members through to ongoing outreach and knowledge dissemination efforts alongside key Ugandan stakeholders. In 2014, the candidate presented baseline findings to all Regional and District Medical Officers (RMO and DMO), Local Chairpersons (LCs), and other elected officials as part of a day-long CLP event. Following this event, the candidate was invited to the 2014 World Psychiatric Association (WPA) Regional Conference in order to present on initial trends emerging from the dissertation research. Findings from the dissertation have also been orally presented at the 2014 and 2015 American Public Health Association (APHA) and 2014 and 2015 Canadian Association for HIV Research (CAHR) conferences. Chapter 4 and 5 have also been published in academic journals. In addition, the candidate has returned numerous times to Uganda to meet with members of the CLP, Ugandan Dissertation Committee members, and CAB mentors during the formulation and writing and formulating of this dissertation. During these trips the candidate also met with the staff of national and international NGOs as well as the United States Agency for International Development (USAID) to disseminate emerging themes and advocate informed support services to be put in place to address the study’s findings.

Knowledge translation activities will continue following the defense and submission of this
dissertation. These activities will include the anticipated publication of portions of Chapter 6 in peer-reviewed journals, presentations at conferences, and, most importantly, a return to northern Uganda to share study findings with participants.

3.6: Summary of study design

This research project utilized a combination of qualitative and quantitative research techniques in seeking to untangle the complex web of physical, social, and mental characteristics that influence substance use and adverse drug-related outcomes in post-conflict northern Uganda. The use of an interpretive and ID framework allowed for the ongoing generation and testing of thematic trends during the course of the research, which was balanced with quantitative population-level modeling. This allowed for a more holistic understanding of population-level vulnerabilities to emerge and located larger trends within the context of local understandings. The combined methodologies that were employed, including the use of validated psychometric scales, are critical to exploring the study population’s vulnerabilities and shared experience of trauma within their cultural context. The methodologies therefore enabled us to gain a better understanding of factors that are potentially associated with and subsequent to substance use at both the individual and community level. Finally, their use helps to elucidate the underlying physiological and psychosocial mechanisms that underpin the transition to substance use as well as its consequent vulnerabilities. This ultimately facilitates the identification of meaningful interventions that target wider population-level level needs and are informed by modalities that make them effective on the ground.
CHAPTER 4: Exploring the Factor Structure and Cutoff Thresholds in a Representative Post-conflict Population in Northern Uganda

4.1 Introduction

As Northern Uganda remerges from over two decades of civil war between the Government of Uganda and the Lord’s Resistance Army (LRA), the region is rapidly changing. Since the cessation of conflict in 2006, NGOs and community leaders have expressed concerns about what they see as significant increases in substance use, yet there remains a paucity of data on problematic substance use in the region (Johnson, 1996; UNHCR et al., 2008; Weaver & Roberts, 2010). Indeed, little is known regarding the pervasiveness and potential health impacts of alcohol consumption during post-conflict transition periods as populations move from periods of conflict toward relative stability and reconstruction, a problem exacerbated as the majority of alcohol-related harms globally remain under- or unreported (Reinert & Allen, 2007; WHO, 2014). This is particularly worrisome as Northern Uganda already faces high rates of post-traumatic stress disorder (PTSD), depression, and HIV (Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008), all of which can be exacerbated by problematic drinking behaviors (T. Babor et al., 2001; Brief et al., 2004; Stappenbeck et al., 2014; WHO, 2014; Woolf-King & Maisto, 2011). As Uganda already experiences one of the highest per-capita alcohol consumption levels in sub-Saharan Africa, it is critical to identify an appropriate tool to accurately assess alcohol use and misuse in the region (T. Babor et al., 2001; Spittal et al., 2008).


Since its first publication in 1989 and subsequent two updates in 1992 and 2001, the Alcohol Use Disorder Identification Test (AUDIT) has become one of the most widely used tools to measure drinking patterns globally (Reinert & Allen, 2007). The AUDIT is a 10-question scale comprises three domains. Questions 1-3 focus on hazardous consumption, indicators of patterns that may indicate future harm or dependence. Questions 4-6 explore alcohol dependency, the behavioral, mental, and physical results of continued alcohol use including suffering from withdrawal when reducing consumption as well as impaired judgment around drinking. Finally, questions 7-10 detail alcohol-related physical, mental, and social harms that result from problematic alcohol usage both in the present and in the past. Each question is scored individually, the first eight questions on a five level (0-4) ordinal scale of increased severity of use and/or impact, and the last two questions at three levels each (0–2). The full wording of each question and possible responses for participants in this study are listed as part of Table 4.1. More recently, a shortened version, the AUDIT-C, has been introduced (Bush et al., 1998). Comprising only the first three questions of the test, it provides a more rapid assessment tool for identifying hazardous drinking only and has been found applicable in a variety of settings (Reinert & Allen, 2007).

The expanded use of the AUDIT in global epidemiological research has brought increased scrutiny into its performance in different languages, cultures, and demographic groupings. Concerns that concepts within the AUDIT such as ‘standard drink,’ ‘typical day,’ or ‘heavy drinking session’ may vary significantly in different groups as well as the recognition that biological factors may influence individual level psychological impacts of alcohol have led researchers to adjusted cutoff thresholds (Reinert & Allen 2007). As a result, recent meta-analyses have found significant discrepancies in cutoffs used with thresholds as low as
summation score of two or greater (Babor et al. 2001; Reinert & Allen 2007). Similar questions have emerged regarding the underlying conceptual framework of the AUDIT and the merits of applying a single summation score in the definition of alcohol disorders. The most common approach to the AUDIT involves comparing a summation score of all 10 of a respondent’s questions with a cutoff threshold. Test guidelines suggest a threshold of 8 or more to define the presence of an alcohol-related disorder, though they also note that this is not a clinical cutoff and may be adjusted. Still, amalgamating the conceptual domains of hazardous use, alcohol dependence, and related harms within single composite score is more suggestive of a unidimensional model. Explanatory and confirmatory factor analyses (EFA/CFA) assessing the construct validity of the underlying structure of the AUDIT have provided mixed results, with evidence towards, one-, two-, three-, and even four-factor frameworks (Peng et al. 2012; Chung et al. 2002; Rist et al. 2009; Reinert & Allen 2007; Gmel et al. 2001). Though most recent evidence now points towards a two-factor approach for the AUDIT, with questions 1-3 focusing on the concept of ‘alcohol consumption’ and the remaining Questions 4-10 unified into ‘alcohol-related problems’ (Peng et al. 2012; Reinert & Allen 2007). The lack of overall uniformity of the EFA/CFA findings may be partially due to differences in the analytical approaches used, but clearly more research is needed to assess the impact different languages, ethnicities, and cultural settings have on the underlying conceptual framework of the AUDIT (Reinert & Allen 2007; Rumpf et al. 2002; Peng et al. 2012).

Amidst the myriad of other health concerns, alcohol use and misuse remains an often-understudied subject in populations in sub-Saharan Africa, limiting the evidence base from which to plan effective interventions. While this is beginning to change, many studies are limited due to small and often non-representative samples of the population and a lack of standardization
in assessment metrics. Though use of the AUDIT and AUDIT-C has increased in recent years there has been little consistency in the cutoffs used to define hazardous drinking (Woolf-King & Maisto 2011; Tumwesigye & Kasirye 2005; Kalichman et al. 2007). Such is the case in Uganda, where despite high levels of alcohol use present in the population, studies of alcohol use have tended to focus on specific segments of the population such as people living with HIV/AIDS (PLWHA). A large study of PLWHA at Mulago Hospital in Kampala used a score of \( \geq 3 \) to denote alcohol misuse and \( \geq 8 \) for hazardous drinking (Wandera et al. 2015; Wandera et al. 2016). Other studies have further varied cutoffs based on participant sex, with one at Mulago defining hazardous use as \( \geq 3 \) for women and \( \geq 4 \) for men and another in the city of Mbarara using \( \geq 5 \) for women and \( \geq 8 \) for men (Hahn et al. 2014; Santos et al. 2014). Only one study has applied the AUDIT in Northern Uganda, focusing on internally displaced persons (IDP) immediately after the cessation of the conflict in 2006, using the standard cutoff of \( \geq 8 \) to denote hazardous drinking (Roberts et al. 2011). No studies have since explored alcohol use patterns in the North despite drastic shifts in population dynamics after decades of conflict as people return to their ancestral villages amidst rapid modernization. Promisingly, all of these studies reported high Cronbach’s Alpha scores, but none to our knowledge have specifically examined the underlying conceptual framework of the test. This study seeks to address these issues and assess the conceptual categories of the AUDIT and applicability of the various cutoff points for disordered drinking in post-conflict Northern Uganda.
4.2 Methods

4.2.1 Ethics
This study received ethical approval in both Canada and Uganda from the University of British Columbia-Providence Healthcare Research Ethics Board, Makerere College of Health Sciences School of Public Health-Science Ethical Committee, and the Ugandan National Council of Science and Technology. Approval to conduct research in each district was received from the Office of the President of Uganda and each Resident District Commissioner.

4.2.2 Sampling
This paper reports findings from the Cango Lyec Project, a large 5-year prospective cohort exploring health vulnerability in post-conflict Northern Uganda. Briefly, an in-depth census, mapping and enumeration of randomly selected communities in the districts most affected by the conflict was completed to lay the groundwork for the next stages. Three communities in each district were then selected subject to a multi-stage stratified sampling of the entire population aged 13-49 years. Consent and assent were obtained by trained local interviewers prior to the administration of questionnaires and blood sampling. The AUDIT scale was introduced in the second year of the cohort and was administered as part of the follow-up questionnaire for all 1720 returning participants.

4.2.3 Measurements
Participant questionnaires contain questions on socio-demographic characteristics, conflict-related experiences, sexual vulnerabilities, knowledge of HIV and other STIs, and access to
healthcare. Screening for depression and post-traumatic stress disorder (PTSD) were conducted via the Hopkins Symptom Checklist-25 (HSCL-25) (American Psychiatric Association 2000) and the Harvard Trauma Questionnaire (HTQ) Parts I and IV respectively (Mollica et al. 2004). Screening cutoffs were based on instrumental standards of having personally experienced 12 or more events listed in the HTQ Part I, scoring an average of 2 or greater in Part IV, and an average score of 1.75 or more on the HSCL-25 (American Psychiatric Association 2000; Palmieri et al. 2007; Shoeb et al. 2007; Silove et al. 2007). Both scales have been demonstrated to be reliable in a number of contexts and have been previously used in the region (Fawzi et al. 1997; Scholte & et. al. 2004; Shoeb et al. 2007; Roberts et al. 2008). HIV and Syphilis status were determined from annually collected blood samples from each participant. HIV testing utilized parallel ELISA tests and the addition of a confirmatory Western Blot test for discordant ELISA results. Syphilis was determined by RPR tests with confirmatory TPHA tests. Trained HIV counselors returned test results to all participants who requested them. Participants with positive tests for syphilis are immediately treated using single-dose antibiotics and participants with HIV, above cutoff trauma or depression scores, who have any mention of suicidal ideation, or who met criteria for hazardous drinking are immediately referred to the closest comprehensive health center.

Alcohol use was measured using the 2001 Second Edition of the Alcohol Use Disorders Identification Test (AUDIT). As with all other scales used in the study, the questions were first translated and back translated into the local language, Acholi Luo, by experienced Acholi researchers and tested by trained staff in a pilot community. Standard units of alcohol were defined as a single beer, a standard shot or sachet of Waragi (a generic name for distilled spirits),
or large glass of traditionally brewed alcohol. The presence of an alcohol-related disorder was defined at three separate cutoff threshold levels for summation scores of \( \geq 3 \), \( \geq 5 \), and the recommended test standard \( \geq 8 \). As the lower cutoff points could lead to the inclusion of those who consume alcoholic beverages regularly but who do not otherwise fit criteria for disordered drinking, participants were assessed based on the test’s three conceptual levels of ‘hazardous drinking’, ‘alcohol dependence’, and ‘alcohol-related harm’. These were defined by test guidelines noted for giving greater detail in consumption measurements (Babor et al. 2001); potentially hazardous drinking was defined as any positive score on Question 2 and 3 in the AUDIT tool dealing with the number of drinks normally consumed in one sitting and the frequency of having six or more drinks. Alcohol dependency likewise was defined as a score of one or more on any of questions four to six in the AUDIT tool. Finally, alcohol-related harm was defined as any score greater than one on the last four questions in the AUDIT tool, which includes inquiry into historical drinking patterns.

### 4.2.4 Analysis

Descriptive univariable statistics were first calculated to assess characteristics of the population overall and within each cutoff threshold used to define hazardous drinking. Next, bivariate analyses compared distributions between each level to assess whether there were significant differences present in population demographics at the different cutoff points. Due to the natural inclusion of lower-level hazardous drinkers at each increased cutoff point and thus lack of independence, Fishers exact test was used to assess the relationship between participant characteristics and cutoff thresholds.
The construct validity of the AUDIT scale was examined using Confirmatory Factor Analysis at one-, two- and three-factor levels based on the conceptual frameworks listed prior for all participants as well as stratified by sex. In holding with best practice, many indices are presented reporting model goodness-of-fit including both absolute and relative fit models (Hu & Bentler 1999; Hoyle & Panther 1995): root mean square error of approximation (RMSEA), Tucker-Lewis non-normed-fit index (NNFI), Bentler comparative fit index (CFI), and Bentler and Bonnett normed-fit index (NFI). All models utilized a weighted least squares means and variance adjusted estimator (WLSMV) to account for the floor and ceiling effects of the categorical AUDIT data (Peng et al. 2012; Brown 2006). Good fit was indicated by common guidelines for each index: RMSEA of < 0.06 with < 0.03 indicating ‘excellent’ fit, CFI ≥0.95, TLI ≥0.90, NNFI ≥0.95, NFI ≥0.90. Chi-Square test statistics, degrees of freedom and associated p-value are also reported with a 0.05 significance threshold, with recognition of the potential limitations as an indicator for CFA (Bentler & Bonett 1980; Barrett 2007; Kenny et al. 2003). Cronbach’s alpha was also calculated to assess the internal reliability of the test and for each subscale.

All analyses were conducted using the R statistical package version 3.2.4 (R Foundation for Statistical Computing, Vienna Austria). CFA were run in R using the Lavaan package 0.5-20.

4.3 Results

4.3.1 Summary of results

All 1720 returning participants in Round 2 of the Cango Lyec Project received the AUDIT and are included in analyses. Table 4.1 lists the breakdown of participant responses to the AUDIT questions overall, and by sex, as well as test results. A summary of their characteristics overall
and at each of the \( \geq 3, \geq 5, \) and \( \geq 8 \) cutoff scores are presented in Table 4.2. A majority of participants were female (55.9\%), and ages ranged from 13 to 52 years old with a median age of 27 years. HIV prevalence in the population was 12.2\%, with screening criteria for PTSD and depression were met for 5.3\% and 8.3\% of the participants respectively. A significant majority (83.6\%) were sexually active and most were currently married (62.0\%).

### 4.3.2 Participant responses to the AUDIT

The responses to the individual questions of the AUDIT are presented at the top of Table 4.1. Unadjusted odds ratios (UOR) and 95\% confidence intervals (95\% CI) are presented to show differences in responses based on participant sex. Subsequent categorization of drinking status and treatment recommendations based on the AUDIT 2001 guidelines are also listed as well as those of adjusted cutoffs for total scores of greater than or equal to 3, 5, and the guideline standard of 8. A majority of all participants (85.8\%) reported abstaining from alcohol use, with women (95\%) significantly more likely to do so than men (74.1\%). Throughout the 10 questions of the test, men continually reported significantly greater levels of alcohol use, dependency criteria, and alcohol-related harms, with one exception. Among those who needed a drink first thing in the morning, there was no difference between men and women in doing so ‘less than monthly’ compared to ‘never’ (UOR: 1.51; 95\%CI: 0.50-4.71).

The mean total score of all questions in the AUDIT was 0.9 with a standard deviation (SD) of 3.1. The mean score for men of 1.7 (SD: 4.1) was significantly higher than the mean score of 0.2 for women (SD: 1.6, \( p<0.0001 \)). Based on the 2001 guidelines (Babor et al. 2001) with disordered drinking categorized as a total score of eight or more, 4.3\% of participants fit into this
category including 8.3% of men and 1.1% of women. Men were 7.82 times more likely than women to fit the criteria for disordered drinking (95%CI: 4.26 – 15.77). When the cutoff point for inclusion was relaxed to a score of five or more, the total percent of the population fitting categorization rose to 6.1% with similar relative increases in men to 11.6% and women to 1.8%. The odds of men being included remained seven times higher than women (OR: 7.28, 95%CI: 4.41 – 12.77). The most lenient inclusion cutoff of three or more, more than doubled the number of participants deemed hazardous compared with the standard guidelines overall and for each sex (9.9% total, 19.2% males, 2.6% females). It also showed an increase in the discrepancy between males and females with the former 8.85 times more likely to be classified as hazardous drinkers (95%CI: 5.82-13.99).

When participants were classified by their responses within each distinct level of the AUDIT 7.0% fit criteria for hazardous drinking, 5.4% for alcohol dependency, and 4.4% reported alcohol-related harms. Within each category, men were over six times more likely than women to fit classification criteria (Hazard UOR: 6.06, 95%CI: 3.72-12.63; Dependence UOR: 6.09, 95%CI: 3.65-10.74; Harm UOR: 6.33, 95%CI: 4.02-10.40). When hazardous drinking in separated out to a distinct level defined by a score greater than zero on Questions 2 or 3, the results are similar among women to when a total AUDIT score of ≥3 is used (2.3% vs. 2.6%). Among men, and overall, more participants would fit classification for hazardous drinking than if a total score of ≥5 was used but fewer than if the score was decreased to ≥3.

At the AUDIT standard cutoff threshold of a summation score ≥8, only 4.3% (n=74) of study participants fit designation for the presence of disordered drinking. When the cutoff was lowered
to ≥5 the percent included rose to 6.1% (n=105). At the least stringent ≥3 threshold, 10% (n=170) of the study population was included, more than doubling the original number of those with potentially disordered drinking behaviors. There were no significant differences in socio-demographic characteristics defining participants, their mental health screening status, or blood test results between the cutoff levels. Clear distinctions emerged between the cutoff thresholds within the AUDIT subcategories. Hazardous drinking, an affirmative answer for Questions 2 or 3, included 69.4% of the participants with a ≥3 total score. This increased to 89.5% at the ≥5 cutoff level and 97.3% at the ≥8 level. This trend continued within both the alcohol dependence and harmful consumption designations as well. The percentage of participants within each ≥3, ≥5, and ≥8 cutoff group characterized as alcohol dependent increased from 54.1% to 80.0% to 90.5%. Those in each group experiencing alcohol-related harms also rose from 44.7% to 67.6% to 81.1% respectively. All of these differences were statistically significant at the \( p<0.0001 \) level.

### 4.3.3 Confirmatory factor analysis results

Results from the CFA are reported in Table 4.3, showing one-, two-, and three-factor models overall and stratified by sex, of each of the 10 AUDIT questions. Chi-Square tests were statistically significant (\( p\)-values <0.0001) at each factor level overall and for men in contrast to those for women. All other CFA indicators of both absolute and relative model fit returned ‘good’ to ‘excellent’ results within every iteration of the models for participants overall and when sex-stratified. All RMSEA were well below the 0.06 cutoff, ranging from a high of 0.40 for a one-level model among males to 0.12 among females for both one- and two-level models. NNFI, NFI, and CFI indicators were similarly good, ranging from 0.992 for one- and two-level
models involving males up to 1.000 in all models involving females. In every case the fit indicators for the three-level models were superior to those of the one- and two-level ones.

Cronbach’s alpha scores detailing the overall internal reliability for the AUDIT for all participants and by sex, overall and for each subscale at two- and three-factor levels are reported at the bottom of Table 3. For all participants, the Cronbach’s α for the 10-question test was 0.85, with scores of 0.84 and 0.90 for men and women respectively, showing relatively good internal reliability. Scores within subscales decreased inversely to increased number of conceptual levels, with lower α consistently for the first three questions examining hazardous drinking. Internal reliability remained good in all two-factor models for the broad concept of ‘alcohol-related consequences.’ In the three-factor models, only the middle alcohol dependency level among women showed reasonable internal reliability with an α=0.86.

4.4 Discussion
This study explored the use of the AUDIT in post-conflict Northern Uganda, assessing implications of adjusted cutoff scores to denote hazardous drinking as well as the conceptual factor structure of the test. In doing so, it sought to further current epidemiological evidence as to the applicability of the test in lesser studied settings, cultures, and languages. Overall, men consumed significantly more alcohol and suffered from more associated consequences than women, consistent with findings from and around the world (World Health Organization 2014). At the same time, the percentage fitting criteria for drinking disorders within the study population even at the lowest threshold (9.9%) were much lower than that found in other non-post-conflict regions of Uganda where levels range from 17.4% to 34.8%. Likewise, the mean
AUDIT scores for both sexes and overall were lower than previously seen in northern Uganda in IDP camp settings (Roberts et al. 2011). While the rates of hazardous and disordered drinking in the study population are low compared to Uganda’s overall consumption rates, it is likely reflective of the distinct characteristics of a post-conflict region. As individuals and families return to ancestral villages to rebuild their homes in a region with limited infrastructure and economic opportunity the acquisition and consumption opportunities for alcohol are much more limited. These differences speak to the unique and rapidly changing nature of the population and region within Uganda, especially as the test showed strong internal reliability and good structural fit.

The overall Cronbach’s $\alpha$ of 0.85 shows good internal consistency of the AUDIT as a whole. When tested within each sex and factor level, the findings are consistent with those from 15 other countries showing high internal consistency both for the entire AUDIT and for the ‘alcohol-related consequences’ subscale Questions 4-10. The weaker Cronbach’s $\alpha$ scores seen at each of the domains within the three-factor models are also consistent with the other studies (Peng et al. 2012).

The confirmatory factor analyses showed good fit in every iteration of the sex and conceptual level approaches possible within AUDIT. The only exception was significant Chi-square test statistics, suggesting poor fit, seen for men and both sexes combined. However, the Chi-square test is known to favor rejection in large samples as well as when distributions are not normal and/or suffer from floor and ceiling effects, as the case with this study, and are thus suggested to be used in conjunction with other indicators (Bentler & Bonett 1980; Hooper et al. 2008; Doyle
et al. 2007). The strength of the two- and three-factor models over a one-factor approach is consistent with most current research, implying that the first three questions of the AUDIT do measure a distinct aspect of alcohol consumption compared with the latter questions (Doyle et al. 2007; Selin 2006; Reinert & Allen 2007). While this supports the applicability of the abbreviated AUDIT-C to capture information on hazardous drinking, it also highlights the limitations of this test to informing on consumption related consequences (Reinert & Allen 2007). The superiority of the three-level model for both sexes and overall differs from the larger trend in recent studies supporting the two-factor approach with questions 4-10 unified into a single concept of ‘adverse consequences’ (Reinert & Allen 2007; Bergman & Källmén 2002; Chung et al. 2002; Peng et al. 2012). This is not necessarily cause for concern as while two-level frameworks may be applicable in many settings, the emergence of one- and three-level frameworks demonstrates the ability for population characteristics to affect the test’s underlying structure. As few studies have conducted CFA of the AUDIT within sub-Saharan Africa, and fewer still in post-conflict settings, these findings lend weight to calls for further research into the cultural, ethnic, and linguistic impacts on the factor structure of the test (Reinert & Allen 2007; Cherpitel & Clark 1995; Rumpf et al. 2002).

The CFA continues to build on prior evidence showing that the factor structure of the AUDIT is not dependent on participant sex, and the better fit seen in the multi-factor models reaffirms that non sex-stratified approaches do not bias toward one-factor models (Peng et al. 2012; Rist et al. 2009). The superior scores of the indicators of fit for all female-only models at every conceptual factor level over to those of men and both sexes combined, especially the appearance of perfect NNFI, NFI, and CFI scores, should be treated with some caution. The extreme imbalance
between those who do and do not drink (5.0% vs. 95.0%) and resulting small sample size (n=48) from which to assess alcohol disorders may have skewed results.

The challenges of approaching the AUDIT as a single level, 10-question scale with a globally uniform cutoff score are shown in Table 2. For those meeting the instrument standard cutoff of a total score of ≥8, almost all (97.3%) met the subscale criteria for hazardous drinking, consuming three or more drinks on average per session and/or consuming more than six drinks on a given occasion. Likewise at this cutoff point, significant majorities were both classified as potentially dependent consumers and suffering from alcohol-related harms (90.5% and 81.1% respectively). Even at the lower ≥5 and even lower ≥3 thresholds, a majority of included participants fit criteria for all three sub-designations, with the only exception being the 44.7% suffering from alcohol-related harms in the ≥3 group. The higher thresholds clearly increase the specificity of capturing those with problematic drinking behaviors. In doing so it lowers the sensitivity of the test, and the use of the higher ≥5 and ≥8 cutoffs limits exploration of the test sub-categories. When used as an assessment tool, the AUDIT is especially useful to indicate potentially disordered drinking in early stages where interventions can often be less invasive and costly. Within this population therefore, the use of a ≥3 cutoff point to denote the potential presence of an alcohol disorder is more useful than higher levels.

### 4.5 Limitations

The Cango Lyec Project includes self-reported behavioral data that are potentially subject to both selection and recall biases. Given cultural and social stigmas against drinking in general and especially among women in Northern Uganda, this is especially of concern with regards to
AUDIT results. Measuring standard units of alcohol remains elusive globally, as percentages per unit vary significantly within types as do volumes per unit (Kerr & Stockwell 2012). In rural settings in Uganda this is made more problematic as consumption often occurs from a communal container, and the percent alcohol of a traditionally brewed beverage is difficult to measure. We are confident that the impact of this issue was minimized due to our research staff’s engagement with participants and clarification as to our definitions of the standard unit.

Caution should also be given around as to extrapolating that the $\geq 3$ summation score denoting hazardous drinking is a clinical definition, as the study lacked biological tests to verify the results. Despite these concerns, we are confident that the biases were minimized due to the rigorous staff training, participant recruitment, and community engagement that characterized the study.

### 4.6 Conclusions

The strikingly high alcohol consumption present in Uganda and the relatively low use currently by peoples in the North creates a unique opportunity for use of pro-active targeted interventions to delay and perhaps interrupt national trends from taking hold in the region. This study clearly demonstrated the AUDIT as an appropriate tool not only to assess potential hazardous drinking behaviors but also the ensuing consequences within this culturally, linguistically, and developmentally unique setting.

Given the benefits of identifying problematic consumers early to stem the potential for increased risk, the use of a low threshold cutoff that increases sensitivity would best be used, thus
capturing and offering brief treatments as described to drinkers before hazard, dependence and harm take hold.

With further evidence demonstrating that the AUDIT measures distinct aspects of alcohol consumption, its use over the shortened AUDIT-C should be promoted when possible. This will allow for a more cohesive picture of not just consumption within a population but also for related sequelae that may harm not only the individual user but the broader community as well. In turn this can help better inform culturally safe and actionable interventions to address disordered drinking.
Table 4.1: AUDIT results and drinking classifications by participant sex and overall with unadjusted odds ratios (UOR) and 95% Confidence Intervals (95%CI) for differences by sex

<table>
<thead>
<tr>
<th>How often do you have a drink containing alcohol</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>915 (95.0%)</td>
<td>561 (74.1%)</td>
<td>1,476 (85.8%)</td>
<td>ref.</td>
</tr>
<tr>
<td>Monthly or less</td>
<td>26 (2.7%)</td>
<td>56 (7.4%)</td>
<td>82 (4.8%)</td>
<td>3.51 (2.20 - 5.74)</td>
</tr>
<tr>
<td>2 - 4 times a month</td>
<td>14 (1.5%)</td>
<td>40 (5.3%)</td>
<td>54 (3.1%)</td>
<td>4.66 (2.57 - 8.94)</td>
</tr>
<tr>
<td>2 - 3 times a week</td>
<td>5 (0.5%)</td>
<td>28 (3.7%)</td>
<td>33 (1.9%)</td>
<td>9.13 (3.82 - 27.02)</td>
</tr>
<tr>
<td>4+ times a week</td>
<td>3 (0.3%)</td>
<td>72 (9.5%)</td>
<td>75 (4.4%)</td>
<td>39.14 (14.51 - 160.38)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many drinks containing alcohol do you have on a typical day when you are drinking</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>945 (98.1%)</td>
<td>703 (92.9%)</td>
<td>1,648 (95.8%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>16 (1.7%)</td>
<td>42 (5.5%)</td>
<td>58 (3.4%)</td>
<td>3.53 (2.01 - 6.51)</td>
</tr>
<tr>
<td>monthly</td>
<td>1 (0.1%)</td>
<td>7 (0.9%)</td>
<td>8 (0.5%)</td>
<td>9.41 (1.67 - 176.09)</td>
</tr>
<tr>
<td>weekly</td>
<td>1 (0.1%)</td>
<td>3 (0.4%)</td>
<td>4 (0.2%)</td>
<td>4.03 (0.52 - 81.62)</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>0 (0.0%)</td>
<td>2 (0.3%)</td>
<td>2 (0.1%)</td>
<td>ref.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you found that you were not able to stop drinking once you had started</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>948 (98.4%)</td>
<td>696 (91.9%)</td>
<td>1,644 (95.6%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>8 (0.8%)</td>
<td>24 (3.2%)</td>
<td>32 (1.9%)</td>
<td>4.08 (1.90 - 9.76)</td>
</tr>
<tr>
<td>monthly</td>
<td>5 (0.5%)</td>
<td>15 (2.0%)</td>
<td>20 (1.2%)</td>
<td>4.09 (1.58 - 12.61)</td>
</tr>
<tr>
<td>weekly</td>
<td>0 (0.0%)</td>
<td>7 (0.9%)</td>
<td>7 (0.4%)</td>
<td>ref.</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>2 (0.2%)</td>
<td>15 (2.0%)</td>
<td>17 (1.0%)</td>
<td>10.22 (2.87 - 64.96)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you failed to do what was normally expected from you because of drinking</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>952 (98.9%)</td>
<td>712 (94.1%)</td>
<td>1,664 (96.7%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>6 (0.6%)</td>
<td>17 (2.2%)</td>
<td>23 (1.3%)</td>
<td>3.79 (1.57 - 10.54)</td>
</tr>
<tr>
<td>monthly</td>
<td>3 (0.3%)</td>
<td>17 (2.2%)</td>
<td>20 (1.2%)</td>
<td>7.58 (2.53 - 32.54)</td>
</tr>
<tr>
<td>weekly</td>
<td>1 (0.1%)</td>
<td>7 (0.9%)</td>
<td>8 (0.5%)</td>
<td>9.36 (1.66 - 175.15)</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>1 (0.1%)</td>
<td>4 (0.5%)</td>
<td>5 (0.3%)</td>
<td>5.35 (0.79 - 104.75)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>954 (99.1%)</td>
<td>737 (97.4%)</td>
<td>1,691 (98.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>6 (0.6%)</td>
<td>7 (0.9%)</td>
<td>13 (0.8%)</td>
<td>1.51 (0.50 - 4.71)</td>
</tr>
<tr>
<td>monthly</td>
<td>2 (0.2%)</td>
<td>3 (0.4%)</td>
<td>5 (0.3%)</td>
<td>1.94 (0.32 - 14.77)</td>
</tr>
<tr>
<td>weekly</td>
<td>1 (0.1%)</td>
<td>4 (0.5%)</td>
<td>5 (0.3%)</td>
<td>5.18 (0.76 - 101.40)</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>0 (0.0%)</td>
<td>6 (0.8%)</td>
<td>6 (0.3%)</td>
<td>ref.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you had a feeling of guilt or remorse after drinking</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>954 (99.1%)</td>
<td>720 (95.1%)</td>
<td>1,674 (97.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>5 (0.5%)</td>
<td>16 (2.1%)</td>
<td>21 (1.2%)</td>
<td>4.24 (1.65 - 13.01)</td>
</tr>
<tr>
<td>monthly</td>
<td>2 (0.2%)</td>
<td>9 (1.2%)</td>
<td>11 (0.6%)</td>
<td>5.96 (1.53 - 39.19)</td>
</tr>
<tr>
<td>weekly</td>
<td>0 (0.0%)</td>
<td>5 (0.7%)</td>
<td>5 (0.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>2 (0.2%)</td>
<td>7 (0.9%)</td>
<td>9 (0.5%)</td>
<td>4.64 (1.12 - 31.19)</td>
</tr>
<tr>
<td>How often during the last year have you been unable to remember what happened the night before because you had been drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td><strong>Male</strong></td>
<td><strong>Total</strong></td>
<td><strong>UOR (95%CI)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>n (%)</strong></td>
<td><strong>n (%)</strong></td>
<td><strong>n (%)</strong></td>
<td>****</td>
<td></td>
</tr>
<tr>
<td>never</td>
<td>954 (99.1%)</td>
<td>720 (95.1%)</td>
<td>1,674 (97.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>less than monthly</td>
<td>3 (0.3%)</td>
<td>15 (2.0%)</td>
<td>18 (1.0%)</td>
<td>6.63 (2.18 - 28.68)</td>
</tr>
<tr>
<td>monthly</td>
<td>4 (0.4%)</td>
<td>10 (1.3%)</td>
<td>14 (0.8%)</td>
<td>3.31 (1.10 -12.11)</td>
</tr>
<tr>
<td>weekly</td>
<td>0 (0.0%)</td>
<td>7 (0.9%)</td>
<td>7 (0.4%)</td>
<td>-</td>
</tr>
<tr>
<td>daily or almost daily</td>
<td>2 (0.2%)</td>
<td>5 (0.7%)</td>
<td>7 (0.4%)</td>
<td>3.31 (7.12 - 23.18)</td>
</tr>
<tr>
<td>Have you or someone else been injured as a result of your drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>959 (99.6%)</td>
<td>735 (97.1%)</td>
<td>1,694 (98.5%)</td>
<td>ref.</td>
</tr>
<tr>
<td>yes but not in last year</td>
<td>3 (0.3%)</td>
<td>11 (1.5%)</td>
<td>14 (0.8%)</td>
<td>4.78 (1.49 - 21.21)</td>
</tr>
<tr>
<td>yes in the last year</td>
<td>1 (0.1%)</td>
<td>11 (1.5%)</td>
<td>12 (0.7%)</td>
<td>14.35 (2.78 - 262.66)</td>
</tr>
<tr>
<td>Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>no</strong></td>
<td>958 (99.5%)</td>
<td>717 (94.7%)</td>
<td>1,675 (97.4%)</td>
<td>ref.</td>
</tr>
<tr>
<td>yes but not in last year</td>
<td>3 (0.3%)</td>
<td>16 (2.1%)</td>
<td>19 (1.1%)</td>
<td>7.13 (2.26 - 30.72)</td>
</tr>
<tr>
<td>yes in the last year</td>
<td>2 (0.2%)</td>
<td>24 (3.2%)</td>
<td>26 (1.5%)</td>
<td>16.03 (4.74 - 99.98)</td>
</tr>
</tbody>
</table>

Categorizations based on the AUDIT answers

<table>
<thead>
<tr>
<th>AUDIT score</th>
<th>Mean (SD)</th>
<th>Score of 3 or more</th>
<th>Score of 5 or more</th>
<th>Score of 8 or more</th>
<th>Suggested treatment by total AUDIT score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>0.2 (±1.6)</td>
<td>1.7 (±4.1)</td>
<td>0.9 (±3.1)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Score of 3 or more</td>
<td>932 (97.4%)</td>
<td>611 (80.8%)</td>
<td>1,543 (90.1%)</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>25 (2.6%)</td>
<td>145 (19.2%)</td>
<td>170 (9.9%)</td>
<td>8.85 (5.82 - 13.99)</td>
<td></td>
</tr>
<tr>
<td>Score of 5 or more</td>
<td>940 (98.2%)</td>
<td>668 (88.4%)</td>
<td>1,608 (93.9%)</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>17 (1.8%)</td>
<td>88 (11.6%)</td>
<td>105 (6.1%)</td>
<td>7.28 (4.41 - 12.77)</td>
<td></td>
</tr>
<tr>
<td>Score of 8 or more</td>
<td>946 (98.9%)</td>
<td>693 (91.7%)</td>
<td>1,639 (95.7%)</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>11 (1.1%)</td>
<td>63 (8.3%)</td>
<td>74 (4.3%)</td>
<td>7.82 (4.26 - 15.77)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggested treatment by total AUDIT score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: non drinker</td>
</tr>
<tr>
<td>1-7: brief interventions</td>
</tr>
<tr>
<td>8-15: targeted interventions</td>
</tr>
<tr>
<td>16-19: direct counseling and monitoring</td>
</tr>
<tr>
<td>20+: diagnostic evaluation, referral to a specialist, and treatment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous use*</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
</tr>
<tr>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alcohol dependency*</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
</tr>
<tr>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Harmful drinking*</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
</tr>
<tr>
<td>yes</td>
</tr>
</tbody>
</table>

* based on 2001 guidelines
Table 4.2: Study population characteristics overall and by AUDIT score cutoff threshold

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>AUDIT score cutoff for hazardous drinking</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>3+ n (%)</td>
<td>5+ n (%)</td>
</tr>
<tr>
<td><strong>Total participants</strong></td>
<td>1713 (100%)</td>
<td>170 (10.0%)</td>
<td>105 (6.1%)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>957 (55.9%)</td>
<td>25 (14.7%)</td>
<td>17 (16.2%)</td>
</tr>
<tr>
<td>Male</td>
<td>756 (44.1%)</td>
<td>145 (85.3%)</td>
<td>88 (83.8%)</td>
</tr>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-19</td>
<td>399 (23.3%)</td>
<td>2 (1.2%)</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td>20-24</td>
<td>288 (16.8%)</td>
<td>21 (12.4%)</td>
<td>12 (11.4%)</td>
</tr>
<tr>
<td>25-29</td>
<td>316 (18.4%)</td>
<td>34 (20.0%)</td>
<td>21 (20.0%)</td>
</tr>
<tr>
<td>30-34</td>
<td>239 (14.0%)</td>
<td>25 (14.7%)</td>
<td>15 (14.3%)</td>
</tr>
<tr>
<td>35-39</td>
<td>189 (11.0%)</td>
<td>34 (20.0%)</td>
<td>25 (23.8%)</td>
</tr>
<tr>
<td>40-44</td>
<td>157 (9.2%)</td>
<td>25 (14.7%)</td>
<td>14 (13.3%)</td>
</tr>
<tr>
<td>45-49</td>
<td>110 (6.4%)</td>
<td>25 (14.7%)</td>
<td>13 (12.4%)</td>
</tr>
<tr>
<td>50+</td>
<td>15 (0.9%)</td>
<td>4 (2.4%)</td>
<td>3 (2.9%)</td>
</tr>
<tr>
<td><strong>District</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amuru</td>
<td>499 (29.1%)</td>
<td>60 (35.3%)</td>
<td>39 (37.1%)</td>
</tr>
<tr>
<td>Gulu</td>
<td>831 (48.5%)</td>
<td>79 (46.5%)</td>
<td>46 (43.8%)</td>
</tr>
<tr>
<td>Nwoya</td>
<td>383 (22.4%)</td>
<td>31 (18.2%)</td>
<td>20 (19.0%)</td>
</tr>
<tr>
<td><strong>Community type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transient</td>
<td>695 (40.6%)</td>
<td>72 (42.4%)</td>
<td>48 (45.7%)</td>
</tr>
<tr>
<td>displaced</td>
<td>269 (15.7%)</td>
<td>41 (24.1%)</td>
<td>22 (21.0%)</td>
</tr>
<tr>
<td>permanent</td>
<td>749 (43.7%)</td>
<td>57 (33.5%)</td>
<td>35 (33.3%)</td>
</tr>
<tr>
<td><strong>Ever abducted</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,269 (74.1%)</td>
<td>110 (64.7%)</td>
<td>71 (67.6%)</td>
</tr>
<tr>
<td>yes</td>
<td>444 (25.9%)</td>
<td>60 (35.3%)</td>
<td>34 (32.4%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never married</td>
<td>575 (33.6%)</td>
<td>20 (11.8%)</td>
<td>17 (16.2%)</td>
</tr>
<tr>
<td>1. married</td>
<td>1,062 (62.0%)</td>
<td>143 (84.1%)</td>
<td>83 (79.0%)</td>
</tr>
<tr>
<td>2. wid/sep/div</td>
<td>76 (4.4%)</td>
<td>7 (4.1%)</td>
<td>5 (4.8%)</td>
</tr>
<tr>
<td><strong>Highest education level attained</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. primary</td>
<td>1,018 (59.4%)</td>
<td>96 (56.5%)</td>
<td>62 (59.0%)</td>
</tr>
<tr>
<td>1. secondary</td>
<td>386 (22.5%)</td>
<td>40 (23.5%)</td>
<td>22 (21.0%)</td>
</tr>
<tr>
<td>2. tertiary/university</td>
<td>98 (5.7%)</td>
<td>12 (7.1%)</td>
<td>8 (7.6%)</td>
</tr>
<tr>
<td>3. others</td>
<td>63 (3.7%)</td>
<td>12 (7.1%)</td>
<td>6 (5.7%)</td>
</tr>
<tr>
<td>4. no schooling</td>
<td>148 (8.6%)</td>
<td>10 (5.9%)</td>
<td>7 (6.7%)</td>
</tr>
<tr>
<td><strong>Ever tested for HIV</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>181 (10.6%)</td>
<td>22 (12.9%)</td>
<td>12 (11.4%)</td>
</tr>
<tr>
<td>yes</td>
<td>1,532 (89.4%)</td>
<td>148 (87.1%)</td>
<td>93 (88.6%)</td>
</tr>
<tr>
<td><strong>HIV positive</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1,499 (87.5%)</td>
<td>138 (81.2%)</td>
<td>83 (79.0%)</td>
</tr>
<tr>
<td>Positive</td>
<td>209 (12.2%)</td>
<td>32 (18.8%)</td>
<td>22 (21.0%)</td>
</tr>
<tr>
<td>Missing</td>
<td>5 (0.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>Active Syphilis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1,639 (95.7%)</td>
<td>158 (92.9%)</td>
<td>100 (95.2%)</td>
</tr>
<tr>
<td>Positive</td>
<td>69 (4.0%)</td>
<td>12 (7.1%)</td>
<td>5 (4.8%)</td>
</tr>
<tr>
<td>Missing</td>
<td>5 (0.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>Screened for PTSD</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,617 (94.4%)</td>
<td>161 (94.7%)</td>
<td>98 (93.3%)</td>
</tr>
<tr>
<td>yes</td>
<td>91 (5.3%)</td>
<td>9 (5.3%)</td>
<td>7 (6.7%)</td>
</tr>
<tr>
<td>Missing</td>
<td>5 (0.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>12 or more trauma experiences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,570 (91.7%)</td>
<td>151 (88.8%)</td>
<td>92 (87.6%)</td>
</tr>
<tr>
<td>yes</td>
<td>143 (8.3%)</td>
<td>19 (11.2%)</td>
<td>13 (12.4%)</td>
</tr>
<tr>
<td><strong>Screened for depression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,565 (91.4%)</td>
<td>154 (90.6%)</td>
<td>95 (90.5%)</td>
</tr>
<tr>
<td>yes</td>
<td>143 (8.3%)</td>
<td>16 (9.4%)</td>
<td>10 (9.5%)</td>
</tr>
<tr>
<td>Missing</td>
<td>5 (0.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3+</td>
<td>5+</td>
</tr>
<tr>
<td>-------------------------------------------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Ever attempted suicide</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,619 (94.5%)</td>
<td>159 (93.5%)</td>
<td>95 (90.5%)</td>
</tr>
<tr>
<td>yes</td>
<td>94 (5.5%)</td>
<td>11 (6.5%)</td>
<td>10 (9.5%)</td>
</tr>
<tr>
<td><strong>Physically abused by a recent partner in last 6 months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,422 (83.0%)</td>
<td>115 (67.6%)</td>
<td>72 (68.6%)</td>
</tr>
<tr>
<td>yes</td>
<td>291 (17.0%)</td>
<td>55 (32.4%)</td>
<td>33 (31.4%)</td>
</tr>
<tr>
<td><strong>Forced into a sexual act by a recent partner in last 6 months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,677 (97.9%)</td>
<td>164 (96.5%)</td>
<td>100 (95.2%)</td>
</tr>
<tr>
<td>yes</td>
<td>36 (2.1%)</td>
<td>6 (3.5%)</td>
<td>5 (4.8%)</td>
</tr>
<tr>
<td><strong>Ever sexually abused or raped</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,563 (91.2%)</td>
<td>165 (97.1%)</td>
<td>103 (98.1%)</td>
</tr>
<tr>
<td>yes</td>
<td>150 (8.8%)</td>
<td>5 (2.9%)</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td><strong>Ever had sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>281 (16.4%)</td>
<td>1 (0.6%)</td>
<td>1 (1.0%)</td>
</tr>
<tr>
<td>yes</td>
<td>1,432 (83.6%)</td>
<td>169 (99.4%)</td>
<td>104 (99.0%)</td>
</tr>
<tr>
<td><strong>Total sexual partners</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 2</td>
<td>649 (45.3%)</td>
<td>24 (14.2%)</td>
<td>16 (15.4%)</td>
</tr>
<tr>
<td>3+</td>
<td>752 (52.5%)</td>
<td>143 (84.6%)</td>
<td>87 (83.7%)</td>
</tr>
<tr>
<td>Missing</td>
<td>31 (2.2%)</td>
<td>2 (1.2%)</td>
<td>1 (1.0%)</td>
</tr>
<tr>
<td><strong>Had any STI in the last 6 months</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,031 (72.0%)</td>
<td>127 (75.1%)</td>
<td>75 (72.1%)</td>
</tr>
<tr>
<td>yes</td>
<td>401 (28.0%)</td>
<td>42 (24.9%)</td>
<td>29 (27.9%)</td>
</tr>
<tr>
<td><strong>Any STI currently</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,241 (86.7%)</td>
<td>149 (88.2%)</td>
<td>91 (87.5%)</td>
</tr>
<tr>
<td>yes</td>
<td>191 (13.3%)</td>
<td>20 (11.8%)</td>
<td>13 (12.5%)</td>
</tr>
<tr>
<td><strong>Always used a condom with ALL recent partners</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1,272 (88.8%)</td>
<td>159 (94.1%)</td>
<td>98 (94.2%)</td>
</tr>
<tr>
<td>yes</td>
<td>160 (11.2%)</td>
<td>10 (5.9%)</td>
<td>6 (5.8%)</td>
</tr>
<tr>
<td><strong>Do you know your partner (s) HIV status</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes for all partners</td>
<td>867 (60.5%)</td>
<td>109 (64.5%)</td>
<td>69 (66.3%)</td>
</tr>
<tr>
<td>yes for some</td>
<td>46 (3.2%)</td>
<td>13 (7.7%)</td>
<td>8 (7.7%)</td>
</tr>
<tr>
<td>dont know for any</td>
<td>477 (33.3%)</td>
<td>43 (25.4%)</td>
<td>25 (24.0%)</td>
</tr>
<tr>
<td>Missing</td>
<td>42 (2.9%)</td>
<td>4 (2.4%)</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td><strong>How many children do you have</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>744 (52.0%)</td>
<td>35 (20.7%)</td>
<td>25 (24.0%)</td>
</tr>
<tr>
<td>1 to 2</td>
<td>235 (16.4%)</td>
<td>38 (22.5%)</td>
<td>18 (17.3%)</td>
</tr>
<tr>
<td>3 to 4</td>
<td>189 (13.2%)</td>
<td>31 (18.3%)</td>
<td>21 (20.2%)</td>
</tr>
<tr>
<td>5 to 6</td>
<td>147 (10.3%)</td>
<td>33 (19.5%)</td>
<td>19 (18.3%)</td>
</tr>
<tr>
<td>7+</td>
<td>117 (8.2%)</td>
<td>32 (18.9%)</td>
<td>21 (20.2%)</td>
</tr>
<tr>
<td><strong>Hazardous drinking (≥1 on Q2 or Q3)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1593 (92.8%)</td>
<td>52 (30.6%)</td>
<td>11 (10.5%)</td>
</tr>
<tr>
<td>yes</td>
<td>120 (7.2%)</td>
<td>118 (69.4%)</td>
<td>94 (89.5%)</td>
</tr>
<tr>
<td><strong>Alcohol dependency (≥1 on Q4-6)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1621 (94.6%)</td>
<td>78 (45.9%)</td>
<td>21 (20.0%)</td>
</tr>
<tr>
<td>yes</td>
<td>92 (6.4%)</td>
<td>92 (54.1%)</td>
<td>84 (80.0%)</td>
</tr>
<tr>
<td><strong>Alcohol-related harm (≥1 on Q7-10)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>1637 (95.6%)</td>
<td>94 (55.3%)</td>
<td>34 (32.4%)</td>
</tr>
<tr>
<td>yes</td>
<td>76 (4.4%)</td>
<td>76 (44.7%)</td>
<td>71 (67.6%)</td>
</tr>
</tbody>
</table>

* Restricted to those who report having ever had sex
Table 4.3: Confirmatory Factor Analyses for the AUDIT by structure and participant sex including Cronbach’s α scores

<table>
<thead>
<tr>
<th></th>
<th>1 Factor</th>
<th>2 Factor</th>
<th>3 Factor</th>
<th>1 Factor</th>
<th>2 Factor</th>
<th>3 Factor</th>
<th>1 Factor</th>
<th>2 Factor</th>
<th>3 Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indices of Model Fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi-square statistic (df)</td>
<td>63.39 (35)</td>
<td>60.41 (34)</td>
<td>47.34 (32)</td>
<td>56.16 (35)</td>
<td>54.84 (34)</td>
<td>40.72 (32)</td>
<td>23.06 (35)</td>
<td>22.32 (34)</td>
<td>20.39 (32)</td>
</tr>
<tr>
<td>Chi-square p-value</td>
<td>p&lt;0.0001</td>
<td>p&lt;0.0001</td>
<td>p&lt;0.0001</td>
<td>p&lt;0.0001</td>
<td>p&lt;0.0001</td>
<td>p=0.002</td>
<td>p=0.262</td>
<td>p=0.276</td>
<td>p=0.2</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.032</td>
<td>0.031</td>
<td>0.028</td>
<td>0.040</td>
<td>0.040</td>
<td>0.033</td>
<td>0.012</td>
<td>0.012</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>(0.024 - 0.039)</td>
<td>(0.024 - 0.039)</td>
<td>(0.020 - 0.036)</td>
<td>(0.028 - 0.052)</td>
<td>(0.028 - 0.052)</td>
<td>(0.020 - 0.047)</td>
<td>(0.000 - 0.027)</td>
<td>(0.000 - 0.027)</td>
<td>(0.000 - 0.02)</td>
</tr>
<tr>
<td>Tucker-Lewis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NNFI</td>
<td>0.995</td>
<td>0.995</td>
<td>0.996</td>
<td>0.992</td>
<td>0.992</td>
<td>0.995</td>
<td>1.000</td>
<td>1.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Bentler CFI</td>
<td>0.998</td>
<td>0.997</td>
<td>0.997</td>
<td>0.994</td>
<td>0.994</td>
<td>0.996</td>
<td>1.000</td>
<td>1.000</td>
<td>1.00</td>
</tr>
<tr>
<td>NFI</td>
<td>0.998</td>
<td>0.998</td>
<td>0.999</td>
<td>0.996</td>
<td>0.996</td>
<td>0.997</td>
<td>1.000</td>
<td>1.000</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Cronbach's α and subscales overall and for each subscale*

| Cronbach's α               |          |          |          |          |          |          |          |          |          |
|                           | 0.85    | 0.68, 0.83 | 0.68, 0.74, 0.76 | 0.84 | 0.66, 0.82 | 0.66, 0.71, 0.76 | 0.90 | 0.75, 0.90 | 0.75, 0.86, 0.75 |

*the order of the listed α corresponds to the subscale grouping order within the AUDIT
CHAPTER 5: Risk Factors Associated with Hazardous Drinking in a Representative Sample of the Population of Northern Uganda

5.1 Background

The protracted conflict in northern Uganda between government forces and the Lord’s Resistance Army (LRA) resulted in widespread human rights violations, psychological trauma, and the dismantling of the region’s social and economic fabric (Soto, 2009; Spittal et al., 2008; World Health Organization & Republic of Uganda, 2005). By the end of the conflict, over 90% of the region’s population were living in Internally Displaced Persons (IDP) camps, and an estimated 66,000 young people had been abducted by the LRA for use as child soldiers, porters, and camp workers (Annan et al., 2006; World Health Organization & Republic of Uganda, 2005). The 2006 “Cessation of Hostilities Agreement” marked the official end of the civil war, and the region is rapidly developing with most of the population having returned to traditional homesteads (CITE). Amidst these changes, little epidemiological evidence exists to inform urgently needed interventions that address the mental, emotional, and physical health needs of conflict-affected families and communities in northern Uganda. NGOs and community leaders are concerned that increases in substance use disorders (SUD) may be hindering redevelopment efforts and exacerbating ongoing health concerns (Porter & Haslam, 2005; Roberts et al., 2011). Actions to address these concerns are hindered by the lack of research regarding alcohol use in post-conflict settings and its potentially potent interactions with mental health and HIV infection (Kerridge et al., 2016; Roberts et al., 2011).

2 This chapter is currently under review in the peer-reviewed journal Drug and Alcohol Dependence
Although alcohol use is often underreported, it is thought to contribute to approximately 4% of the global disease burden, and is often concurrent with mental health disorders as well as HIV vulnerability and infection (Naomi Breslau, 2003, 2009; PHAC, 2009; Sacco et al., 2009). The potential for these concomitant vulnerabilities is high in post-conflict settings in general and specifically in northern Uganda (Ertl et al., 2016; Horyniak et al., 2016). For example, the breakup of families and the loss of social support structures erodes accepted cultural norms that might otherwise mitigate problematic substance use (Saile, Ertl, Neuner, & Catani, 2013; Spittal et al., 2008). Conflict-affected people may also turn to alcohol as a coping mechanism for dealing with the traumas related to conflict, rapidly changing regional dynamics, and limited economic opportunities. People may also consume substances as a form of self-medication to deal with symptoms of mental distress (Khantzian, 1997; Leeies et al., 2010; Weaver & Roberts, 2010). These potentialities can heighten vulnerability for HIV through factors such as increased high-risk sexual behaviors, poor adherence to medication regimes, and intimate partner violence (Annan & Brier, 2010; Cohen et al., 2001; Fritz et al., 2010; Palfai et al., 2014; Samet, Horton, Meli, Freedberg, & Palepu, 2004). The critical need to understand these epidemiological pathways in northern Uganda are clear, as HIV prevalence was recently recorded to be as high as 12.2%, nearly double the national average for rural areas estimated at 8.3% in the 2011 Ugandan AIDS Indicator Survey (UAIS) (Malamba et al., 2016; Ugandan Ministry of Health et al., 2011). The high prevalence rate corresponds with high rates of screening for post-traumatic stress disorder (PTSD) and depression in the region, especially among those with a history of conflict-associated abduction (Malamba et al., 2016; Mugisha et al., 2015; S. Patel et al., 2013).
Alcohol use and misuse remains under-studied in sub-Saharan Africa, especially in post-conflict settings, where research often focuses on non-representative samples with uneven standardization of assessment tools (Johnson, 1996; S. C. Kalichman et al., 2007; Roberts et al., 2011; Weaver & Roberts, 2010). For northern Uganda, this is especially troublesome. After more than two decades of civil war, resettlement and rebuilding processes are occurring in a country with one of the highest-per capita alcohol consumption rates in sub-Saharan Africa (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008; WHO, 2014). For rebuilding efforts to be successful, it is critical to understand the current intersectionality of trauma-related health burdens in this population to inform actionable public health interventions.

This research sought to fill the substantial gaps in current epidemiological knowledge regarding the lingering effects of conflict and post-conflict scenarios on SUD. Specifically, it focused on exploring the potential comorbidities of hazardous drinking behaviors, mental health, and HIV in a representative sample of the population in northern Uganda.

5.2 Methods

5.2.1 Sample

The results contained in this research are part of the “Cango Lyec Project”, a five-year prospective cohort study involving conflict-affected populations living in northern Uganda. Detailed descriptions of the project’s rationale, recruitments methods, and baseline findings are reported elsewhere (Blair et al., 2016; Malamba et al., 2016). Sites in the Gulu, Amuru, and Nwoya districts which are among the Ugandan communities most affected by the conflict, were randomly selected through a two-stage stratified sampling method. Once the communities were
selected, all of the households within each were first fully mapped and enumerated in order to establish demographic profiles. A ‘take-all’ approach was then used to recruit eligible participants between the ages of 13 and 49 in proportion to each community’s demographics and size. During recruitment, trained local staff explained the purpose and scope of the study to all participants prior to obtaining written consent and assent. Staff then administered comprehensive questionnaires in the language of the participants choosing and obtained blood samples for testing. All questionnaires were translated into English and back-translated into the local Luo language by experienced Acholi research staff, and were tested in a pilot community prior to being used within the study population.

5.2.2 Measurements and Definitions

Participant questionnaires collected detailed information on socio-demographic characteristics, health-seeking behaviors, sexual histories, and experiences during the conflict. Participants were screened for depression by the Hopkins Symptom Checklist-25 (HSCL-25) using the instrumental standard and validated cutoff of an average score of ≥1.75 (American Psychiatric Association, 2000; Palmieri et al., 2007; Silove et al., 2007). Post-traumatic stress disorder (PTSD) was examined in parts I and IV of the Harvard Trauma Questionnaire (HTQ) (R. Mollica et al., 2004). Personally experiencing 12 or more events of trauma in Part I and/or an average score of two or more on Part IV were considered to indicate screening positive for PTSD (Shoeb et al., 2007; Silove et al., 2007, 2002). Both the HTQ and HSCL-25 have been previously used and validated in the region and other post-conflict settings (Fawzi et al., 1997; Kleijn et al., 2001; Roberts et al., 2008; Scholte et al., 2004; Shoeb et al., 2007). Any participant screening positive
for PTSD, depression, or a mentioning of suicidal ideation were immediately referred to local health services and closely monitored by trained staff members.

Blood samples were collected from all participants for HIV and syphilis testing. Syphilis was determined through rapid plasma regain (RPR) tests with confirmatory T. Pallidium Hemagglutination Assay (TPHA). Parallel ELISA tests were run to determine HIV status and a confirmatory Western Blot test was employed in the case of discordant ELISA results. Test results were returned to participants by trained staff members, with referrals to local health centers for those who were HIV positive. Participants with syphilis were immediately offered a single course of antibiotics for treatment.

The Alcohol Use Disorders Identification Test (AUDIT) was included in cohort questionnaires during the second year of the study and administered to all 1713 returning participants. Alcohol consumption behaviors were explored using the 2001 AUDIT Second Edition (T. Babor et al., 2001). The AUDIT was first published in 1989 and updated most recently in 2001 and is a globally accepted tool that has been successfully used in northern Uganda (Blair et al., 2016; Ertl et al., 2016; Roberts et al., 2011). It utilizes a 10-question scale that comprises the three domains of alcohol consumption (questions 1-3), alcohol dependence (questions 4-6), and related consequences (questions 7-10). The full wording of the questions are presented as part of Table 5.1. ‘Standard units’ of alcohol were defined as a single beer, a shot or sachet of Waragi (generic distilled spirits), or a large glass of traditionally brewed alcohol. The AUDIT guidelines suggest a summation score of $\geq 8$ to denote problematic drinking, and acknowledge that many researchers adjust the cutoff based on cultural, biological, and linguistic factors (T. Babor et al., 2001;
Reinert & Allen, 2007). In Uganda, research utilizing the AUDIT has varied overall and by participant sex with cutoffs ranging from ≥3 to ≥8 (Donovan & McEwan, 1995; Hahn et al., 2014; Santos et al., 2014; Tumwesigye & Kasirye, 2005; Bonnie Wandera et al., 2015). Prior to this study, a confirmatory factor analysis of the AUDIT and comparison of cutoff thresholds were undertaken within the study population (Blair et al., 2016). Findings supported the use of a ≥3 cutoff within a single 10-question factor structure for increased test sensitivity. We therefore used the ≥3 cutoff in this study as a threshold to define ‘problematic’ and ‘hazardous’ drinking behaviors.

Participants’ abduction status during the conflict was defined by a ‘yes’ versus ‘no’ answer to the question “have you ever been abducted?” Given the complexities characterizing the experiences of captivity during the conflict in northern Uganda, we use the term ‘abductee’ to refer to any participant who reported ever being abducted over the course of the civil war.

5.2.4 Analysis

All data analysis was completed using the R statistical package version 3.2.4 (R Foundation for Statistical Computing, Vienna Austria).

All analyses were sex-stratified to reflect differences in population characteristics as well as the disparate social, cultural, and tribal norms between the sexes with regard to alcohol consumption. Descriptive statistics were first calculated to summarize male and female participants’ responses to all 10 AUDIT questions. Next, bivariate tests for men and women separately assessed the relationship between a) participant characteristics, trauma experiences, sexual behaviors, and b)
health statuses and hazardous drinking behaviors as defined by a ≥3 score on the AUDIT. Statistical associations were calculated for dual categorical associations using Chi-square tests and the Fisher’s Exact test when observed cell counts were zero and/or expected counts were less than five. Continuous and categorical associations were calculated with t-tests, sign-rank, and rank-sum tests where appropriate. Unadjusted odds ratios (UOR) and 95% confidence intervals (95%CI) were calculated to report both the direction and strength of associations.

Multivariable logistic regressions were built to explore characteristics associated with problematic drinking at the ≥3 cutoff level for men and women and for subsets specific to those who were sexually active. Variables were chosen for inclusion based on their significance at the bivariate level as well as their noted importance in the empirical literature. The final model was chosen by comparing nested models using the likelihood-ratio test and non-nested models based on the lowest Bayesian Information Criteria (BIC) score.

5.2.5 Ethics

This project received ethical approval from the University of British Columbia-Providence Healthcare Research Ethics Board, the Makerere College of Health Sciences’ School of Public Health-Science Ethical Committee, and the Ugandan National Council of Science and Technology (UNCST) of the office of the President of Uganda. Following study approval by the UNCST, we received permission from Resident District Commissioners prior to the commencement of data collection.
5.3 Results

A total of 1713 baseline study participants returned for Round 2 of the study and completed follow-up questionnaires, including the AUDIT. Overall ages ranged between 14 and 52 years, representing participants aging during the course of the study, of age (median age: 28 for men, 26 for women), and a majority of the participants (56.2%) were women. Roughly a quarter (25.9%) of all participants reported being abducted at least once during the conflict, with a minority (15.7%) still living in a displacement setting. HIV tests were positive for 12.2% of participants and the proportion of participants who screened positive for depression and PTSD was 8.3% and 5.3% respectively.

Sex-stratified participant responses to the AUDIT and amalgamated alcohol-associated screening classifications are presented in Table 5.1 with unadjusted odds ratios (UOR) and 95% confidence intervals (95%CIs). Only 5.0% of women reported consuming any alcohol, compared to 14.2% of men. Among those who reported alcohol use, 2.6% of women and 19.2% of men fit the screening criteria for problematic drinking (UOR: 8.85; 95%CI: 5.82-13.99). Throughout each conceptual level of the AUDIT, men remained significantly more likely to consume alcohol and suffer alcohol related consequences than women. Men were also consistently about six times more likely to screen positive on the three sub-scales of hazardous use (UOR: 6.60; 3.73-12.63), alcohol dependency (UOR: 6.09; 95%CI: 3.65-10.74), and harmful drinking (UOR: 6.33; 95%CI: 4.02-10.40).

Table 5.2 presents bivariate sex-stratified demographic data between those with and without problematic drinking, defined as a total AUDIT score ≥3. Table 5.3 reports sex-stratified
distributions of risk factors among those participants who reported being sexually active. There were few significant bivariate associations among the women, given their small overall number. All 25 women who screened positive for problematic drinking were sexually active. They were significantly older on average than men who screened positive for problematic drinking (median: 43 vs. 28, \( p<0.001 \)), with no women in this group being under 20 years old. Women who had three or more sexual partners in their lifetime were more likely to report problematic drinking as were women with active syphilis. Protective effects against problematic drinking appeared among women who self-reported having ever been pregnant, (UOR: 0.31; 95%CI: 0.07-0.90), ever or currently being in school (UOR: 0.30; 95%CI: 0.13-0.71).

As stated, men with problematic drinking were older than women with problematic drinking (median: 34 vs. 24 years, \( p<0.001 \)). They were also more likely than women to live in displacement rather than permanent settings (UOR: 1.95; 95%CI: 1.18-3.22); to be HIV positive (UOR: 3.44; 95%CI: 2.01-5.84), and; to have syphilis (UOR: 3.50; 95%CI: 1.32-9.05). While there was no association between problematic drinking and screening positive for PTSD or depression, males with problematic drinking were more likely to have attempted suicide (UOR: 2.63; 95%CI: 1.08-6.04). In the subset of men who were sexually active, risky behaviors associated with problematic drinking included knowing only some of their sexual partners’ HIV statuses as well as having had more sexual partners in their lifetime than men who did not exhibit these behaviors (UOR: 2.17; 95%CI: 1.25-4.03) and (UOR: 5.31; 2.14-13.91).
Four multivariable logistic regressions are presented in Table 5.4, reporting the adjusted odds ratios (AOR) of the variables associated with problematic alcohol use after adjustment in both men and women, and sexually active subsets.

Among women, problematic drinking remained significantly associated with increased age (AOR: 1.10; 95%CI: 1.05-1.17) and having had three or more lifetime sexual partners (AOR 3.27; 95%CI 1.39-8.11) after adjustments. The protective effect of ever or currently being in school on problematic drinking behaviors saw confidence intervals slightly cross parity (AOR: 0.41; 95%CI: 0.17-1.03). There was no significant difference between women who self-reported as having ever been pregnant after adjustment.

In adjusted male models, high collinearity between the PTSD and depression screening variables resulted in the inclusion of only depression as a mental health indicator in order to prevent overly exaggerated confidence intervals. Among all men, problematic drinking behaviors remained significantly associated with increased age (AOR: 1.06; 95%CI 1.04-1.09), living in displacement versus permanent settings (AOR: 2.41; 95%CI: 1.37-4.22), and being married compared to being never-married (AOR: 2.25; 95%CI: 1.26-5.22). There was no difference in those in transient versus permanent settings or those who were widowed/separated/divorced and never married. There was no significant association between problematic drinking and screening for depression in men after adjustment.

In the sexually active subset of women, problematic drinking was associated with yearly increases in age (AOR: 1.10; 95%CI 1.04 1.17), and having had three or more sexual partners
during their lifetime (AOR: 3.23; 95%CI: 1.04-1.07). Similar to all women, a slightly suggestive protective effect of school appeared though confidence intervals again just crossed parity (AOR: 0.41; 95%CI 0.17-1.04).

Among men who reported being sexually active, associations with problematic drinking were present for yearly increases in age (AOR: 1.07; 95%CI: 1.04-1.10), displacement compared to permanent settings (AOR: 2.22; 95%CI: 1.23-4.00), and having been married compared to never having been married (AOR: 2.34; 95%CI: 1.14-5.08). While there was again no association between depression and problematic drinking in multivariate models of men, suicidality remained almost three times as likely (AOR: 2.91; 95%CI: 1.05-7.86) among problematic drinkers. While the association between HIV positivity and drinking status disappeared after adjustment, associations remained with known risk factors. Males with problematic drinking were more likely to have had more sexual partners over their lifetime, and men in the sexually active subset were over three times more likely to have syphilis (AOR: 3.23; 95%CI: 1.09-9.36). They were also much less likely to know their sexual partners’ HIV statuses; almost two times as likely to not know the HIV status of any of their partners (AOR: 1.95 95%CI: 1.11-3.43), and more than four times as likely to only know some of their partners’ statuses (AOR: 4.60; 95%CI: 1.74-12.66).

A history of abduction was borderline significant in its association with problematic drinking at the unadjusted level (UOR: 1.44; 95%CI: 0.98-2.11) and was seen to in fact have a protective effect once confounders were taken into account. This held true both for men overall (AOR: 0.61; 95%CI: 0.39-0.95) and for sexually active men (AOR: 0.61; 95%CI: 0.38-0.96).
5.4 Discussion

To our knowledge, this is the first study to explore the associations between substance use and the interrelated epidemics of HIV and mental health in a representative sample within a post-conflict population. Though the proportions of participants who reported alcohol use and problematic drinking were low, multivariate models for both men and women demonstrated that hazardous consumption of alcohol was significantly associated with risk factors on the causal pathways for both mental health comorbidities and HIV infection, including suicide attempts and a higher number of lifetime sexual partners. These findings demonstrate clear areas for actionable interventions and the potential for serious consequences to arise if such interventions are not undertaken.

Consistent with findings globally, men were both more likely to consume alcohol and suffer related harms compared to women (Isidore S. Obot & Room, 2005; WHO, 2014). The consequences of these gendered dynamics extend beyond the individual to family and communities. These include and often exacerbate problems already pervasive in post-conflict settings such as high levels of intimate-partner violence, increased transmission of HIV, and family-level economic instability (Ezard, 2012, 2014; Gottert et al., 2017; Tumwesigye et al., 2012). In turn, they hinder rebuilding processes, cyclically contributing to drivers of alcohol consumption (Dunnegan, 2011; Weaver & Roberts, 2010).

Overall consumption rates observed in this study (9.9%) were well below those previously estimated using the AUDIT scale in the region and elsewhere in Uganda (Ertl et al., 2016; Hahn et al., 2014; Santos et al., 2014; Bonnie Wandera et al., 2015; Weiss et al., 2016; WHO, 2014).
For example, Roberts et al. (2011) reported 17% of 1206 persons living in IDP camps screened positively for hazardous drinking, however, alcohol was widely available within this encamped population. The only other regional comparison conducted by Ertl et al. (2016) involved 669 adult guardians of second-graders, among whom 46% of the men and 1% of the women screened for problematic alcohol use. This study’s findings are limited due to significant discrepancies from regional characteristics in the sample’s age, mental health screening levels, and physical residence (Ertl et al., 2016; Malamba et al., 2016; Mugisha et al., 2015; Roberts et al., 2011).

The lower prevalence of problematic drinking reported in the present study may also be explained by the slow and uneven pace of economic and physical rebuilding in the decade since the signing of the Cessation of Hostilities Agreement (IDMC, 2014; United Nations Development Program, 2015). Coupled with a widely-dispersed population lacking significant disposable income, this has hindered alcohol distribution networks and advertising, and even where alcohol is available, consumption is likely reduced due to financial barriers (Bryden et al., 2012).

The proportions of participants who screened positive for PTSD (11.9%) and depression (14.9%) were consistent with other studies in the region. However the lack of an association between mental health and alcohol behaviors is unique as it stands in contrast with much of the empirical literature (Ezard, 2012; Stappenbeck et al., 2014; Weaver & Roberts, 2010). This suggests that the lack of association found is related to distinct characteristics of post-conflict settings, including those of alcohol use behaviors and/or interruptions of causal pathways that exist.
elsewhere (Ertl et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Roberts et al., 2011).

The lack of association between screening for depression and PTSD and alcohol in this study is perplexing given the almost three time higher likelihood of suicidality among men who reported hazardous drinking. This may result from differences between the screenings for current PTSD and depress and ever attempting suicide, suggesting that temporal factors associated with the post-conflict period may play a role. This may partially result from the regional and structural factors noted above, as limited access to alcohol may be mitigating self-medication and dose-response associations when they may otherwise occur (P. J. Brown & Wolfe, 1994; Leeies et al., 2010). The return and resettlement process itself may also inhibit the many social and cultural comorbidities associated with post-conflict alcohol-related disorders. These include depression resulting from limited economic mobility, loss of culture, and the breakdown of supportive social networks that in the extreme context of war may have led to suicide attempts (Dutton et al., 2014; P. N. Pham et al., 2009; Porter & Haslam, 2005; Roberts, Odong, et al., 2009; Roberts & Browne, 2010; Spittal et al., 2008). Together these gain support from and help explain the lingering higher rates of alcohol use and hazardous use among participants remaining in displacement settings where screening levels for PTSD and depression were likewise elevated (Malamba et al., 2016). The association between alcohol and suicidality demand further exploration especially through the use of qualitative methodology in order to meaningfully assess the impact of cultural and social stigma.
HIV remains a critical challenge for northern Uganda, and among both men and women hazardous drinking was linked to known HIV risk factors including increased lifetime sexual partners and limited awareness of partner(s) status (Drumright et al., 2004; Hanson et al., 2008; Morris & Kretzschmar, 1997). This demonstrates a clear opportunity to integrate alcohol and HIV prevention programs, especially as HIV rates in region are much higher than once thought (Malamba et al., 2016). With larger sexual networks and decreased knowledge of partner(s) HIV status among people with problematic drinking, there is a worrisome potential that left unaddressed, the alcohol-HIV relationship may contribute to a spread of HIV in the region (Drumright et al., 2004; Ghani & Garnett, 2000).

In our study we found that among women, education had a borderline protective effect on hazardous drinking. The benefits of increasing educational opportunities for women and girls are already well known, and have been recorded to be instrumental in helping decrease HIV infection (Gallant & Maticka-Tyndale, 2004; Sani et al., 2016; Spittal et al., 2008). It now appears that the positive effects may also extend to a decreased likelihood of problematic drinking. Given the low number of women in the cohort who screened for problematic drinking, or consumed alcohol in general, further research with a larger sample is recommended, and qualitative explorations should be undertaken with those women who do consume alcohol to better understand their lives.

This study demonstrated a protective effect of abduction on problematic drinking among men, underlining the complex ways in which the conflict continues to reverberate in northern Uganda. The LRA’s strict prohibitions against any substance use, including alcohol and cigarettes, were
brutally enforced (Soto, 2009; Vlassenroot & Doom, 1999). Their legacy may thus depress current alcohol use overall and especially in abductees who may otherwise be at potentially increased risk due to their higher reported personal experiences of trauma and screening levels for PTSD and depression (Malamba et al., 2016; Mugisha et al., 2015). This also demonstrates how the philosophical underpinnings of militant groups may extend into post-conflict periods and must be considered when planning interventions.

5.5 Limitations
The Cango Lyec Project and the AUDIT rely on self-reporting of behaviors that may be subject to recall and selection biases. The AUDIT also seeks to measure standard units of alcohol, a globally challenging issue as alcohol percentages per unit can vary significantly (Kerr & Stockwell, 2012). This is further compounded in areas such as northern Uganda where traditional brewed beverages are consumed via communal containers. Despite these concerns, we are confident that the presence of bias was minimized due to extensive staff training, community outreach, and explanations around individual questions during data collection process as well as prior use of the AUDIT regionally. Testing for biomarkers of hazardous drinking was beyond the scope of this study, and so caution should be taken around the exactitude of the ≥3 AUDIT score cutoff used. However, this and similar cutoffs are used frequently in Uganda and elsewhere, and its use for screening rather than diagnoses is likely to increase the tests sensitivity to capture those at risk of problematic behaviors. Issues of loss-to-follow-up within the cohort remain a concern. Analysis of those lost between rounds is ongoing, and as of writing no significant differences have been found between those remaining and those lost. It is possible that those not returning in Round 2 when the AUDIT was introduced did so due to alcohol-related harms,
which can be assessed through subsequent rounds of the study. Therefore this study would be under-estimating the prevalence of use in the region. Finally, with only 25 women reporting problematic drinking, our power was quite limited with regards to their findings.

5.6 Conclusions

The conflict that engulfed northern Uganda continues to create many challenges for those living in the region, yet it does not appear to have resulted in increased rates of harmful drinking. This is despite heightened levels of mental health disorders, HIV infection, and other STIs. Together, these findings clearly indicate that the region has a unique opportunity for proactive interventions to mitigate the future spread of problematic drinking as well as their potential impact on other causes of morbidity and mortality. The comorbid risk factors of and for alcohol disorders remain, and may only increase as the region rapidly changes and people rebuild and resettle. Actionable culturally-safe interventions are urgently required.
Table 5.1: AUDIT questions and potential answers by participant sex with unadjusted odds ratios (UOR) and 95% confidence intervals (95%CI)

<table>
<thead>
<tr>
<th>How often do you have a drink containing alcohol</th>
<th>Female n (%)</th>
<th>Male n (%)</th>
<th>Total n (%)</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>915 (95.0%)</td>
<td>561 (74.1%)</td>
<td>1,476 (85.8%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. monthly or less</td>
<td>26 (2.7%)</td>
<td>56 (7.4%)</td>
<td>82 (4.8%)</td>
<td>3.51 (2.20-5.74)</td>
</tr>
<tr>
<td>2. 2 to 4 times a month</td>
<td>14 (1.5%)</td>
<td>40 (5.3%)</td>
<td>54 (3.1%)</td>
<td>4.66 (2.57-8.94)</td>
</tr>
<tr>
<td>3. 2 to 3 times a week</td>
<td>5 (0.5%)</td>
<td>28 (3.7%)</td>
<td>33 (1.9%)</td>
<td>9.13 (3.82-27.02)</td>
</tr>
<tr>
<td>4. 4+ times a week</td>
<td>3 (0.3%)</td>
<td>72 (9.5%)</td>
<td>75 (4.4%)</td>
<td>39.14 (14.51-160.38)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many drinks containing alcohol do you have on a typical day when you are drinking</th>
<th>Female n (%)</th>
<th>Male n (%)</th>
<th>Total n (%)</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>945 (98.1%)</td>
<td>703 (92.9%)</td>
<td>1,648 (95.8%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>16 (1.7%)</td>
<td>42 (5.5%)</td>
<td>58 (3.4%)</td>
<td>3.53 (2.01-6.51)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>1 (0.1%)</td>
<td>7 (0.9%)</td>
<td>8 (0.5%)</td>
<td>9.41 (1.67-176.09)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>1 (0.1%)</td>
<td>3 (0.4%)</td>
<td>4 (0.2%)</td>
<td>4.03 (0.52-81.62)</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>0 (0.0%)</td>
<td>2 (0.3%)</td>
<td>2 (0.1%)</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you found that you were not able to stop drinking once you had started</th>
<th>Female n (%)</th>
<th>Male n (%)</th>
<th>Total n (%)</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often during the last year have you found that you were not able to stop drinking once you had started</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>948 (98.4%)</td>
<td>696 (91.9%)</td>
<td>1,644 (95.6%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>8 (0.8%)</td>
<td>24 (3.2%)</td>
<td>32 (1.9%)</td>
<td>4.08 (1.90-9.76)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>5 (0.5%)</td>
<td>15 (2.0%)</td>
<td>20 (1.2%)</td>
<td>4.09 (1.58-12.61)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>0 (0.0%)</td>
<td>7 (0.9%)</td>
<td>7 (0.4%)</td>
<td>-</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>2 (0.2%)</td>
<td>15 (2.0%)</td>
<td>17 (1.0%)</td>
<td>10.22 (2.87-64.96)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How often during the last year have you failed to do what was normally expected from you because of drinking</th>
<th>Female n (%)</th>
<th>Male n (%)</th>
<th>Total n (%)</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often during the last year have you failed to do what was normally expected from you because of drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>952 (98.9%)</td>
<td>712 (94.1%)</td>
<td>1,664 (96.7%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>6 (0.6%)</td>
<td>17 (2.2%)</td>
<td>23 (1.3%)</td>
<td>3.79 (1.57-10.54)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>3 (0.3%)</td>
<td>17 (2.2%)</td>
<td>20 (1.2%)</td>
<td>7.58 (2.53-32.54)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>1 (0.1%)</td>
<td>7 (0.9%)</td>
<td>8 (0.5%)</td>
<td>9.36 (1.66-175.15)</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>1 (0.1%)</td>
<td>4 (0.5%)</td>
<td>5 (0.3%)</td>
<td>5.35 (0.79-104.75)</td>
</tr>
</tbody>
</table>

152
<table>
<thead>
<tr>
<th></th>
<th>Female n (%)</th>
<th>Male n (%)</th>
<th>Total n (%)</th>
<th>UOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How often during the last year</strong></td>
<td></td>
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<tr>
<td>have you needed a first drink in</td>
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<tr>
<td>the morning to get yourself going</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>after a heavy drinking session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>954 (99.1%)</td>
<td>737 (97.4%)</td>
<td>1,691 (98.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>6 (0.6%)</td>
<td>7 (0.9%)</td>
<td>13 (0.8%)</td>
<td>1.51 (0.50-4.71)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>2 (0.2%)</td>
<td>3 (0.4%)</td>
<td>5 (0.3%)</td>
<td>1.94 (0.32-14.77)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>1 (0.1%)</td>
<td>4 (0.5%)</td>
<td>5 (0.3%)</td>
<td>5.18 (0.76-101.40)</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>0 (0.0%)</td>
<td>6 (0.8%)</td>
<td>6 (0.3%)</td>
<td>-</td>
</tr>
<tr>
<td><strong>How often during the last year</strong></td>
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<tr>
<td>have you had a feeling of guilt</td>
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<tr>
<td>or remorse after drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>954 (99.1%)</td>
<td>720 (95.1%)</td>
<td>1,674 (97.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>5 (0.5%)</td>
<td>16 (2.1%)</td>
<td>21 (1.2%)</td>
<td>4.24 (1.65-13.01)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>2 (0.2%)</td>
<td>9 (1.2%)</td>
<td>11 (0.6%)</td>
<td>5.96 (1.53-39.19)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>0 (0.0%)</td>
<td>5 (0.7%)</td>
<td>5 (0.3%)</td>
<td>-</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>2 (0.2%)</td>
<td>7 (0.9%)</td>
<td>9 (0.5%)</td>
<td>4.64 (1.12-31.19)</td>
</tr>
<tr>
<td><strong>How often during the last year</strong></td>
<td></td>
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<tr>
<td>have you been unable to</td>
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<tr>
<td>remember what happened the</td>
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<td></td>
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<tr>
<td>night before because you had</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>been drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. never</td>
<td>954 (99.1%)</td>
<td>720 (95.1%)</td>
<td>1,674 (97.3%)</td>
<td>ref.</td>
</tr>
<tr>
<td>1. less than monthly</td>
<td>3 (0.3%)</td>
<td>15 (2.0%)</td>
<td>18 (1.0%)</td>
<td>6.63 (2.18-28.68)</td>
</tr>
<tr>
<td>2. monthly</td>
<td>4 (0.4%)</td>
<td>10 (1.3%)</td>
<td>14 (0.8%)</td>
<td>3.31 (1.10-12.11)</td>
</tr>
<tr>
<td>3. weekly</td>
<td>0 (0.0%)</td>
<td>7 (0.9%)</td>
<td>7 (0.4%)</td>
<td>-</td>
</tr>
<tr>
<td>4. daily or almost daily</td>
<td>2 (0.2%)</td>
<td>5 (0.7%)</td>
<td>7 (0.4%)</td>
<td>3.31 (7.12-23.18)</td>
</tr>
<tr>
<td><strong>Have you or someone else been</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>injured as a result of your</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>drinking</td>
<td></td>
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</tr>
<tr>
<td>0. no</td>
<td>959 (99.6%)</td>
<td>735 (97.1%)</td>
<td>1,694 (98.5%)</td>
<td>ref.</td>
</tr>
<tr>
<td>2. yes but not in last year</td>
<td>3 (0.3%)</td>
<td>11 (1.5%)</td>
<td>14 (0.8%)</td>
<td>4.78 (1.49-21.21)</td>
</tr>
<tr>
<td>4. yes in the last year</td>
<td>1 (0.1%)</td>
<td>11 (1.5%)</td>
<td>12 (0.7%)</td>
<td>14.35 (2.78-262.66)</td>
</tr>
<tr>
<td><strong>Has a relative, friend, doctor</strong></td>
<td></td>
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<tr>
<td>or another health worker been</td>
<td></td>
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</tr>
<tr>
<td>concerned about your drinking</td>
<td></td>
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<tr>
<td>or suggested you cut down</td>
<td></td>
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</tr>
<tr>
<td>0. no</td>
<td>958 (99.5%)</td>
<td>717 (94.7%)</td>
<td>1,675 (97.4%)</td>
<td>ref.</td>
</tr>
<tr>
<td>2. yes but not in last year</td>
<td>3 (0.3%)</td>
<td>16 (2.1%)</td>
<td>19 (1.1%)</td>
<td>7.13 (2.26-30.72)</td>
</tr>
<tr>
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<td>2 (0.2%)</td>
<td>24 (3.2%)</td>
<td>26 (1.5%)</td>
<td>16.03 (4.74-99.98)</td>
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<td><strong>Score of 3 or more (Problematic drinking cutoff)</strong></td>
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<td>no</td>
<td>932 (97.4%)</td>
<td>611 (80.8%)</td>
<td>1,543 (90.1%)</td>
<td>ref.</td>
</tr>
<tr>
<td>yes</td>
<td>25 (2.6%)</td>
<td>145 (19.2%)</td>
<td>170 (9.9%)</td>
<td>8.85 (5.82-13.99)</td>
</tr>
<tr>
<td></td>
<td>Female n (%)</td>
<td>Male n(%)</td>
<td>Total n(%)</td>
<td>UOR (95%CI)</td>
</tr>
<tr>
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<td>--------------</td>
<td>-----------</td>
<td>------------</td>
<td>-------------</td>
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<tr>
<td><strong>Hazardous use</strong>*</td>
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<tr>
<td>no</td>
<td>935 (97.7%)</td>
<td>658 (87.0%)</td>
<td>1,593 (93.0%)</td>
<td>ref.</td>
</tr>
<tr>
<td>yes</td>
<td>22 (2.3%)</td>
<td>98 (13.0%)</td>
<td>120 (7.0%)</td>
<td>6.60 (3.73-12.63)</td>
</tr>
<tr>
<td><strong>Alcohol dependency</strong>*</td>
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<tr>
<td>no</td>
<td>940 (98.2%)</td>
<td>681 (90.1%)</td>
<td>1,621 (94.6%)</td>
<td>ref.</td>
</tr>
<tr>
<td>yes</td>
<td>17 (1.8%)</td>
<td>75 (9.9%)</td>
<td>92 (5.4%)</td>
<td>6.09 (3.65-10.74)</td>
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<td><strong>Harmful drinking</strong>*</td>
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<td>693 (91.7%)</td>
<td>1,637 (95.6%)</td>
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<tr>
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<td>13 (1.4%)</td>
<td>63 (8.3%)</td>
<td>76 (4.4%)</td>
<td>6.33 (4.02-10.40)</td>
</tr>
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</table>

* Designations as defined by AUDIT 2001 guidelines
Table 5.2: Participant demographics by drinking status (AUDIT score ≥3) with unadjusted odds ratios (UOR) and 95% confidence intervals (95%CI)

<table>
<thead>
<tr>
<th>Women</th>
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<tr>
<td></td>
<td>Screened for Problematic Drinking*</td>
<td>yes</td>
<td>Total</td>
<td>n (%)</td>
<td>UOR (95%CI)</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 (2.6%)</td>
<td>957 (100%)</td>
<td></td>
<td></td>
<td>145 (19.2%)</td>
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<tr>
<td></td>
<td>Median age in years (IQR)</td>
<td>43 (34-46)</td>
<td>28 (21-36)</td>
<td>1.13 (1.08-1.19)</td>
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<td>34 (27-40)</td>
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<td>Age Group</td>
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<td>13-19</td>
<td>0 (0.0%)</td>
<td>192 (20.1%)</td>
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<td>2 (1.4%)</td>
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<td>20-24</td>
<td>3 (12.0%)</td>
<td>150 (15.7%)</td>
<td></td>
<td>ref</td>
<td>18 (12.4%)</td>
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<td>25-29</td>
<td>1 (4.0%)</td>
<td>187 (19.5%)</td>
<td>0.26 (0.01-2.08)</td>
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<td>1.00 (0.18-5.48)</td>
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<td>108 (11.3%)</td>
<td>1.88 (0.41-9.73)</td>
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<td>40-44</td>
<td>3 (12.0%)</td>
<td>91 (9.5%)</td>
<td>1.67 (0.30-9.20)</td>
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<td>22 (15.2%)</td>
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<tr>
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<td>45-49</td>
<td>10 (40.0%)</td>
<td>71 (7.4%)</td>
<td>8.03 (2.36-36.75)</td>
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<td>15 (10.3%)</td>
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<td>50+</td>
<td>1/10/17</td>
<td>8 (0.8%)</td>
<td>7.00 (0.32-63.49)</td>
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<td>3 (2.1%)</td>
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<td></td>
<td>Amuru</td>
<td>10 (40.0%)</td>
<td>255 (26.6%)</td>
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<td>50 (34.5%)</td>
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<td>Gulu</td>
<td>12 (48.0%)</td>
<td>495 (51.7%)</td>
<td>0.61 (0.26-1.46)</td>
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<td>Nwoya</td>
<td>3 (12.0%)</td>
<td>207 (21.6%)</td>
<td>0.36 (0.08-1.20)</td>
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<td></td>
<td>permanent</td>
<td>9 (36.0%)</td>
<td>453 (47.3%)</td>
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<td>ref</td>
<td>48 (33.1%)</td>
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<td>displaced</td>
<td>7 (28.0%)</td>
<td>145 (15.2%)</td>
<td>2.50 (0.88-6.84)</td>
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<td>34 (23.4%)</td>
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<tr>
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<td>transient</td>
<td>9 (36.0%)</td>
<td>359 (37.5%)</td>
<td>1.27 (0.49-3.28)</td>
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<td>63 (43.4%)</td>
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<tr>
<td></td>
<td>Ever abducted</td>
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<td>no</td>
<td>16 (64.0%)</td>
<td>731 (76.4%)</td>
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<td>ref</td>
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<td>226 (23.6%)</td>
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<td>Marital status</td>
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<td></td>
<td>Never married</td>
<td>6 (24.0%)</td>
<td>280 (29.3%)</td>
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<td>ref</td>
<td>14 (9.7%)</td>
</tr>
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<td>married</td>
<td>17 (68.0%)</td>
<td>617 (64.5%)</td>
<td>1.29 (0.53-3.62)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>wid/sep/div</td>
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<td>60 (6.3%)</td>
<td>1.57 (0.23-7.03)</td>
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<td>5 (3.4%)</td>
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<td>Ever or currently in school</td>
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<tr>
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<td>142 (14.8%)</td>
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<td>ref</td>
<td>1 (0.7%)</td>
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<tr>
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<td>16 (64.0%)</td>
<td>815 (85.2%)</td>
<td>0.30 (0.13-0.71)</td>
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<td>144 (99.3%)</td>
</tr>
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<td>Highest education level attained</td>
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<td></td>
<td>Men Screened for Problematic Drinking*</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------------------</td>
<td>---------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>Total</td>
<td>UOR (95%CI)</td>
<td>n (%)</td>
<td>Total</td>
<td>UOR (95%CI)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>yes</td>
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<td>primary</td>
<td>14 (56.0%)</td>
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<td>82 (56.6%)</td>
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<td>secondary</td>
<td>0 (0.0%)</td>
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<td>242 (32.0%)</td>
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<td>tertiary/university</td>
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<td>-</td>
<td>12 (8.3%)</td>
<td>62 (8.2%)</td>
<td>0.95 (0.46-1.81)</td>
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<td>23 (2.4%)</td>
<td>4.07 (0.61-15.85)</td>
<td>10 (6.9%)</td>
<td>40 (5.3%)</td>
<td>1.32 (0.59-2.72)</td>
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<td>9 (36.0%)</td>
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<td>2.89 (1.18-6.73)</td>
<td>1 (0.7%)</td>
<td>6 (0.8%)</td>
<td>0.79 (0.04-4.99)</td>
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<td>ref</td>
<td>18 (12.4%)</td>
<td>120 (15.9%)</td>
<td>ref</td>
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<tr>
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<td>21 (84.0%)</td>
<td>896 (93.6%)</td>
<td>0.34 (0.13-1.20)</td>
<td>127 (87.6%)</td>
<td>636 (84.1%)</td>
<td>1.41 (0.84-2.49)</td>
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<td>118 (81.4%)</td>
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<td>65 (8.6%)</td>
<td>3.44 (2.01-5.84)</td>
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<td>1 (0.1%)</td>
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<td>-</td>
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<td>1 (0.1%)</td>
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<td>21 (84.0%)</td>
<td>902 (94.3%)</td>
<td>ref</td>
<td>137 (94.5%)</td>
<td>737 (97.5%)</td>
<td>ref</td>
</tr>
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<td>Positive</td>
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<td>51 (5.3%)</td>
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<td>8 (5.5%)</td>
<td>18 (2.4%)</td>
<td>3.50 (1.32-9.05)</td>
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<td>1 (0.1%)</td>
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<td>no</td>
<td>23 (92.0%)</td>
<td>897 (93.7%)</td>
<td>ref</td>
<td>138 (95.2%)</td>
<td>720 (95.2%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>2 (8.0%)</td>
<td>57 (6.0%)</td>
<td>1.38 (0.22-4.84)</td>
<td>7 (4.8%)</td>
<td>34 (4.5%)</td>
<td>1.09 (0.43-2.43)</td>
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<td>900 (94.0%)</td>
<td>ref</td>
<td>127 (87.6%)</td>
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<td>ref</td>
<td>132 (91.0%)</td>
<td>701 (92.7%)</td>
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<td>3 (12.0%)</td>
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<td>1.32 (0.31-3.91)</td>
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<td>2 (0.3%)</td>
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<tr>
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<td>Women Screened for Problematic Drinking*</td>
<td>Men Screened for Problematic Drinking*</td>
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<tr>
<td></td>
<td>yes</td>
<td>Total</td>
<td>UOR (95%CI)</td>
<td>yes</td>
<td>Total</td>
<td>UOR (95%CI)</td>
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<td>Ever attempted suicide</td>
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<tr>
<td>no</td>
<td>23 (92.0%)</td>
<td>887 (92.7%)</td>
<td>ref</td>
<td>136 (93.8%)</td>
<td>732 (96.8%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>2 (8.0%)</td>
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<td>1.10 (0.17-3.84)</td>
<td>9 (6.2%)</td>
<td>24 (3.2%)</td>
<td>2.63 (1.08-6.04)</td>
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<td>Ever sexually abused or raped</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>22 (88.0%)</td>
<td>811 (84.7%)</td>
<td>ref</td>
<td>143 (98.6%)</td>
<td>752 (99.5%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>3 (12.0%)</td>
<td>146 (15.3%)</td>
<td>0.75 (0.18-2.21)</td>
<td>2 (1.4%)</td>
<td>4 (0.5%)</td>
<td>4.26 (0.51-35.74)</td>
</tr>
<tr>
<td>Physically abused by a recent partner in last 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>18 (72.0%)</td>
<td>800 (83.6%)</td>
<td>ref</td>
<td>97 (66.9%)</td>
<td>622 (82.3%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>7 (28.0%)</td>
<td>157 (16.4%)</td>
<td>2.03 (0.78-4.74)</td>
<td>48 (33.1%)</td>
<td>134 (17.7%)</td>
<td>3.02 (1.99-4.56)</td>
</tr>
<tr>
<td>Forced into a sexual act by a recent partner in last 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>23 (92.0%)</td>
<td>931 (97.3%)</td>
<td>ref</td>
<td>141 (97.2%)</td>
<td>746 (98.7%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>2 (8.0%)</td>
<td>26 (2.7%)</td>
<td>3.29 (0.51-12.03)</td>
<td>4 (2.8%)</td>
<td>10 (1.3%)</td>
<td>2.86 (0.72-10.15)</td>
</tr>
<tr>
<td>Ever had sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>0 (0.0%)</td>
<td>139 (14.5%)</td>
<td>ref</td>
<td>1 (0.7%)</td>
<td>142 (18.8%)</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>25 (100.0%)</td>
<td>818 (85.5%)</td>
<td>-</td>
<td>144 (99.3%)</td>
<td>614 (81.2%)</td>
<td>43.20 (9.55-763.32)</td>
</tr>
</tbody>
</table>

Table 5.3: Demographics for sexually-active participants by drinking status (AUDIT score ≥3) with unadjusted odds ratios (UOR) and 95% confidence intervals (95%CI)
<table>
<thead>
<tr>
<th></th>
<th>Women Screened for Problematic Drinking*</th>
<th>Men Screened for Problematic Drinking*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes n (%)                  Total n (%)     UOR (95%CI)</td>
<td></td>
</tr>
<tr>
<td>Number of partners last 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>24 (96.0%)                 793 (96.9%)     ref</td>
<td></td>
</tr>
<tr>
<td>two</td>
<td>1 (4.0%)                   14 (1.7%)      2.52 (0.14-13.53)</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>0 (0.0%)                   3 (0.4%)       -</td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>0 (0.0%)                   8 (1.0%)       -</td>
<td></td>
</tr>
<tr>
<td>Participated in dry sex in last 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>15 (60.0%)                 427 (52.2%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>10 (40.0%)                 384 (46.9%)     1.10 (0.49-2.55)</td>
<td></td>
</tr>
<tr>
<td>no response</td>
<td>7 (0.9%)                   0 (0.0%)       -</td>
<td></td>
</tr>
<tr>
<td>Exchanged food, gifts, or money for sex in last 6mo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>25 (100.0%)                809 (98.9%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>0 (0.0%)                   9 (1.1%)       -</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0 (0.0%)                   5 (0.6%)       -</td>
<td></td>
</tr>
<tr>
<td>Had any STI other than HIV or syphilis in the last 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>15 (60.0%)                 531 (64.9%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>10 (40.0%)                 287 (35.1%)     1.24 (0.53-2.77)</td>
<td></td>
</tr>
<tr>
<td>Any STI currently other than HIV or syphilis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>21 (84.0%)                 673 (82.3%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>4 (16.0%)                  145 (17.7%)     0.88 (0.25-2.36)</td>
<td></td>
</tr>
<tr>
<td>Informed your recent sexual partners of your STI status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>3 (30.0%)                  124 (41.1%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>7 (70.0%)                  176 (58.3%)     1.67 (0.45-7.87)</td>
<td></td>
</tr>
<tr>
<td>Always used a condom with ALL recent partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>24 (96.0%)                 759 (92.8%)     ref</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>1 (4.0%)                   59 (7.2%)      0.53 (0.03-2.57)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>77 (53.5%)                 354 (57.7%)     ref</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>44 (30.6%)                 165 (26.9%)     1.31 (0.85-2.00)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22 (15.3%)                 77 (12.5%)      1.44 (0.81-2.48)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1 (0.7%)                   18 (2.9%)      0.21 (0.01-1.06)</td>
<td></td>
</tr>
</tbody>
</table>

158
<table>
<thead>
<tr>
<th>Do you know your partner(s) HIV status</th>
<th>Women Screened for Problematic Drinking*</th>
<th>Women Screened for Problematic Drinking*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes n (%)</td>
<td>Total n (%)</td>
</tr>
<tr>
<td>yes for all partners</td>
<td>13 (52.0%)</td>
<td>431 (52.7%)</td>
</tr>
<tr>
<td>yes for some</td>
<td>1 (4.0%)</td>
<td>26 (3.2%)</td>
</tr>
<tr>
<td>dont know for any</td>
<td>11 (44.0%)</td>
<td>350 (42.8%)</td>
</tr>
<tr>
<td>declined to answer</td>
<td>0 (0.0%)</td>
<td>11 (1.3%)</td>
</tr>
</tbody>
</table>

| How many children do you have         |                          |                          |
|                                       |                                |                          |
| 0                                     | 22 (88.0%) | 580 (70.9%) | ref        | 13 (9.0%) | 164 (26.7%) | ref        |
| 1 to 2                                 | 1 (4.0%)  | 85 (10.4%)  | 0.30 (0.02-1.47) | 37 (25.7%) | 150 (24.4%) | 3.80 (1.98-7.74) |
| 3 to 4                                 | 0 (0.0%)  | 87 (10.6%)  | -          | 31 (21.5%) | 102 (16.6%) | 5.07 (2.55-10.59) |
| 5 to 6                                 | 2 (8.0%)  | 51 (6.2%)   | 1.04 (0.16-3.66) | 31 (21.5%) | 96 (15.6%)  | 5.54 (2.78-11.61) |
| 7+                                    | 0 (0.0%)  | 15 (1.8%)   | -          | 32 (22.2%) | 102 (16.6%) | 5.31 (2.68-11.07) |

| Have you ever been pregnant           |                                |                                |
|                                       | no                          | yes                          |                                |                                |
|                                       | 22 (88.0%) | 572 (69.9%) | ref        | -            | -            |                                |
|                                       | 3 (12.0%)  | 246 (30.1%) | 0.31 (0.07-0.90) | -            | -            |                                |

| How many times have you been pregnant | Median (IQR) | P=0.55 |                                | Median (IQR) | P=0.53 |                                |
|                                       | 5.0 (4.0-5.5) | 4.0 (2.0-6.0) |                                | 5.0 (3.5-5.5) | 3.0 (2.0-5.0) |                                |

*Based on an AUDIT score of three or more
Table 5.4: Multivariate logistic regression results for variables associated with problematic drinking including adjusted odds ratios (AOR) and 95% confidence intervals (95%CI) with problematic drinking coded as 1 and non-problematic drinking 0.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All AOR (95%CI)</th>
<th>Sexually active AOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly increase in age</td>
<td>1.10 (1.05-1.17)</td>
<td>1.10 (1.04-1.17)</td>
</tr>
<tr>
<td>Ever or currently in school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>0.41 (0.17-1.03)</td>
<td>0.41 (0.17-1.04)</td>
</tr>
<tr>
<td>Total lifetime sexual partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1 to 2</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>3+</td>
<td>3.27 (1.39-8.11)</td>
<td>3.20 (1.36-7.95)</td>
</tr>
<tr>
<td>Ever pregnant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>-</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>-</td>
<td>0.71 (0.16-7.95)</td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly increase in age</td>
<td>1.06 (1.04-1.09)</td>
<td>1.07 (1.04-1.10)</td>
</tr>
<tr>
<td>Community type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>permanent</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>displaced</td>
<td>2.41 (1.37-4.22)</td>
<td>2.22 (1.23-4.00)</td>
</tr>
<tr>
<td>transient</td>
<td>1.34 (0.85-2.12)</td>
<td>1.43 (0.90-2.31)</td>
</tr>
<tr>
<td>Ever abducted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>0.61 (0.39-0.95)</td>
<td>0.61 (0.38-0.96)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>married</td>
<td>2.25 (1.26-5.22)</td>
<td>2.34 (1.14-5.08)</td>
</tr>
<tr>
<td>wid/sep/div</td>
<td>3.24 (0.84-11.34)</td>
<td>2.73 (0.69-9.95)</td>
</tr>
<tr>
<td>HIV status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Positive</td>
<td>1.62 (0.89-2.89)</td>
<td>1.22 (0.65-2.25)</td>
</tr>
<tr>
<td>Screen for depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>1.01 (0.47-2.05)</td>
<td>0.89 (0.41-1.86)</td>
</tr>
<tr>
<td>Ever attempted suicide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>2.32 (0.86-6.09)</td>
<td>2.91 (1.05-7.86)</td>
</tr>
<tr>
<td>Total lifetime sexual partners</td>
<td>All AOR (95%CI)</td>
<td>Sexually active AOR (95%CI)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>0</td>
<td>ref</td>
<td>-</td>
</tr>
<tr>
<td>1 to 2</td>
<td>2.67 (0.78-12.33)</td>
<td>ref</td>
</tr>
<tr>
<td>3+</td>
<td>4.26 (1.38-18.71)</td>
<td>1.58 (0.84-3.13)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you know your partner(s) HIV status</th>
<th>All AOR (95%CI)</th>
<th>Sexually active AOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes for all partners</td>
<td>-</td>
<td>ref</td>
</tr>
<tr>
<td>yes for some</td>
<td>-</td>
<td>4.60 (1.74-12.66)</td>
</tr>
<tr>
<td>dont know for any</td>
<td>-</td>
<td>1.95 (1.11-3.43)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Active syphilis</th>
<th>All AOR (95%CI)</th>
<th>Sexually active AOR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>-</td>
<td>ref</td>
</tr>
<tr>
<td>yes</td>
<td>-</td>
<td>3.23 (1.09-9.36)</td>
</tr>
</tbody>
</table>
CHAPTER 6: Qualitative Results “This War has Brought a lot of Bad Things in Our Land and it has Destroyed Our Culture.”

6.1 Background

Assessing the extent and impact of substance use disorders (SUD) in developing regions of sub-Saharan Africa is difficult at best, and doing so in conflict and post-conflict settings is harder still due to inherent instability (Carrier & Klantschnig, 2012; Thoumi, 2005). This is particularly troubling given that scholars who study the health of populations during and after conflict continue to note a dearth of information regarding the relationship between associated traumas, HIV vulnerability, and SUD within the context of war and forced migration (Naomi Breslau, 2003, 2009; Davies, Borland, Blake, & West, 2011; Sacco et al., 2009; Siriwardhana & Stewart, 2013). Such information is critical to planning effective interventions that serve the needs and interests of conflict-affected persons and communities. Such is the case in northern Uganda, which is now reemerging after over two decades of civil war. During that time, the region’s social and economic fabric was almost completely destroyed and over 90% of its population was displaced from their homes (Annan et al., 2006; Soto, 2009; World Health Organization & Republic of Uganda, 2005).

Since the Cessation of Hostilities Agreement in 2006, northern Uganda has developed rapidly and reports indicate that national and regional healthcare systems are under-resourced and struggling to keep up with the complex needs of the population. Among other causal challenges, this is often attributed to a lack of knowledge about the health impacts and drivers of HIV (IDMC, 2014; IDMP & Norwegian Refugee Council, 2009; McElroy et al., 2012). While the drivers of many of the health burdens in this region may be not well understood, their
consequences are becoming clear. Recent research in Uganda suggests that the scope of the HIV epidemic in the northern region is much larger than previously thought, with prevalence reaching 12.2% in a representative sample of the population and upwards of 20% for adult women (Malamba et al., 2016; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). At the same time, the most recently available data on mental health indicators, including screening levels for PTSD (11.9%) and depression (14.9%) are consistent with prior studies in the region. This suggests that despite significant research and reporting on PTSD and depression, efforts to meaningfully address the mental health needs of the population have not had widespread success (Ertl et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Roberts et al., 2011).

Though substance use potentially plays a significant role in mental health and HIV-related vulnerabilities, there remains a paucity of data on it throughout northern Uganda. This is despite the fact that NGOs and community leaders have continually expressed concerns about the scope and subsequent impacts of substance use in the population (Hanson et al., 2008; Johnson, 1996; Morris & Kretzschmar, 1997; Mutto et al., 2010; S. Patel, Schechter, Sewankambo, Atim, Lakor, et al., 2014; SMEC, 2005; UNHCR et al., 2008; Weaver & Roberts, 2010). Especially at risk are young Acholi men and women, who will play a critical role in the success or failure of rebuilding efforts in northern Uganda, including and perhaps most importantly the reestablishment of healthy cultural norms and traditional behaviors. Many of these young people grew up knowing no other life other than conflict and displacement, and yet they are expected to become active members in the rebuilding efforts. Problematically, these young people already carry a disproportionate burden of many of the conflict- and post-conflict-associated vulnerabilities that
may limit their willingness or ability to participate in such efforts (Derluyn et al., 2004; Malamba et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Lakor, et al., 2014; S. H. Patel et al., 2012; Spittal et al., 2008).

For programs aimed at addressing the health needs of populations in post-conflict settings to succeed, they need to not only identify the pertinent objective risk factors and disease profiles, but also understand populations’ realities and cultural traditions. For instance, health prevention strategies often focus on the choice and adaptation of individual behavioral practices to limit possibilities for exposure to transmittable diseases. Although such strategies are laudable, to be efficacious they must address the underlying structural factors that can limit individual choice in the first place, such as gender roles, internalized and externalized stigmas, and poverty (H Muyinda et al., 1997; UNAIDS & NAFOPHANU, 2013; M. J. Westerhaus et al., 2007). Findings from non-conflict settings have already demonstrated that such community-based, culturally sensitive interventions effectively address concurrent mental health, HIV, and SUD risk, suggesting that they have the potential to do likewise in conflict and post-conflict settings (T F Babor & Higgins-Biddle, 2000; Thomas F Babor & Higgins-Biddle, 2001; Cedar Project Partnership et al., 2008; Ezard, 2014; Pearce et al., 2015; Spittal et al., 2008). Combined epidemiological methodologies are also critical to understanding vulnerability and trauma, especially in previously un-studied or under-studied settings (Morgan, 2007; Punch, 2014; M. Westerhaus, 2007). Quantitative methodologies, including validated scales and diagnostic tests, can provide a more objective population-level backdrop in which to contextualize qualitative inquiries, which in turn can inform the development and implementation of behavior change interventions and health promotion programs.
6.2 Conceptual Framework

A framework for risk assessment first developed by Mock et al. (2004) exploring the relationship between HIV and conflict provides a helpful conceptual starting point that can similarly be applied to SUD and mental health disorders. Mock et al. propose that many changes in risk profiles are dependent on situational changes that simultaneously elevate both population-level vulnerabilities (i.e. poverty, malnutrition, limited health services) and risks for exposure to HIV (i.e. mobile populations, increased sexual violence, interaction with high-risk groups) (Mock et al., 2004). Kerridge et. al (2016) expand on the work of Mock et al. (2004) in arguing that research addressing conflict and post-conflict associated risks need to not only take into account the complex ways in which associated vulnerabilities and opportunities for exposure to diseases interact with each other, but also to consider issues related to temporal changes that affect these interactions (i.e. baseline prevalence of disease, destruction of infrastructure, shifting cultural and social norms and support structures) (Kerridge et al., 2016). Such an approach allows for the acknowledgment of the role of baseline risk factors present in a region, risk factors newly introduced by conflict, and the specific trajectories of each factor on its own and in the presence of others. This is critical for assessing the health of populations as they transition from conflict to post-conflict settings in which situational factors – particularly the cessation of fighting – can result in drastic shifts involving the presence or absence of vulnerabilities and opportunities for exposure to diseases.
The approaches mentioned above have provided us with an untested framework (Fig 6.1) in which to situate the initial stages of inquiry and interpretation for this study, which will enable us to better understand the complex web of conflict, trauma, substance use, and HIV infection.

Figure 6.1: Untested theoretical framework of exposure opportunity and vulnerabilities for HIV and SUD over time in conflict-associated settings adapted from Mock (2004) and Kerridge (2016)

6.3 Study Methods

6.3.1 Study setting and background

The qualitative research portion of this study was conducted in partnership with the larger CLP Cohort, a five-year study of conflict-affected populations living in northern Uganda. The overall scope, aims, and rationale of the CLP are described in detail in Chapter 3 and published elsewhere (Blair et al., 2016; Malamba et al., 2016). Briefly, the study mapped and enumerated population centers in the Gulu, Amuru, and Nwoya districts, randomly selecting three centers in each for participant recruitment. Research staff then used a ‘take-all’ approach to recruit 2449
eligible participants, aged 13-49 years old. During the second round of the CLP, when the qualitative portion of the research occurred, participants who were returning as part of their follow up (n=1713) were asked addition questions about substance use via the AUDIT (T. Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). To account for loss due to follow up, the cohort replenished the sample from eligible participants in each community.

6.3.2 Eligibility Criteria

Because the impact of substance use on conflict-associated HIV and mental health risks is understudied, this dissertation employed non-random, purposeful sampling for its qualitative in-depth interview component (Roberts & Ezard, 2015; Weaver & Roberts, 2010). This approach was chosen in order to capture a diverse set of narratives across differing socio-demographic spectrums in a manner that would reflect both wider themes and individual- or group-level sub-themes with the overall aim of achieving a thematic saturation within the research scope of the study (King & Horrocks, 2010; Punch, 2014). The approach ensured the inclusion of participants within each district (Gulu, Amuru, and Nwoya) and setting (permanent, transient, displacement). It included those with hazardous drinking behaviors, and of those who had experienced abduction during the conflict. Additionally, people who are HIV-positive within the CLP cohort were specifically sought out in order to ensure that their voices were represented. The life stories of conflict-affected persons who are HIV-positive and/or have recently been infected are critical sources of information for better understanding experiences of HIV risk as well as HIV behavior management, risk minimization and vulnerability amongst this population. All of the subsample groups were identified through participants’ responses to the quantitative questionnaires at baseline, and during follow-up interviews. HIV positive participants were identified by their
yearly blood samples. Both participants and research staff were blinded to the participant selection process, including HIV positivity and substance use behavior. The qualitative sample was comprised of 30 participants (15 males and 15 females) who were selected for in-depth interviews. A summary of qualitative participant demographics is presented in the results section below, and a summary for all study participants is presented in Chapters 4 and 5.

6.3.3 Interview process

Interviews were conducted between December 2013 and May 2014 and lasted between 20 minutes and just under two hours. Participants were approached by trained research staff fluent in the Acholi Luo language who explained the purpose of the study and sought written consent prior to conducting interviews. A copy of the consent form is given in Appendix A. The consenting procedure was comprised of two stages, and was individually administered by the trained interviewers who could answer any study specific questions not covered in the consent forms. First, the head of household was asked for permission to enroll eligible household members if possible. Adults over 17 years of age were asked to provide their written consent on standardized forms via signature, or thumbprint. Emancipated minors, who are defined as between 15 and 17 years of age who are heads of households or who live independently, were asked to provide individual informed consent on the written forms. Unemancipated minors (persons aged 13-17 living with a parent or guardian) were asked to provide individual informed assent via signature or thumbprint, and their enrolment was also contingent on their parents’ or guardians’ written consent. If the parent or guardian consented but the minor did not provide assent, that minor was not enrolled. All participants received a copy of the consent form that included contact information for
the candidate, CLP project PIs, and both Ugandan and Canadian IRB-approving institutions, should any questions or concerns arise. A second signed copy of all consent forms was kept by the study team in a secure location to protect participant privacy. Given the anticipated duration of the interviews (>20 minutes and <2 hours) participants received remuneration of ~$2.50 USD (~6000 Ugandan Schillings) to compensate them for the time devoted to participation in the study. As requested by the Makerere University Ethics committee, the remuneration occurred following the provision of consent for an interview, and prior to the commencement of questions, to allow participants to halt the interview process at any time without concern. This amount was determined in collaboration with local CAB members and was commensurate with other studies in the region. Participants were also offered a non-alcoholic beverage of their choice (water, soda, or tea) during the interview process.

Due to the sensitive nature of the topics covered by the study, all consenting eligible participants were interviewed in a private location of their choosing by same-sex interviewers. The areas of inquiry were intentionally loosely structured to allow for an open dialogue between the interviewer and interviewee. This facilitated a more organic and comprehensive understanding to emerge with regard to the complex interplay between substance use, trauma, mental health and HIV vulnerability that the participants experienced during and after the conflict. Researchers began the interviews using broad topic guidelines that had been designed with input from the research team and CAB members, and were developed from the empirical literature. These loosely structured guidelines helped research staff to frame the narratives, and were continually updated during the qualitative process to reflect and capture emergent themes.
and identify areas for further inquiry. Copies of the guidelines are presented in Appendix B. The initial areas of inquiry included: a) situating participants who had survived the conflict within cultural, social, familial and historical contexts; b) unraveling the influence of displacement histories and the concomitant experiences of abduction, night commuting and early sexual debut/early marriage on substance use; c) identifying the social and structural vulnerabilities associated with substance use, including partnerships and housing transitions back to villages from IDP camps and transit camps; d) tracing the rationale for risk behaviors, and; f) identifying participants’ perceptions of the risks associated with substance use for themselves and their communities. Primary categories of exploration were kept as open as feasibly possible to allow for a more organic discussion about the complexities of substance use before, during, and after the conflict.

All interviews were conducted in the language preferred by the interviewee (English or Luo). The interviews were digitally recorded and transcribed verbatim in the language of the interview, prior to translation of Luo interviews into English. Any notes associated with interviews that had been written in Luo were also translated by trained staff into English for evaluation by the candidate, due to his limited familiarity with the nuances of the Luo language. Additionally, periodic back-translation was performed by a staff member other than the original translator/transcriber to ensure the accuracy of the translation process. Similarly, a complete translation cycle from the original audio was completed for seven (23.3%) of the interviews by an additional experienced local researcher for purposes of accuracy and to enhance the veracity of the Luo narratives.
Overall, a total of 30 respondents - 15 women and 15 men - participated in the in-depth interviews. Of these individuals, 80% were returning from Round One of the study and 20% were newly recruited for Round Two as part of the cohort replenishment required by loss to follow-up. This corresponds to the overall return rate of 69.9% (n=1713) in the larger CLP. Ages ranged from 14 to 48 years with a median age of 30 years, similar to that of the broader Cango Lyec study participant breakdown at Round 2, where participants had a median age of 27 years and a range from 13 to 52 years, the latter showing that participants had aged since original recruitment.

Participant experiences describing the complex ways in which the history of northern Uganda has shaped the interplay of substance use, mental health, and HIV in the region challenged many of the currently accepted narratives that have guided interventions in the region. Participants were extremely open in disclosing personal and familial experiences of abduction, abuse, mental health disorders, and HIV positivity. During the interview process only a single individual refused to participate citing work obligations, and an alternate was recruited in his stead who fit a similar profile as laid out in the purposive sampling.

6.3.2 Analytical approach

All participants were assigned unique random alphanumeric codes, and personally identifying information was removed from the transcripts. Once Luo interviews had been translated, they were imported for analysis and coding using NVivo 11 Version 11.1.1 (QSR International Pty Ltd. 2015) software. We have not included a detailed table listing the specific socio-demographic and health-related variables for these participants, as due to the tight-knit nature of their
communities providing such detailed information might allow for their identification.

An interpretative approach was initially used in the design and execution of this study to allow for ongoing thematic generation based on emergent patterns set within the social and cultural norms of participants (Punch, 2014; Starks & Trinidad, 2007). The study subsequently built upon the initial approach by incorporating interpretive description (ID) methodologies proposed and later expanded by Thorne et al. to analyze the qualitative data (Thorne, 2008; Thorne et al., 1997). While ID methodologies were originally designed for use in hospital-based clinical care settings, their use has expanded to encompass other fields of inquiry in which the information they generate can help inform appropriate and effective treatment guidelines to address ongoing health concerns (M. R. Hunt, 2009; Thorne, 2008). ID allows for the identification of thematic commonalities throughout participant narratives, while also acknowledging variations of the themes within sub-groupings and at the individual level. Similar to other qualitative methodologies, it encourages an approach of ‘constant comparison’ in order to draw out emerging thematic trends (LeCompte et al., 1999; Punch, 2014; Starks & Trinidad, 2007; Thorne, 2008). Unlike many other approaches, it seeks to delay the process of immediate formalized thematic coding in the initial stages of analysis. In so doing, it calls for alternating periods of immersion in the field collecting participants’ stories and immersion within the subsequent data itself. This supports the process of exploring emerging conceptualizations and prevents the analysis from being confined within a forced and likely superficial framework of understanding (Strauss, 1987; Thorne, 2008). Finally, an ID-informed approach enables a framework to be created that can recognize subjective individualized experiences within the more objective confines of prior epidemiological evidence or historical records (M. R. Hunt,
2009; King & Horrocks, 2010; Thorne, 2008). As a result of all of these characteristics, ID methodologies allow the voices of those receiving care to be acknowledged in the care-giving process, which ultimately makes it more effective.

These approaches were appropriate for the novel nature of the research and supported the end goal of helping to inform potential health interventions in northern Uganda and potentially beyond (Punch, 2014; Starks & Trinidad, 2007; Thorne, 2008). The implementation of an ID approach is especially useful in settings such as northern Uganda because the complexities of the conflict and post-conflict periods often resulted in participants having vastly different personal experiences and interpretations of those experiences. ID also supports an informed comparison of the quantitative data and results found elsewhere in this dissertation and the detailed analysis of the collected narratives, reflecting lived experiences of affected persons. Finally, ID recognizes the role of the researcher’s knowledge base and lived reality as having validity in the data collection and analysis process. Therefore, it does not require the researcher to act as if they do not arrive with preconceived notions or biases but instead, though acknowledging them, provide greater context and depth to the overall process.

The interviews were conducted in five separate stages with six different participants in each, with a pause between each set for complete transcription and translation, rough initial review, and discussion amongst the research team. During each stage, the research team held meetings before and after the interviews to discuss field notes, the interview process, and any issues that may have arisen. Emergent trends were noted and grouped into the general topic areas into which the themes began to coalesce, which formed the basis for additional areas of exploration or
probing in subsequent interviews. As the stages progressed, the thematic structures that emerged in individual interviews could be explored within the context of other interviews, in order to begin mapping overarching thematic relationships. As these larger patterns emerged, they were used to re-explore earlier interviews in order to give the thematic analysis greater depth. The process was continually evaluated through regular group meetings between the field research assistants and the candidate. This included field notes, discussions of the interview processes and challenges, and patterns that emerged from the participant narratives. Additionally, after each set of interviews, the broader group comprised of the CLP research team, the candidate, dissertation committee members, and members of the CAB discussed emergent themes, described in the thematic areas detailed below.

6.3.3 Rigor and credibility

To increase the overall rigor, credibility, and conformability of the study, multiple data sources were employed in addition to the formalized qualitative and quantitative approaches. This helped to triangulate findings and allow for a more comprehensive understanding of the results. These approaches also helped to increase the candidates own reflexivity to and awareness of the knowledge construction processes, and to further reinforce the importance and recognition of both Cultural Safety and cultural humility. Indeed, triangulation through the use of multiple sources can help reduce the influence of researcher(s) positionality on the interpretation and presentation of the results, thus increasing the overall credibility and transferability of the research as a whole (Farmer, Robinson, Elliott, & Eyles, 2006; King & Horrocks, 2010; Thorne, 2008). In turn, this process contributes to increasing the overall reliability and validity of the findings by seeking to limit the extent of bias affecting the results (Bourke, 2014; Cameron et al.,
This also helped to situate the study not only within the broader context of post-conflict health research, but also within a culturally safe understanding that allows for more actionable and accountable interventions.

Within the CLP itself, the above process occurred through constant engagement with the senior Ugandan investigators, staff, and CAB throughout the research process. During the qualitative interviews, the team held ongoing formal and informal debriefing discussions pertaining specifically to the study, and also to larger aspects of life within northern Uganda. This also occurred during formal knowledge translation sessions with the team, with local and regional medical personnel, and between local and international NGOs, where emerging findings could be discussed and compared with other experiences. Situating the data within this larger context provided a more rounded picture from which to approach the analysis and interpretation of the study’s results. Further, this process was all the more critical when the findings diverged from the a-priori hypotheses that were influenced by empirical literature from similar settings. In such cases, the triangulation and confirmation of the emergent trends through these multiple sources provided a greater credibility to the results and interpretations therein (Golafshani, 2003; Thorne, 2008). Throughout this process, an audit trail of field notes was kept to account for the broader knowledge bases, as well as how they informed both analytical decision-making and the interpretation of results. Finally, within the lens of Cultural Safety, the study sought to increase credibility by not presenting the qualitative and quantitative results in a hierarchical manner that could suggest a greater validity of one method over the other (Cameron et al., 2010; Sale, Lohfeld, & Brazil, 2002).
6.4 Results

6.4.1 Summary of findings

The qualitative findings are described below, beginning with a brief summary of the substances mentioned during the interview process and the main characteristics pertinent to their use in order to orient the reader towards the inquiry that follows. The themes that emerged are subsequently explored in relation to the wider context(s) of northern Uganda as based on the analytical processes identified above. The narratives broadly coalesced around clusters of a pre-conflict ‘long ago’ period, the time of the conflict itself, and the initial demobilization and post-conflict rebuilding stage. Each cluster contained distinct associations between substance use, HIV, and mental health. Narratives focusing on the conflict and demobilization/post-conflict rebuilding stages coalesced into further thematic groups that were defined by specific attributes. These findings demonstrate that during the conflict clear differences emerged between the experiences of and with abductees, the LRA, GoU Forces, and IDP camp dwellers. In the post-conflict period from demobilization to the present, narratives of substance use recognized clear urban and rural divides and significantly different expectations and views based on one’s sex. In both stages, strong connections were made between the sense that traditional norms had been lost, and the perception that behaviors deemed unacceptable were increasing.
6.4.2 Introduction to substances used and their role in Acholi culture

6.4.2.1 Alcohol within a changing society

Alcohol was by far the most common substance that was both mentioned and personally consumed by participants. It existed in three distinct categories: (1) locally brewed traditional beverages such as the cassava-based lugutu and maize-based kwete; (2) waragi, a generic term for higher proof distilled alcohol; and (3) bottled beer. Each of these categories were demarcated by both geographic boundaries and serving venues, as summarized by one participant:

“Some big drinking joints like bars is where you get things like beer and the sachets can be got from some small shops like kiosks, and ‘lugutu’ is got from among the villages.”

[25-year-old male]

Distilled clear spirits were often referred to by the generic term ‘waragi’ or ‘sachets,’ a name deriving from the small individual serving size plastic-bags in which they are most often consumed. Participants also referred to these higher-proof alcohols by common brand names such as “UG,” “Chief,” or “Ugandan Waragi.” Discussions about their consumption indicated that they were ubiquitous in both urban and rural settings.

Bottled beer, which was rarely seen outside of Gulu, the major urban center in northern Uganda, was the least-discussed alcohol among study participants. Some participants attributed this to limited infrastructure and informalized distribution networks that restricted access to beer in primarily rural districts. More commonly, participants recognized that the subsistence-based,
agricultural, and slowly recovering economy played a key role in the consumption of beer. As put bluntly by one 20-year-old participant, “[only] those who have money like drinking factory products like beer and soda.”

Participant narratives expressed an underlying expectation that the consumption of alcohol was a male-dominated domain. When the interviews began to explore topic areas related to substance use, participants rarely initiated discussions about female consumption patterns and behaviors. However, once the topic was prompted, it developed into a rich area of inquiry. For men, consumption of alcohol by women was seen as something almost wholly foreign:

*There is no reason besides that for women taking alcohol I can’t imagine women taking alcohol on a daily basis it looks strange to me*  

[30-year-old male]

None of the women interviewed personally reported drinking alcohol, even when probed. However, they often noted that alcohol consumption did occur among other women in instances beyond that of single outliers. At the same time these women noted that consumption among their sex was constrained to specific temporal periods. As noted by one 14-year-old female participant, “*Women like taking things like alcohol on big days like Women’s Day and Christmas.*” Another also shared this view seeing consumption among women as also associated with age:
Women at the stage of teenagers and girls in most cases don’t use alcohol so much and they don’t use it. But it’s the elderly mothers who take alcohol.

[24-year-old female]

For many participants, expectations that women do not consume alcohol regularly were driven not only by cultural perceptions of whether or not they should drink alcohol, but also by a belief that the effects of consumption were biologically different and more severe for women:

In true sense of the word, women were not supposed to take alcohol because alcohol has negative effects on women. Secondly, it brings out very high sexual urge in women. Thirdly, there are some women who are mothers and if she gets drunk, she can easily fall on the child. This makes me think drinking for men is better, but for women it is not good.

[35-year-old male]

The concern that alcohol consumption interferes with women’s socially prescribed domestic behavior for women was frequently expressed. These concerns did not extend to men, even when their consumption patterns were seen to interfere with their daily responsibilities:

Drunkardness is not fit for women, they should look after home. [interviewer: How about men, how do people look at them?] Men, nobody looks at them in a bad way.

[16-year-old male]
6.4.2.2 Presence and growth of non-alcoholic substances

After alcohol, marijuana, also referred to by participants as ‘ganja’ or ‘weed’/’weeds’, was the second most commonly mentioned substance. This was followed by khat, also referred to as ‘mira’ and ‘mairungi’. Finally, a few participants mentioned ‘kuba,’ varyingingly described as a chewed substance distinct from tobacco or khat, and one that had a strong stimulant effect. It was noted for being purchased clandestinely from shops in towns, and while members of the CAB team likewise had heard of its use, none were able to offer specifics as to its chemical makeup or origins. There was no mention that any of these substances existed in northern Uganda during the pre-conflict era, while khat and marijuana were frequently cited as present during the conflict and the post-conflict periods, and with kuba only in the latter (as explored in detail in the subsequent sections of this of this dissertation). Additionally, those living in IDP camps mentioned the use of inhaled solvents and petrol as a form of intoxication, but one former user noted that:

Also in the past, which is now not common, is that people used petrol. But it is not heard of now.

[30-year-old male]

No participants reported current use of any drugs, and only a handful reported any personal non-alcoholic substance use at any point in their life. One claimed to have inhaled solvents, a few participants who discussed smoking marijuana in the past, and another 30-year-old male who more recently tried kuba and, “found it not complying with my head and I stopped it.”
The use of the substances mentioned above was ascribed at least once to either resulting from idleness or aiming to assist with strenuous labor, especially with regards to khat. Additionally, marijuana use was almost ubiquitously associated with frowned-upon behaviors and outright criminal activity that included theft and sexual assault. These beliefs were even held by a participant who had smoked marijuana in the past:

*Marijuana has many associated problems. I’m talking about something I just used and left. Marijuana has many problems; firstly, if it influences you to steal, then that very moment, you will go to steal. If it gives you any plan, that is the plan you will use immediately. If it influences you to rape a woman, then you will also rape a woman immediately. If it influences you to have sex, then immediately you will start looking for someone to have sex with. So I think marijuana is worse. Alcohol is better.*

He continued:

*Alcohol and marijuana, we can say is the Satan in people’s lives because these two things give you the courage to go and do such things [pay for sex]. If you feel like having sex, they make you go straight for it because they give you the courage and you don’t think of any other thing. So these things are not so good if you don’t use them in a good way. Marijuana is the worst of all.*

[35-year-old male]
No participants reported personal experiences using other drugs. Further, it was difficult to determine the extent to which these drugs were even present in the conflict or post-conflict settings, as participants labeled different non-alcoholic substances interchangeably, such as conflating marijuana and opium. While all participants were probed specifically on the topic of other drugs by name, only three were able to articulate and delineate them base on their personal use and/or knowledge about their use by others. One participant noted that he observed opium being smoked in addition to marijuana in gambling halls in town (referring to the urban center of Gulu), though he could not offer further information when probed about their distinct use. Two other participants mentioned cocaine. While one noted it occasionally was used during the conflict, both brought it up to specifically note its current absence in the region. For them, this derived from the economic and physical barriers facing northern Uganda. As bluntly stated by one 31-year-old male participant, “Nobody can afford to buy cocaine here and it is equally hard to get it.”

6.4.3 Pre-conflict substance use

Thirty years have now passed since the start of the war between the LRA and GoU Forces in 1986, and over a decade has passed since the Cessation of Hostilities Agreement. Consequently, recollections of a time, or of life, before the conflict were based on inherited stories, cultural traditions, and some personal recollections from the older participants. Further, northern Uganda was the site of sporadic and violent confrontations prior to the conflict, which has complicated the formation of cohesive narratives that delineate pre-conflict use of substances or memories of HIV in the region. Within the narratives about substance use before the war, discussions of non-
alcoholic substances were largely absent, as noted by a young male participant: “long ago there was alcohol but marijuana was not like these days.”

During the pre-conflict period, alcohol consumption of traditional, locally-made beverages were the most common types of alcohol that were consumed. These beverages, which were brewed in large batches and generally consumed communally, were valued not only for their intoxicating effects, but also their cultural importance within the rich agricultural history of the north. Their use was governed by established cultural norms regarding age and sex, and they were confined primarily within the domain of older men:

Alcohol, long ago it was the elders who would take it, which was even brewed from home, but not young ones of the age of thirty and below, it was hard for you to see them take alcohol.

[25-year-old male]

Aside from such generalized recollections, no participants discussed personal consumption of alcohol during this period. Further, even when probed, there was no anecdotal commentary regarding non-alcoholic substances, and knowledge of such substances appeared to be lacking.

Overall, the pre-conflict period was characterized by feelings of both physical and social stability that were derived from the traditional practices disseminated by respected elders within the community. These feelings were seen to not only help prevent problematic substance use, but to also be critical in reducing vulnerabilities to diseases such as HIV:
When people were still in their homesteads HIV/AIDS was rare because homesteads were spread far apart in the villages according to how the elders used to settle, so moving very long distances in the night was very difficult and that is why we just used to hear of these disease from those who came from distant places.

[38-year-old male]

Many other participants repeated these sentiments, particularly emphasizing that population dispersion provided protection from the negative impacts of rapid social change or other negative externalities. Even when these changes and externalities were introduced, they could be safely processed through established physical and cultural structures. However, this provision of safety would soon be upended by the start of the LRA insurrection, mass displacement, and subsequent decades of fighting.

6.4.5 Conflict, substance use patterns, and changing risk patterns

Understandably, the decades of conflict in northern Uganda marked a distinct period within participant discussions. The conflict was noted for disrupting traditional social behaviors and expectations, and creating new ones that were rooted in the distinct characteristics of the era. The groupings around which these themes coalesced drew heavily upon characteristics inherent within the warring factions of the LRA and the GoU Forces, as well as upon the nature of life within the IDP camp settings.
With over 90% of the population of northern Uganda displaced by the end of the conflict, it is understandable that most participants had personal recollections of the challenges associated with life in an IDP camp. The handful who did not were primarily younger participants and had been sent away as children to live with relatives in Kampala, or other unaffected regions of Uganda. They nonetheless recalled the hardships their families and friends endured while in the IDP camps and the challenges of being separated from their homes.

Time spent in the camps was closely tied with memories of loss of livelihoods, dependence on external aid for basic needs, and constant instability. Participants describe a time of restricted mobility, during which deprivation of food and medical supplies combined with overcrowding resulted in the rapid spread of disease. There were few safe options aside from living in the marginally secure IDP camps, as those who attempted to leave were often actively or passively caught up in the fighting. Further, the camps themselves became settings of active conflict due to the volatile and unpredictable nature of guerilla warfare:

*Life was very hard because too many people were kept together. There was nowhere people could go for calls [to the bathroom]. Managing sanitation defeated people. Women used to line up for water. If your wife went to fetch water, she would take too long before coming back. People also died in large numbers... Some died of sickness. Diseases like malaria and HIV/AIDS were there. Rebels also attacked camps and killed people – LRA attacked camps and killed people, and some times in the cross-fire, bullets of the government soldier also shot and killed people. Huts also were getting burnt. You build your hut*
today, tomorrow it gets burnt. This burns all your food stuff. Some people were not registered for relief food; food was not sufficient for people. Others go to look for it in the bushes, and there they meet rebels who killed them. That too inflicted a lot of pain on us. My hut also got burnt and I lost many of my belongings. Rebels abducted people who went to look for food.

[20-year-old male]

In the view of many participants, the resulting rise of idleness among working-age males and rapidly declining connection to traditional agricultural roles and frameworks directly contributed to increased alcohol use. As one IDP camp resident noted:

So in the camp there was even no piece of land for farming, people were just renting land that is near to the camp, there was excessive drinking of alcohol because people are many but they don’t have what to do, no land for farming.  

[24-year-old female]

Camp dwellers had few options for earning a livelihood, and were increasingly dependent on aid organizations such as the World Food Program for the provision of food and other basic necessities. Consequently, many therefore felt that their self-sufficiency had been eroded and noted that the community’s traditional work ethic deteriorated for much of the population.

\[\text{\footnotesize 3In northern Uganda the inclusion of a question as an internal clause of a sentence followed the answer is a common conversational characteristic.}\]
Agricultural traditions are intricately intertwined with Acholi culture and/or connection to the land. Participants commonly referenced the erosion of the former, which extended to the breakdown of the latter. These conditions were frequently linked with, and seen to contribute to, the rapid increase of substance use in the camp settings. Alcohol use was further impacted by the introduction of stronger and cheaper sources within a growing at-risk population. The extent to which alcohol consumption quickly elevated to the point of being hazardous is clear in the recollections of camp dwellers who gave up basic necessities to afford drinking:

[in the camps] *There was the use of alcohol, they would sell part of the food World Food distributed to buy alcohol because the alcoholic brand like chief waragi was a must for them it was a very difficult moment because even cassava could not be harvested from the garden. Vehicles would bring alcoholic substance in sachets.*

[38-year-old male]

Farming cassava was one of the traditional means of sustenance to the Acholi, and the loss of this livelihood had a two-fold impact. It not only removed from the population a direct means from which to derive income, but also required a change in sources of alcohol. Since alcohol had often been made with cassava, the Acholi had to turn to more mass-produced options. The high-potency, ubiquitousness, and relative cheap cost of the sachets quickly saw them become the most commonly consumed alcohol in the camps, upending the previously noted traditions regarding who, how, and where consumption should occur. Previously, the consumption of traditional beverages had been constrained by cultural norms and production limitations, but the
large, tightly-packed populations of the IDP camps were now able to easily access relatively cheap, high-proof alcohol. These types of alcohol were brought in from outside the region, and thus deviated from traditional brewing practices and associated consumption patterns. Many contended that this was critical to the rapid rise of problematic drinking:

\[\text{People use alcohol like those in the sachets like the Chief, London gin, Adrikos that has destroyed locally made Acholi ones.}\]

\[\text{[38-year-old male]}\]

While the physical hardships resulting from displacement as well as the increased accessibility of alcohol, were seen as important to alcohol use patterns, they were not seen as the primary driver of increased consumption. As noted previously, increased consumption was instead attributed to the erosion of Acholi agricultural practices, cultural traditions and behavioral norms. This was especially true for younger generations, who did not receive the dissemination of knowledge that had been traditional for the Acholi. Common laments from camp dwellers included: “children had no time to be taught,” “a child has no guidance,” and “it was not easy to give advice at that time.” The accelerating breakdown of Acholi culture, especially as it pertained to the intergenerational dissemination of norms, was commonly associated with recollections of increased alcohol use in younger members of the populace, and was likewise seen as critical in the rise of non-alcoholic substance use.

Although the appearance of drug use in northern Uganda was fairly fixed within narratives around the conflict era, and was strongly viewed in a negative light, information was scant
regarding specifics around their introduction to the region. Instead, drug use was seen to have simply appeared as another problematic aspect inherent to IDP camp life. Its expansion was seen to occur in tandem with time spent in the camps. Non-alcoholic drugs quickly became common, and initially were among the many imports coming in from outside the region. However, respondents noted that drugs soon began to be cultivated locally in the few arable areas in and the around camps. One participant directly attributed the growing popularity of marijuana to the presence of GoU soldiers, who were perceived to be primary users of the drug. It was however unclear as to whether the soldiers were importing marijuana or accessing it locally from the supply, which was already available in the camps. Regardless of its provenance, marijuana was soon recognized as yet another challenging part of IDP life. As described by a 28-year-old female participant:

> When people were brought together in the camp a lot of things started happening including taking Marijuana which caused a lot of people in the camp to mentally run mad.

As was the case with the rise of alcohol use, marijuana consumption was seen to reflect the challenges present within the IDP camps, including limited economic opportunities, the pressures of conflict, long periods of inactivity, and the loss of cultural and familial connections. However, marijuana use was unlike alcohol in that it was constrained primarily within the specific demographic groups of younger civilian men and GoU soldiers. One 30-year-old male participant specifically highlighted this generational split in terms of their choice of substances:
During that time life was hard and you know if life is hard people look for ways to make their lives simple, so then consumption of alcohol was at its peak; the youth would smoke ganja.

While excessive alcohol use was generally frowned upon, it was seen to result from situational factors, and to occur within at least a marginal historical context. The language used to describe consumers of alcohol in the camp setting centered on consumption patterns (e.g. high levels, type of alcohol used, etc.) and rarely extended into individual character generalizations. In contrast, descriptions of those who used marijuana were uniformly negative and users were seen to have character flaws. Whether smokers were individuals directly known to participants, or described more as part of a broad amorphous group, they were frequently called “thieves” or “rapists” and were seen to be the main perpetrators of crime and assault in the camps. Further, users were also known for their concurrent high consumption of alcohol.

Over time, the results of increased marijuana use were seen to both be rooted in, and further contribute to, the erosion of the cultural traditions considered as appropriate behavior for young people. This saw young women and girls at particular risk as seen in uniformly common associations with smoking marijuana and sexual assault and rape. As has been highlighted, the changing patterns of substance use were not occurring in a vacuum, and were often intertwined with societal-level changes and risk factors associated with the conflict. Not the least of these were ongoing experiences of trauma and consequent mental health disorders. These were likewise linked to, and exacerbated by, increases in previously unacceptable social behaviors and the subsequent growth of HIV in the population. Both substance use, and the groups commonly
associated with it, were seen as drivers of these trends. As one participant indicated, this was seen especially critical when pertaining to young people:

*During that time life was hard and you know if life is hard people look for ways to make their lives simple so then consumption of alcohol was at its peak, the youth would smoke ganja the other was belonging to groups that are bad, so all those things [previously discussing theft, risky sexual behavior, assault, spreading of HIV] were done either by ganja smokers or those that consumed alcohol*

[30-year-old male]

According to individual and overarching narratives, the perceived drivers of instability that upended life in northern Uganda were not only the two warring factions, but also included the experiences of violence and trauma inflicted by these factions. While similar themes emerged when participants talked about the instability and trauma caused by both the GoU and the LRA, there were stark differences in how interactions with the two groups influenced substance use and its associations with HIV and mental health risk factors. One participant said of the GoU forces:

*I was not abducted but what happened in 87 when I was working in Kitgum hospital in Kitgum District, which is for the missionaries, that was when Yoweri’s soldiers came and arrested us that we are the ones supplying drugs to the rebels. What I remember they caned us ... they were going to even shoot us, “firing squad.”*
Another participant said of the LRA:

*First of all, they killed my brother the day I was abducted. Then the last time I was abducted it was not easy because things like carrying heavy luggage, killing people who were abducted or giving you people to kill.*

[25-year-old male]

To avoid being victim to violence from the two factions, participants recalled being highly mobile, as they traveled between IDP camps and other areas thought to be safe, only to be forced to move again as the conflict shifted. During this unstable time, families were often separated both willingly and unwillingly as they struggled for daily survival. The breakdown of familial support structures was further complicated by the choosing of sides, either voluntarily or via forced coercion. The experience of one participant was far from uncommon:

*One of my brothers was abducted and up to now he’s nowhere to be found, the other two were both at the side of Yoweri [President Yoweri Museveni’s GoU Forces] as soldiers, they were all shot dead by the rebels.*

[18-year-old female]
Factionalism was far from static however, particularly for those abducted by the LRA, who had little personal choice in terms of their allegiance. In fact, two participants discussed fighting for both the LRA and government forces at different points during the conflict.

6.4.5.2.1 Correlates of substance use within the LRA and GoU Forces

Almost all participants had at least one immediate family member or friend who had been abducted or killed by the LRA. Many also had personal experiences of abduction, ranging from a single day to years. During their abduction, participants’ roles ranged from being porters and camp workers to soldiers involved in direct combat. The narratives of substance use among those who spent more than a few days with the LRA stand in stark contrast to the narratives of those who were only in IDP camps or who were aligned with GoU forces. No participants abducted by the LRA mentioned seeing or personally using any substances during their captivity; this included not only drugs and alcohol but also less commonly thought of substances like cigarettes. This was attributed to the fundamental beliefs underpinning the ideology of Joseph Kony and the LRA (Human Rights Watch, 2010; Soto, 2009; Temmerman, 2001):

Those [previously discussing alcohol, cigarettes, marijuana] were things that were very important to these guys [the LRA] in that if they are teaching they begin with that; they say the religion which is the Holy Spirit that they are fighting with doesn’t allow those things among them is alcohol, cigarettes and marijuana. Anything else that disorganizes the brain they don’t allow you to use them... you should not go and take alcohol in that even if you get someone’s alcohol that she...
The LRA’s cultural and moral prohibitions against alcohol – or any substance use - did not fully explain the discrepancies that developed over time between their regions of control and other areas in the north. As noted above, Acholi cultural practices likewise frowned upon the unconstrained use of alcohol or the use of any other substances. This was not enough however to prevent their use, and rapid growth, in the IDP camps where it was seen as yet another casualty of the mental and physical stressors of the conflict, and compounded by a diminishing influence of Acholi traditions. The primary driver of this contrast was clearly described by one participant, a 35-year-old male, whose abduction by the LRA lasted six months, and who indicated that the paucity of use derived from the brutal enforcement of LRA’s prohibitions:

*Those substances are not wanted, if it is found in your hands then they [the LRA]
will kill you anytime, they totally do not want it, alcohol and cigarettes*

In stark contrast to the LRA’s lack of substance use, almost all participants who discussed GoU soldiers recalled their frequent and extensive use of alcohol and other drugs. The soldiers’ use was further observed to even exceed the levels exhibited by recognized high-use groups in the IDP camps, and was often tied to its spread throughout the community. This was especially true in the case of non-alcoholic substances:
That one [marijuana] was there that the soldiers used to use, there were few civilians who would use marijuana and alcohol

[42-year-old male]

Many participants attributed soldiers’ use of substances to the financial resources available to them as well as to the level of impunity from the consequences of use accorded by their status. This viewpoint was consistent with the experiences of two participants who disclosed that they were members of GoU Forces during the conflict and noted it as the time when they were first initiated into the use of both alcohol and marijuana. For one of the men, now 35 years old, who fought for both LRA and GoU, his substance experiences while being a member of the GoU was in stark distinction to his time in the bush while still an LRA fighter:

It was very high, the level of alcohol use was very high, that is when I was with the government, because if we get some money, most of that money was used for drinking alcohol and the place where you are drinking from is where there is disease. Women are also there, but from the bush (LRA), there is no alcohol and also no cigarettes.

6.4.6. Mental health

Increased substance use and related risky behaviors in the IDP camps were the result not only of idleness, loss of livelihood, and access, but also of the ongoing traumas associated with the conflict and their subsequent mental health impacts. This led camp dwellers to use substances as
a coping mechanism or as forms of self-medication. This experience was widely expressed in the narratives of those who reported substance use during the conflict:

*It’s the problem of the war that made me to start taking alcohol in 1991...There are other killings that happened in the bush that when I recall it brings me trauma, I feel bad and hurt.*

[42-year-old male]

Another recalled:

*I started taking alcohol because I had a lot of thoughts in my head, then after taking alcohol I would wake up when those thoughts are gone.*

[25-year-old male]

Members of the GoU forces likewise felt that access alone did not account for their ‘very high’ consumption of alcohol. They recalled that decisions to initiate use and continue using were made on the basis of alcohol’s ability to help mitigate the physical and mental stressors associated with the demands of their roles. When asked why he started using, the former soldier stated bluntly:

*Conditions. [Interviewer: Tell me more.] Cold weather, and there are other things which you can do faster when you drink. [Interviewer: Like what?] Like*
sometimes when you are sent to do something, you do it faster if you have taken something.

[35-year-old male]

The interviewer recorded in his field notes that the soldier seemed ‘uneasy’ when probed to talk about the specific kinds or types of assignments he was ordered to carry out that were made easier by being in an inebriated or altered state. Thus, the interviewer chose not to press further. While it is not possible to know more of this soldier’s specific experiences, the narratives of other participants paint a chaotic picture of violence coming from both sides in the conflict, with civilians often being caught in-between. Indeed, participants considered the trauma of war to be a major contributing factor to their initiation of substance use:

What made me to start taking alcohol? It was not my own wish. It was the war that was there... where the rebels made my relatives... and I was the one carrying them while I was already hurt, then I thought of starting to drink alcohol and I started taking alcohol. They [the LRA] killed my relatives ...when I take alcohol, I forget about my thoughts and what was always hurting me, those thoughts all disappear.

[38-year-old male]

The associations between trauma, mental health disorder, and substance use were not always unidirectional, especially in the context of marijuana. In fact, some participants saw the rise of
mental health disturbances as a direct result of substance consumption, which in turn increased instability in the IDP camps:

When people were brought together in the camp a lot of things started happening including taking marijuana, which caused a lot of people in the camp to mentally run mad.

[28-year-old female]

Such concerns were reflected in the aforementioned and common laments regarding users in the IDP camps becoming mentally unstable and assaulting, robbing, and raping others.

6.4.7 Women at risk within substance use, changing sexual behavior, and HIV

As was the case for substance use itself, the rapidly changing social norms regarding acceptable sexual behaviors were thought to be heavily influenced by the three factions in the conflict: IDP camp life, GoU Forces, and the LRA. Recollections regarding the increase of problematic behaviors such as early sexual debut, increased numbers of sexual partners, sexual assault, and rape were intertwined with recollections of IDP life and GoU soldiers, and with themes of substance use:

There was no respect among the people who were concentrated in one place. You would look at one’s partner and think him/her is better than yours. Not only that, military life. Sometime you would stay away for close to six months in the bush and when they emerge and come out where women are, they buy the women with
money. These are some of the reasons why the disease has spread so much. Rape was also there because sometimes you would find someone who has stayed without sex for close to six months and when such a person finds anything called a woman, he will definitely rape. That was mostly on the government side.

[35-year-old male]

Participants’ discussions of the rapidly changing sexual behaviors in the camps emphasized that these behaviors intrinsically fueled the rise of HIV in the region and the increase in the use of substances, especially alcohol. These events were seen to occur for a number of reasons. Some participants attributed them to an erosion of Acholi cultural norms regarding appropriate sexual behaviors in camp settings:

You know that living in large numbers in a place brings problems, those days when people were in the camp there were all gathered in one place during the war, where people during the war most of them had lost the Acholi culture. Even in the bush you find people having sex in the bush, that’s why you see even if the spread of HIV is high.

[48-year-old female]

Conversely, the strictly prescribed sexual behavior within the LRA and its harshly enforced sexual norms were seen to have a strong influence on limiting the spread of HIV in the north. One participant succinctly summarized this situation:
...But with Kony, it is hard to tarnish Kony’s reputation because when you are there, if you are not yet given a woman, you won’t stay with a woman. And if you are discovered sleeping with a woman, even if you do it stealthily, you may either be injured or killed. That is what used to happen on the other side with Kony.

[30-year-old male]

Other participants were more explicit about the perceived connection between alcohol use, crime, sexual behavior, and HIV:

*Men also steal things from the house and goes to drink it. He gets those prostitutes, goes back home and infects the wife with HIV. That’s how the virus spread.*

[33-year-old male]

A number of participants drew parallels between the changes in sexual behaviors, the resulting increased risks, and the constant deprivation inherent to life in the camps, which fueled transactional and survival sex. In such a scenario, those with the resources to purchase and consume substances – seen by many as an HIV high-risk group – would likewise be the ones able to take advantage of those in need, seeking to exchange sex for money or supplies:

*The things I was seeing was problems that made people not to have food, money would make them use you in any way for example the soldiers were sleeping with*
women which made people begin to contract HIV. People started taking alcohol and sleeping with women just anyhow with both the soldiers and civilians.

[42-year-old male]

Even when the soldiers were not seen as the driver of HIV, links were commonly drawn between the disease and alcohol-serving venues that were a center for sexually risky behaviors. As noted above: “the place where you are drinking from is where there is disease.” The perception of such places and people in them as HIV-risk sources continued even after the cessation of violent conflict.

6.4.8 Post-conflict era

For many, the conflict caused potentially irreparable harm to the traditional Acholi way of life. While the active fighting may have ended, the vulnerabilities and risks that developed during the war persisted and in some cases expanded. This was especially true with regards to substance use, which was evidence in the almost uniformly held belief that consumption - and the associated problematic behaviors - were on the rise within northern Uganda today. This was commented on both with great concern and limited hope:

Alcoholism is just increasing. If you go to any trading center now, you will find that people are completely drunk. I don’t see any changes with stopping alcohol use.

[35-year-old male]
Alcohol had also begun to be used by portions of the population who had previously been un- or under-affected by it in past periods. Women, for whom cultural prohibitions had traditionally served as a protective barrier against alcohol use, were one such group:

*People here take alcohol very much including even the women and it is not only that during festive season but almost every day.*

[42-year-old female]

While the perceived rise in alcohol use was seen as ubiquitous, the use of non-alcoholic substances was subject to a fairly clearly delineated urban/rural divide. Few people in rural settings even mentioned such substances without being specifically queried, and would then indicate that any of the substances mentioned were external to their communities and largely contained within urban areas:

*Among the youth here it is not so common. But when you go to town kuba is found among the boda bodas and drivers a lot.*

[Rural participant: 30-year-old male]

Urban residents reinforced these sentiments, although their narratives more frequently expressed specific knowledge of the other non-alcoholic substances:
I find that it’s these days that the rate of marijuana is increasing, earlier on when I had just come back I didn’t see marijuana. But these days the boys are smoking a lot of marijuana.

[Urban participant: 32-year-old female]

An urban dweller who had spent some time in the rural areas shared similar observations:

*Kuba and mairungi is what I have just known when I came to town. So nowadays the rate of its use in the municipality is high more than in the village and it’s even more then when people were in the camp and before they came to the camp.*

[Urban participant: 25-year-old male]

These local understandings around the perceived drivers and sequelae of substance use also helped inform the underlying factors driving them. According to some participants, regional development and the subsequent increased availability of alcohol and other substances played a significant role in post-conflict patterns. An urban 16-year-old male acknowledged that peace was important to allowing for stable supplies of alcohol and also the time for people to consume it:

*These days level of taking alcohol is high more than during the war because there is development… there is no running away from rebels.*

However, such ascriptions to peace and its associated changes as the main driver of increased use were rare. Instead, commentary on post-conflict substance use largely related it to the persistence
of unaddressed mental traumas, the residual breakdown of appropriate cultural norms, and HIV. More often than not, these issues emerged during interviews when participants’ illustrated overarching themes via recollections of specific instances or persons.

Among participants who shared the view that the use of both alcoholic and non-alcoholic substances were pervasive and increasing in northern Uganda, their narratives tended to center on specific, readily identifiably groups or individuals. One such group included young women in urban centers who were visible and harshly judged for consuming alcohol and young men who were seen to be ‘running mad.’ It was also common for participants to share specific stories about people within their immediate community to illustrate the larger issue of HIV transmission and substance use. One 18-year-old woman from a rural village encapsulated her perceptions of post-conflict substance use in describing a former soldier living in her community who had recently committed suicide:

*For myself I say that that one [using marijuana and opium simultaneously] brings madness. Yes, because it doesn’t respect people...He just shot himself, he was a soldier. [interviewer: He shot himself, after taking marijuana?] Yes, when his eyes are red then he beats people any how... People all knew because he would take long in a hideout taking it and there after takes alcohol...Yeah, because it brought trauma... His head could not help.*

Another 48-year-old female participant expressed her concerns about the rise of alcohol use in her rural community by describing a recent experience:
At exactly 10am in the morning, some woman took alcohol and was drunk completely up that side of the hotel. In that everyone knows about that in this area. Imagine this lady undressed herself and just fell there naked, opened her legs in that even students were looking at her, even children who were from prayers were looking at this woman.... Then some boy came and started beating her and took her to her home.

When participants were encouraged to explore larger trends in substance use, their narratives continued to coalesce around specific subgroupings of the population. The identification of “youth,” “young men,” and “boys” was constant throughout the narratives of all the participants when they discussed the use of the non-alcoholic substances khat, marijuana, and kuba. These young men were highly visible within the population, as they congregated in town centers during the day and were therefore seen as idle, and ignoring traditional connections to the land and agricultural work:

That one there are certain groups like the youths who are just frustrated, they don't want to dig, they were the ones using it [marijuana], smoking it.

[33-year-old male]

Boda boda drivers – young men who transport goods and services on motor-cycles across the region – were likewise commonly identified as disproportionately using both alcoholic and non-
alcoholic substances. As summarized by one older male participant who had relocated back to his ancestral village, such urban young men were seen to have innately different characters:

*Youths from here [a rural village] that go for mira are few... Their appetite for mira is low. Most of the boys I see using it are the boda bodas. Then the drivers are the ones I see using it often nowadays.*

However, the stigma towards the boda boda drivers and the perceptions of their use behaviors was not evident in the lived realities of the drivers themselves. None of the three participants who worked part- or full-time as boda boda drivers reported personally having ever consumed any non-alcoholic substance. Further, only one of them consumed alcohol, and stated that he only did so infrequently. While the three concurred with the overarching belief that substance use was on the rise in northern Uganda, they did not indicate that use was increasing among their fellow drivers. According to their narratives, the rising use occurred among a broader cross section of the younger population, rather than among a highly localized group. Notably, these boda boda drivers were able to individually identify each type of alcoholic and non-alcoholic substance, knew where each was to be procured, and often tacitly recognized their own subtle role in helping to precipitate use by transporting those who sold or consumed them. One driver’s commentary helped explore the reasoning behind perceptions that his profession was associated with expansive substance use. He noted that despite strong concerns that use was rising, and stigmas against substance users, drivers themselves had reached a point where they at least tacitly accepted the use of alcohol and non-alcoholic substances through their employment:
These days the usage of alcohol and marijuana is so rampant because long ago there was alcohol but marijuana was not like these days. I am a boda cyclist, there are other customers that we carry and take them to buy marijuana openly.

[25-year-old male]

Overall, participants maintained their considerable reticence to initiate discussions about mental health disorders and potential relationships to substance use. However, when specifically probed on the subject, participants consistently expressed the view that the links between mental illness and violence that were initially seen during the conflict remained important in the post-conflict era:

The result of the war follows... you meet demons or meeting somebody who has been killed or even seeing somebody who has been killed and shot. Then it brings trauma or lets the demons enter you.

[26-year-old male]

For the most part, the traumas were not seen as new, but instead as unaddressed legacies of the conflict that deeply permeating the lives of those affected:

The thought of our children who lost their lives at times keeps haunting me. I keep thinking about them and it pains my heart because there is now no one to help me.

[31-year-old female]
As mentioned in the second quotation, there was a commonly held belief that there was no help available to address mental health burdens, leaving those in need to find their own sources of support. As a result, participants thought that many of those with mental health disorders turned to substance use as a coping or self-medicating mechanism:

_Sometimes [people drink] because of death, sometimes because life is difficult to live. Some people say if they do not drink they find life difficult._

[20-year-old male]

These sentiments were validated by the only participant who was willing to disclose his feelings of mental anguish and concurrent substance use, the former soldier noted above:

_I started taking alcohol because I had a lot of thoughts in my head, then after taking alcohol I would wake up when those thoughts are gone._

[25-year-old male]

Participants indicated that alcohol was the only substance used for self-medication, and none even anecdotally mentioned other substances. Instead, these non-alcoholic substances were uniformly seen as unidirectional drivers of mental health disorders:

_There are some people that you see them digging so hard, and at times you see that they are running mad that that person smokes marijuana and that’s what is disturbing him. That how we know that someone smokes marijuana._
A plurality of interviewed participants associated the drivers and the continuation of substance use in the post-conflict period with a lack of re-established guidelines for teaching and promoting acceptable behaviors. One 18-year-old female interviewee described it as a self-perpetuating downward spiral that disproportionately affected younger generations:

Smoking marijuana has actually killing our culture because what these people do after smoking the weed really says that we don’t have children in the future.

These views coalesced into an overarching theme as participants expressed great concern and nostalgia regarding the loss of Acholi traditions that were central to specific physical locations and temporal periods where the dissemination of inter-generational knowledge could occur. They were also concerned about what the fast-paced life of urban centers, the time-consuming demands of rebuilding in rural areas, and the frequent splitting of families between those urban and rural areas would ultimately mean for their communities:

The aunties in town now don’t have the time to teach people

[urban resident: 26-year-old male]

These days there are no fireplace sittings. What you should do is how you began growing with your friends, then call your children, sit them down and tell them this is what will help you all in life.
The loss of education about protective cultural practices permeated the narratives of substance use, especially for those living in urban areas. This subject was raised particularly frequently when discussions turned to participants’ almost unanimous concerns about increased alcohol consumption among young women. Many noted that young women had left their villages to seek education or work in urban areas, as upwardly mobile economic opportunities in rural agricultural settings were limited. These women were seen as highly vulnerable because they lacked the guidance and protection of their family structure. One 30-year-old male participant referred to the dangers of living in urban areas:

_The girls who party in town take [alcohol] from town. Then there is this category of women, the youth, who are invited by men for an outing from where they learn to take alcohol. They take alcohol because they are outing but for the women in this community [a rural village] it is not common to see them._

Concerns about the consequences that young women might experience if they tried alcohol or other substances were in notable contrast to the condemnation of those who had already consumed and were perceived as, “young girls who are already spoilt.” [25-year-old male] For the most part, this perception was derived from associations between women using alcohol and behaving in ways which were seen to violate or reject established social/sexual norms:
There are women here; they drink almost like men. We see them in bars – the same with men. Some women say alcohol is nice. But most of them say that when something is bought for you don’t leave it. It is men who buy for them, so they just drink it. When she drinks you see her life changes. She does things that are not proper. She begins to dance, and she develops hyper affinity for a man.

[20-year-old male]

Further, participants were explicit in drawing direct connections between their perceptions around increased alcohol use and the spread of HIV throughout northern Uganda:

Then the last one is alcohol because when someone is already drunk, he will find as though everyone is healthy and he will not care that does this one have the virus or she doesn’t have.

[33-year-old male]

Three of the participants who self-disclosed their positive HIV status saw alcohol use as intrinsically linked to when they became HIV positive, and two directly attributed their infection to drinking. One young male stated that alcohol had diminished his ability to make the decision to engage in safe sexual practices:

[drinking] is how I contracted the disease. I used to see that woman and my mind was also on her. On that very occasion, when I had already taken enough alcohol, all the fear vanished. And in those days, people were not so much aware of
testing. I made my advance and she accepted. We then had sex and that is how I contracted the disease. Alcohol gives you the courage to do anything, anything. That is how bad alcohol is. It gives you the courage to do anything.

[35-year-old male]

6.4.9 Additional challenges faced by women

Another 30-year-old likewise reported that he acquired HIV when he had alcohol-related intercourse with a young woman he met at a bar. However, his narrative differed from the one above in emphasizing that the young woman had seduced and taken advantage of him:

She then plays with your psychology in the long way. I, who am speaking now, my psychology was also played with. It was during those days when I was still working that some woman played with my psychology, which is how I got this problem [HIV].

The participants’ blame of the young woman and deriding her for drinking and sexual forwardness illustrates the externalized stigmatization of young women who were perceived to deviate from expected social behaviors. This blaming and shaming was personally noted by a female HIV-positive participant who willingly disclosed her status. While she did not attribute her acquisition to substance use, she recognized that alcohol had an impact on her HIV-positive life:

When he [her husband] is drunk some time he begins telling me that I am the one who gave him the disease yet we really don’t know who infected the other.
The externalized stigma towards young women who drank led many to automatically assume that they were likewise HIV positive. For some participants this derision manifested to the point of attributing women’s presence at drinking venues with sinister motives:

*It was heard that some women who are HIV positive want to infect men who sleep with them. So, they smear some oil that destroy condom in their private part. Their body will reach you. I have been hearing all this from in conversations. It has not happened to me.*

Although this view was not commonly held, it does exemplify the extent to which the externalized stigma towards women manifested when they engaged in frowned-upon behaviors. However, young men were also seen in a negative light, especially when conversations moved to the impact of non-alcoholic substances on the spread of HIV in the post-conflict era. As seen above, non-alcoholic drugs were referenced to drive these young men ‘mad’ and lead them to commit sexual assault and rape. In the view of one 20-year-old participant, this was directly linked to their likelihood of being HIV-positive and their desire to inflict the disease on others:

*Some men rape for a reason. Some have HIV/AIDS and are not happy about it, so they want to infect others with it. That is also continuously been done by the people.*
Such fear and stigma with regard to substance using, and perceived HIV-positive, young people made them a common point of reference for many participants as they expressed their concerns about post-conflict life.

### 6.4.10 Rebuilding traditional structures

Given the current situation and in light of the challenges facing northern Uganda, few participants had much hope that change would happen quickly or easily, especially with regard to addressing the growing problem of substance use. However, on the individual level, most participants who reported personal substance use during the interview process had either completely stopped using, or significantly reduced their consumption. One older male shared his personal success story:

*I stopped taking alcohol because I saw that my age was going but I had not done anything good in my life. My children are also becoming old. I don’t have anything like bulls for digging. So I saw that I have problems in that I don’t know how I am going to take care of my children and paying for their studies and that’s why I stopped taking alcohol. I stopped drinking at my own will because I saw the way alcohol was wasting me was too much.*

[42-year-old male]

This quotation illustrates many of the sub-themes that emerged with regard to potential positive changes that could counteract persistent or emerging anti-social behaviors. These included engaging in productive activity to counter idleness, a reconnection to the land and agriculture (as
opposed to settling in urban areas) and the need for educators and elders to disseminate appropriate behavioral expectations to younger generations. These changes were commonly mentioned together rather than separately, as this interconnection was seen as crucial to helping young men and women avoid the vulnerabilities and opportunities for exposure that drive current HIV patterns:

_The way to protect children is a child who can start nursery should be taken to school to avoid staying home, during weekends they should be taken to the garden, giving advice to children when they come back from the garden or school._

[24-year-old male]

And:

_Okay, there, I want to say assuming you have male children, because these days there are no fire place sittings. What you should do is how you began growing with your friends, then call your children, sit them down and tell them this is what will help you all in life._

[33-year-old male]

In calling for an active rebuilding of traditional physical infrastructures through which to facilitate the dissemination of social norms, participants also emphasized the need to address the
proliferation of substance serving venues, or to at least create framework within which they should operate:

*It doesn’t look good, they should first stop those dances, for that to happen they must close bars early, bars shouldn’t be opened early, it should be opened in the evening hours according to me.*

[48-year-old female]

Regarding the different forms of stigma, informants cited a need to address the lingering stigma towards HIV positivity in order to combat the unsafe sexual behaviors that were often associated with both its transmission and with substance use. For one participant, doing so was critical to mitigating the ongoing pervasiveness of the disease:

*Because you point at someone that she’s HIV positive yet you also don’t know tomorrow you might also be infected…tomorrow you go to the hospital and find that the finger you were pointing has turned on you.*

[18-year-old female]

A female participant who disclosed that she was HIV positive went a step further in not only recognizing the importance of situating efforts to address HIV within traditional social structures, but also highlighting the need for people who are HIV-positive to be willing to be open about their status:
When I was just told [of her HIV status], I was broken because when I was told that day I cried and didn’t even eat. Then I came and didn’t tell my parents they just saw my life had changed. I went to my mother’s sister in town and started telling her. She said her husband died long ago in 1990 when we were still young. So she is living a positive life, now I should see how she is living if there is anything that shows that she is HIV positive. Then from that time I started taking drugs and stayed freely, I got some people in the hospital who looked even healthier than me then I found life easy. Then I started giving up on those sorrows, I started living well how people stay till now in that when we tell people that we are HIV positive If you have HIV, you should not keep it in your heart, if you share it and your friends know about they give you advice that can make you live a better life.

[32-year-old female]

Drawing on the support and leadership of her maternal aunt, she now felt comfortable freely disclosing her positivity and trying to inspire others to do the same.

Finally, as participants explored the intersection of mental health, substance use, and HIV in the post-conflict era and looked toward the future of Acholiland, some recognized the potential contribution that external actors could make towards rebuilding their communities. Although there was a large focus on an internalized need for reestablishing cultural traditions in order to combat and prevent the proliferation of perceived negative behaviors and their consequences, participants also stated that experts were needed to provide counseling and treatment to those
already suffering from the effects of the decades of conflict. Discussions around such treatment programs focused primarily on those targeting HIV and other STIs, with scant mention of specific programs to address mental health disorders or SUD. This created many challenges for those in need of or seeking mental health and substance-associated care, who were often seen as left to their own devices:

_Alcohol needs deliverance from above, if not then it's impossible because I see that that drunkard can stop taking alcohol or if its someone who listens to advise or issues about the dangers of alcohol._

[42-year-old male]

When probed to identify where such services might be available and to what extent, participants frequently cited religious, often Pentacostalist, groups:

_It was those days [during the conflict] when people were still in the camps that some people had serious nightmare, screaming and running at night. They were advised to get saved so that they pray for them. Many of them got saved. But as people went back home from the camp, most of them also returned home, and I do not know where they are. Some of them must have died and others still alive, but I see most of them among saved people._

[20-year-old male]
Only one participant noted the existence of pharmacological treatment options for mental health or substance use issues, but did so while simultaneously noting the role of traditional approaches towards treatment within his community:

*People say that they should correct his head if it’s possible.* [Interviewer: Correct in what way?] *Drugs. At times they might even take him to the witch doctor to correct, to become a good person. That is what our culture says. If they find it hard they will say they must take him to get saved.* [Interviewer: Just get him saved⁴? Do you think getting saved is in the culture or just getting saved?] *Getting saved is not in the [Acholi] culture. Culture just says they should take that person to the witch doctor to be corrected.*

[29-year-old female]

Participants repeated feelings that were also frequent points of discussion with both CAB members, and non-participants in study communities, who engaged with research staff; these groups all noted that current programming efforts faced many challenges. Though the existence of health centers and NGO projects was acknowledged, their effectiveness was seen to be hindered by unequal quality of care, medicine stock outs, the cost of treatment, and the distance to treatment facilities:

⁴ Referring to the religious process of being ‘saved’ or ‘reborn’ into the Church
They [those needing any treatment] should go to hospitals, there are medical personnel who lie to us here in clinics which is not the right place to go... so you should go to Lacor\textsuperscript{5} or the main hospital [Gulu Regional Referral Hospital]

[38-year-old male]

Finally, at the end of interviews when participants were encouraged to ask questions of the research team, many wondered at the potential outcome of this project. In the subsequent discussions, staff noted expressions of research fatigue and a sense that members of the community felt a limited engagement with the outcomes of previous research programs they engaged with. This lack of feeling listened to was seen to significantly limit the capacity of outreach efforts to meet the needs of the population:

\textit{One day when they were counseling us in some hospital I replied that ‘Doctor, we keep on counseling from here but we don’t reach there.’}

[33-year-old male]

6.5 Discussion

6.5.1 Summary of findings

This chapter sought to explore the complex pathways through which over two decades of conflict have shaped behaviors, practices, and experiences pertaining to substance use, mental health, and HIV in northern Uganda. To this end, it began to address a knowledge gap in the connection

\textsuperscript{5} St. Mary’s Lacor Hospital, a private non-profit hospital just West of Gulu which was a research partner for this study and the Cango Lyec Project
between the perceptions, local understandings, and meanings attached to substance use, SUD, and the healthcare seeking prevention and wider promotion of HIV and mental health care in such a low-income setting. It further helped address the distinct lack of research utilizing qualitative methodologies to explore these risk factors and their intersection in sub-Saharan Africa and conflict-associated settings in general (Carrier & Klantschnig, 2012; Roberts & Ezard, 2015; Weaver & Roberts, 2010). Ultimately, it sought to allow residents of the region to describe the relationships that they and their communities have had with these health burdens as well as the perceived impacts within the contexts of their histories and lived realities. It is hoped that the key themes identified by participants’ narratives will support the design of relevant, actionable, and culturally sensitive interventions to effectively address the needs of community members. Throughout the interviews, participants openly disclosed personal challenges with substance use, experiences of conflict-associated trauma and subsequent struggles with mental health issues, and their HIV-positive status. Their stories and recollections paint a complex picture that both confirmed and contrasted prior research findings and epidemiological understandings of the complexities around SUD, HIV, and mental health in both conflict and non-conflict settings.

6.5.2 Culture, tradition, and young people

Feelings of loss and nostalgia for the pre-conflict Acholi ways of life permeated the qualitative interviews, and were considered to be deeply interconnected to perceived drivers of the spread of HIV and SUD during the conflict and post-conflict phases in north Uganda. These feelings pertained to the physical and social frameworks in which Acholi traditions were passed between generations. Traditionally, family compounds in Acholi regions of northern Uganda were built
around a ‘wang-oo’ or communal fireplace that was surrounded by separate structures for young men and women to reside in once they left their parent’s hut. In this setting they could be supervised and taught about healthy and expected behaviors by uncles – “Nero”, and aunts – “Wayo”, who also played a central role in courtship behaviors between families (Spittal et al., 2008). These frameworks for the dissemination of knowledge and perpetuation of social harmony were seen to all but disappear during displacement due to the destruction of the community’s physical infrastructure and subsequent scattering of families. The resulting rise of previously unacceptable sexual and substance use behaviors by young people during the displacement period therefore rarely seemed to surprise participants, who considered those behaviors to be a natural consequence of limited supervision and guidance. While the behaviors were still frowned upon, especially those related to the consumption of non-alcoholic substances, participants emphasized that “it was not easy to give advice at that time” and, “children had no time to be taught.” A shift appeared in the post-conflict narratives wherein the critique of young people who were still participating in previously unacceptable behavior intensified. For instance, during the conflict young men were seen to drink because of limited economic opportunities, while similar groupings of young men were considered ‘lazy’ in the post-conflict era. This shift largely appeared to derive from a perception that the young men’s actions were displays of a rejection of the reestablishment of cultural traditions and/or rebuilding efforts. The development of such a stigma against young people poses a challenge, as evidence from other post-conflict settings suggests that those who grow up during conflict often lack the skills needed to engage productively in post-conflict phases. In turn this contributes to a cyclical process of increased vulnerability to mental health disorders, SUD, and ultimately HIV (Ghobarah et al., 2004; UNICEF, 2009). This suggests that community-driven calls for the reestablishment of wang-oo
and Wayo/Nero teachings of cultural traditions should consider incorporating relevant and viable vocational training to help address the underlying issues of agency experienced by conflict-affected young people.

6.5.3 Situating narratives within broader evidence bases

The perceived drivers of substance use in the IDP camps identified in participant narratives largely matched those described in the wider empirical literature. These include the loss of one’s livelihood, a dependence on external aid for basic needs, and a sense of constant instability (Ezard, 2012; Oxfam International, 2008; United National Office on Drugs and Crime, 2016; Weaver & Roberts, 2010). Interestingly, the narratives also helped to explain aspects of the seeming contradiction between limited economic opportunity and the presence of increased substance use in displacement settings, which typically necessitate funds for procurement. This included the introduction of cheap high-proof alcoholic options such as the sachets, the direct cultivation of marijuana, and the sale of food and other aid provided by NGOs. Not only does the redirection of aid resources heighten direct individual- and family-level risk factors for malnutrition and resulting HIV risk, but also contributes to the more diffuse drivers of HIV acquisition, including participation in transactional and survival sex, ARV non-adherence, and limited engagement with health systems (Audain, Zotor, Amuna, & Ellahi, 2015; Dunkle et al., 2004a; Weiser et al., 2011). There is clearly a demonstrable need for aid organizations to further examine their protocols for the allocation of resources, although this is a complex task amidst the many challenges that they already face.
Reports of cannabis grown in and around IDP camps further illustrate the complex role that substances can play in these settings, especially in light of stated concerns about limited arable land for food production. While some cannabis was possibly cultivated for personal consumption, it was reported to be a commodity that was in demand by the few groups with disposable incomes, thus offering some economic opportunity amid a dearth of other earning options. The complex relationship wherein the cultivation of illegal substances helps to economically empower a marginalized group has been reported elsewhere in sub-Saharan Africa (Anderson, Beckerleg, Hailu, & Klein, 2007; Carrier & Klantschnig, 2012). Efforts to reduce cultivation and subsequently limit overall use will likely meet with limited success in such settings where economic needs are high in the absence of economically viable alternatives. This is especially true when the people or groups who have enforcement roles are some of the primary users of substances grown in their communities, which participants’ narratives indicated to be the case in northern Uganda.

During their interviews, participants expressed the widely held perception that, “These days the level of taking alcohol is high, more than during the war,” which is similar to the viewpoints of NGOs and community leaders that helped inform this study. However, only a small number of interviewees personally reported drinking, and those who did often told stories of successful cessation or limiting of use. Likewise, the perception of which groups were indicative of the problem, such as boda-boda drivers, was not corroborated by the experiences of actual members of those groups. While the participants in this study were purposely sampled as part of the qualitative methodological process, and thus may not be representative at the general population level, their personal narratives did suggest a diminishing prevalence of alcohol use in the region.
The discrepancy between perceived and reported alcohol use is further supported by the quantitative evidence reported on in Chapters 4 and 5. These findings derived from multiple methodologies strongly suggest that, at least in the case of alcohol, consumption and related harms are significantly less now than they were in the past as reported in earlier studies (Ertl et al., 2016; S. H. Patel, 2012; Roberts et al., 2011). It is possible that the discrepancy between perceived and reported alcohol use may reflect a response bias that led to an under-reporting of personal consumption in both the qualitative and quantitative portions of the study. However, the strong rapport between research staff and participants during the interviews was such that many participants self-disclosed their HIV status and/or personal struggles with mental health traumas. This occurred even among those who noted their disclosures could subject them to externalized stigma, so it is unlikely that substance use would not have been discussed in a similarly open manner. Further, the personal narratives of drinking largely matched the information gathered on each participant via their CLP questionnaires, showing that the data from both methodologies was consistent.

Given that the above findings are contrary to participant perceptions of increased use, other potential reasons for these perceptions need to be considered. The central themes that emerged in the qualitative interviews included descriptions of persons specifically known to the participant (e.g. the visibly intoxicated woman who exposed herself and the former soldier who committed suicide) or strictly defined, highly visible groups (e.g. boda-boda drivers, unemployed youth congregating in trading centers, young women who frequented alcohol serving venues). In each of these cases, both at the individual and group level, the descriptions coincided with commentary of concurrent violations of other norms of socially acceptable behaviors. These
behaviors included being sexually overt as a female, engaging in the highly frowned upon use of non-alcoholic substances, and not participating in agricultural activities and/or the rebuilding and resettlement efforts. In fact, some of the concerns about sub-groups who engaged in socially unacceptable behaviors appear to track with aspects of the quantitative findings. The multivariate regressions seen in Chapter 5 reported that men who still remained in displacement settings (e.g. not returning to traditional homesteads or settling in urban areas) – now almost a decade after the cessation of fighting – had more than a twofold likelihood of screening for hazardous alcohol use. Sexually active women with more than three partners also had over three times higher odds of screening for hazardous alcohol use. The inconsistency between the more objective population-level statistics and individually subjective narratives may therefore be partially driven by the combination of use being more openly visible and blatant than in the past, and use being exacerbated by concurrency with other behaviors that are similarly condemned. It is also possible that participants’ concerns about increased alcohol use are an accurate reflection of increasing non-alcohol SUD in northern Uganda, which to our knowledge has not been investigated in a quantitative representative sample of the population. However, this hypothesis receives uneven support from the interviews, as almost all participants felt that alcohol use was higher than during the conflict, but were roughly equally split as to whether the same was true for marijuana and khat, while noting that the use of inhalants was significantly less. Further research addressing substance use is clearly needed given the overall rise of non-alcohol substance use across sub-Saharan Africa, especially in relation to the rapid changes associated with overall economic development (Carrier & Klantschnig, 2012; United National Office on Drugs and Crime, 2016). In addition, the findings on alcohol use clearly highlight a unique opportunity for meaningful intervention. If rates of usage are lower than originally thought, as the evidence
appears to suggest, prevention programs have the potential to be highly effective. This is crucial as the region continues to reintegrate within Uganda as a whole - which has some of the highest alcohol consumption rates in sub-Saharan Africa (WHO, 2014).

6.5.4 Interplay of conflict, substance use, mental health, and HIV

The intersectionality of conflict-associated trauma, substance use, and HIV were frequent topics of discussion for participants. They shared often-distressing personal and familial experiences of trauma that ranged from hunger and deprivation to direct experiences of violence and sexual assault. Within these stories, references to medical terms related to mental health such as depression or PTSD were absent from all the narratives. This was the case despite the frequent research that has been conducted on the subject across the region. Although these studies used different methodological approaches, they tended to report rates in the 10-20% range overall and note significantly higher rates for subsets of the population (Ertl et al., 2016; Kinyanda et al., 2014; S. H. Patel, 2012; P. N. Pham et al., 2009). These trends were mirrored in participants’ discussion of suicidal ideation, which was reported in the CLP as having occurred within the past two weeks by 11.7% of the overall sample and 19.2% of those who were HIV positive. However, it was only mentioned once during the qualitative interviews, and then in reference to ‘madness’ resulting from marijuana use (Malamba et al., 2016). Further, while participants frequently discussed perceived drivers of the HIV epidemic, none of them included mental health factors. This is despite evidence to the contrary in the CLP cohort, which associated both screening for PTSD and depression with HIV prevalence (Malamba et al., 2016). Study participants’ limited discussion of mental health issues and associated risk factors may be in part due to the limited scope of mental health outreach and treatment programs across northern Uganda. Those
programs that do exist are hindered by an uneven evidence base on which to plan effective programming, as studies exploring PTSD and depression in northern Uganda vary significantly in their use of psychometric tools and methods. As a result, the reported prevalence of PTSD alone ranges from 10% to 99%, depending on study methodology and population of interest (Bayer et al., 2007; Derluyn et al., 2004; Klasen & Oettingen, 2010; Mugisha et al., 2015; Ovuga et al., 2008; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; P. N. Pham et al., 2009). Although such inconsistencies present challenges, they also provide an opportunity in clearly delineating an area for intervention. More specifically, culturally sensitive mental health-focused HIV-prevention programs that recognize the traumas faced by much of the population may be an effective way to help address the unexpectedly high, and potentially rising, HIV rates in the region. Such programs should occur across the north to be accessible to as much of the population as possible, and seek to build upon the positive role of rebuilding and resettlement. Specific recommendations are such programs are discussed in Chapter 7.

When participants discussed mental health, it was almost wholly in the context of substance use, although the temporal sequence of whether use preceded mental health or vice versa was dependent on the substances themselves. In the case of alcohol, both internal and external perceptions of use were consistent with epidemiologically established pathways of self-medication and coping with daily stressors (Ezard, 2012; Roberts & Ezard, 2015; United National Office on Drugs and Crime, 2016). These pathways were identified both during the conflict and in more recent post-conflict periods. However, it is interesting to note that in the CLP, after adjustment, the quantitative evidence did not find associations between hazardous drinking and screening for depression, PTSD, or frequent experiences of trauma (Chapter 4). In
contrast to the trauma-to-alcohol directional pathway, the perceived temporality for marijuana and khat usage had an inverse relationship wherein consumption was seen to drive users “mad.” Communal perceptions and stories told by the few participants who had tried marijuana or khat uniformly saw uptake of these substances as deriving from peer-based influences, with poor mental health being a subsequent corollary. It is particularly salient to note that both narrative themes included the common presence of GoU soldiers; that is, substance use, and its subsequent potential for impaired decision-making, were seen to occur at times when the soldiers were acting in official capacities.

Although participant narratives did not address mental health disorders, connections between the conflict, substance use, and HIV were frequently made. These connections recognized direct relationships between each potential grouping of risk factors as well as temporal trends for each. Conflict-associated mass displacement and subsequent resettlement into IDP camps were remembered for removing the pre-conflict protective physical barriers of distance and isolation and upending social protections through the breakup of familial support networks. The vulnerabilities associated with this perceived loss of protections coincided with intermingling within densely packed populations and the appearance of high-risk groups, both of which are often seen as having played a major role in the transmission of both HIV and SUD in the north.

Participants also explored the role of conflict-associated deprivation as a driver of exchange-based sex, which often occurred in or near to alcohol-serving venues and in turn contributed to the spread of HIV. These causal pathways are readily evident in the results presented in the quantitative portions of this dissertation (Chapter 5), in other CLP publications, and have been
well-established in the wider body of epidemiological literature (Ezard, 2012; Malamba et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010).

Finally, participant narratives were particularly valuable in illustrating how the regional- and combatant-specific characteristics of conflicts can also interrupt or wholly alter widely established epidemiological pathways. The war in northern Uganda was heavily influenced by the beliefs and practices of the LRA. Although participants told difficult stories of abduction, forced marriages and coerced violence at the hands of the LRA, those who had had both personal and peripheral interactions with the group recognized that its ideology may have protected them from acquiring/transmitting HIV and developing SUD. The LRA’s swift and brutal enforcement of their tenets enabled their perpetuation throughout decades of conflict, in contrast to the relative rapid dissolution of broader Acholi traditions. The subsequent impacts of this dichotomy are complex. Although former abductees carry a disproportionate mental health burden than those in IDP camps - being almost three times more likely than non-former abductees to screen positive for depression and more than three times for PTSD - they remain at no greater risk for HIV or SUD, which would not normally be expected (Blair et al., 2015; Malamba et al., 2016). This may in part be due to an inverse higher risk of HIV and SUD vulnerabilities for those living in IDP camps. Regardless, there is an evident need to better understand the underlying ideologies influencing conflicts and how they may persist in post-conflict settings such as northern Uganda. A failure to gain this understanding could cause programmatic interventions to be ineffective due to a lack of local contextual adjustments.
6.5.5 Transition into the post-conflict phase

As participants’ narratives turned to the post-conflict era, the connections they made between the breakdown of traditions, the establishment of previously rejected behavior, and the spread of SUD and HIV coalesced. In making these connections, participants mentioned well-established pathways of risky sexual behaviors (e.g. inconsistent condom use, multiple partners, transactional sex), diminished decision-making, and both IPV and sexual assault. Similarly, HIV-positive participants openly discussed the role that alcohol use had played in their acquisition of HIV.

Standing out amidst the themes of social behavior and alcohol consumption is the extent to which condemnation against use by females manifested concurrently with those of HIV-risk and acquisition. Throughout the interviews, perceptions of what constituted appropriate alcohol use differed greatly for men and women. Epidemiologically, most alcohol consumption guidelines and screening tools acknowledge that sex-based variations exist in consumption behaviors and in their biological effects; these variations are primarily seen to result from factors such as average body weight and metabolism (T. Babor et al., 2001). These considerations were not expressed in the qualitative interviews. Instead, concerns about women’s consumption of alcohol was closely tied to its impact on outward expressions of their sexuality. Participants stated that alcohol brought out a ‘very high sexual urge’ in women that led them to ‘vibe’ on men, which was uniformly seen as inappropriate behavior. This stands in contrast to fairly casual observations, and the almost tacit expectation, that men who drink or go to bars often do so with the understanding that they will pursue women for sexual encounters. Therefore, the communally held negative beliefs about women’s drinking behavior may be more rooted in concerns about
perceived deviations from long-held social-sexual norms rather than in the act of drinking itself (Spittal et al., 2008). It can be argued that this is evident in the neutral language that participants used when they acknowledged (after being probed) that women do drink on certain special occasions or holidays. Nonetheless, the perceptions of biological differences in the effects of alcohol consumption on men and women led participants to believe that young women who visited alcohol-serving venues did so because they were actively or tacitly seeking sex. This stigmatization was exacerbated by the perception that these women were thus violating cultural norms of appropriate sexual behavior. Stereotyping of young women was so extreme that participants discussing them not only automatically viewed these young women as prostitutes, but also as HIV positive and at times even actively attempting to spread the disease. The condemnation around these women’s perceived status was a stark contrast to participants’ more commonly held perception that HIV-associated stigma was diminishing in the region. This is of great concern as it not only inhibits larger efforts to destigmatize the disease, but also places young north Ugandan women at a heightened risk for assault, IPV, GBV and the potential acquisition of HIV if they are currently seronegative.

6.6 Limitations

In interpreting the qualitative results, it is important to recognize the potential limitations present in the study design and analysis. The qualitative portion of the dissertation relied on self-reported behavioral data from a purposively sampled subset of the larger CLP, which was taken from a sample of the population in northern Uganda. The potential for response bias among participants was ever present, as they may have adjusted their personal stories due to real or perceived stigmas, especially with regard to the loaded topics of substance use, mental health, HIV, and
their roles during the conflict. Study protocols aimed to reduce this potential as much as possible through the use of trained Acholi research staff who had ethnic, socio-economic, sexual, and cultural backgrounds similar to participants, which aimed to minimize discrepancies between the interviewer and interviewee. Participants’ open disclosures in each of the areas of inquiry suggest that response bias was successfully reduced.

The candidate’s limited knowledge of the Acholi Luo language and reliance on study staff for the transcription and translation of all interviews was another limitation. However back-translation and field notes were used to periodically assess the veracity of the process and give the narratives a stronger context, which included a full transcription and translation of seven randomly selected interviews to assure the quality of the analyzed versions. While it is possible that linguistic nuances and/or cultural idioms commonly employed by people in northern Uganda were missed in the translation process, the candidate spent significant time studying Acholi both formally and informally to begin addressing this gap. Finally, despite the thematic similarities seen across participant narratives, and the use of a methodological approach allowing for individually diverse narratives, the findings were drawn from only 30 purposively sampled participants. It is therefore possible that those facing extreme mental health or substance use disorders would have brought up themes beyond that of the sample population. However, the range of narratives expressed by study participants and thematic saturation that occurred suggest that the information contained herein provide detailed insight into the lived realities for many in northern Uganda.
Certain aspects of the results of this study pertain to specific characteristics of the conflict in northern Uganda especially with regards to the role of the LRA in substance use and sexual vulnerabilities both during and after the conflict. However, themes pertinent to these vulnerabilities (e.g. idleness, breakdown of social norms, and trauma) and opportunities (e.g. modernization and IDP camp life) are sadly common in conflict and post-conflict settings throughout the world.

6.8 Looking forward

Participants largely attributed the underlying drivers of current perceived increases in substance use and HIV to the conflict. However, some raised the interesting question of the extent to which substance use and HIV would have manifest in the absence of war, with development and urbanization trends remaining unchanged. This line of inquiry is worth exploring as the recognition of both conflict-specific and broader regional factors that impact substance use and HIV are crucial to identifying areas for intervention. During the decades encompassing the conflict in northern Uganda, HIV spread rapidly across sub-Saharan Africa in rural and urban areas alike, including Uganda. At the same time, expanding transportation networks, economic development and modern forms of alcohol production led alcohol to permeate the region. Although the high-proof sachets that supplanted traditional Acholi brews appeared and spread widely during the war, participants were just as likely to attribute their use of these brews to access, cost, and transportability, all of which were independent of the conflict. Finally, there remains the question as to whether the drivers of familial separation and the subsequent erosion of traditional norms, which had a strong impact on young people in particular, would have occurred in the absence of conflict. While it is impossible to definitively answer this question,
participant narratives around risk behaviors in the post-conflict period are thought provoking. Many noted that the economic and educational opportunities available in the larger urban areas led parents to send their children away or inspired young people to go away on their own, despite the fact that, “The aunties in town now don’t have the time to teach people.” It is therefore possible that development would have led to generational separation even in the absence of war, albeit potentially to a lesser extent. Finally, a non-conflict narrative would not include the significant presence of high-risk groups as well as conflict-associated trauma and subsequent mental health disorders. It would also not include the potentially protective effect of the LRA on sexual and substance use associated risk. This exploration recognizes that for HIV and alcohol treatment programs to be effective, they cannot be based on a formulaic approach that defines exposures and vulnerabilities as exclusively to a dichotomous part of either a narrative of ‘conflict’ or a narrative of ‘development.’ These limited approaches risk ignoring pervasive risks that will persist and potentially metastasize if unaddressed. Thus, future programs must take a context-specific approach that both directly engages the population and that craft interventions grounded in established evidence bases that reflect the lived realities of those they seek to help.
CHAPTER 7: Recommendations and Conclusion

7.1 Summary of study findings
Though over a decade of peace has passed since the end of the brutal civil war that engulfed northern Uganda for a generation, little remains known about the vulnerabilities facing the population as it rebuilds and rapidly reintegrates with the rest of the country. Much of this derives from a limited epidemiological understanding of the greater interplay of risk factors in conflict and post-conflict settings globally. While conflict-epidemiologists have begun to more meaningfully explore the relationship between trauma, mental health, and HIV in these settings, they have noted an overall omission of research into the powerful potential impact of substance use within these frameworks (Kerridge et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010). This body of work sought to contribute to this understudied field of research through an exploration grounded in the context of post-conflict northern Uganda. While each chapter individually contributed to investigations of the stated objectives of this dissertation and assessed subsequent proposed hypotheses, the overall multidisciplinary approach allowed for a holistic analysis and interpretation of the findings.

The quantitative inquiries into substance use focused on alcohol consumption and associated harms due to the inordinately high rates seen in the rest of Uganda, as well as to community-driven concerns. Chapter 4 provided the grounding for further analyses of the population-level data explored in Chapter 5, through the examination of the factor structure and validity of the AUDIT scale within northern Uganda. This examination was chosen due to concerns in the extant literature that cultural, ethnic, and social aspects of consumption may affect the test’s applicability (T. Babor et al., 2001; Doyle et al., 2007; Peng et al., 2012). The CFA reported
consistent good fit for the overall population, and when stratified by participant sex. The strength of the two- and three-factor models within the CFA were consistent with growing epidemiological evidence that the AUDIT successfully measures or measured distinct aspects of use as well as its consequences (Doyle et al., 2007; Reinert & Allen, 2007; Selin, 2006). However, within this realization, the overall best fit of a three-factor approach over a two-factor structure frequently reported in other settings suggests that as with the test as a whole, cultural, social, and ethnic aspects around drinking behaviors need to be taken into account prior to the application and interpretation of the test (Bergman & Källmén, 2002; Chung et al., 2002; Peng et al., 2012; Reinert & Allen, 2007).

Quantitative explorations of this dissertation’s objectives continued in Chapter 5, where findings both affirmed, and contrasted, some of the proposed a priori hypotheses. The most significant findings were in regards to Hypothesis 1.2 - that rates of consumption in the north would be higher than elsewhere in Uganda. Meetings with CAB members at the inception stage of this research found many who reiterated concerns reported elsewhere, namely that since the conflict, substance use was on the rise and was significantly impacting the region. These concerns appeared to be reinforced by the baseline findings from the CLP reporting unexpectedly high rates of HIV, persistent levels of conflict-associated trauma, and subsequent clinical screenings for depression and PTSD (Malamba et al., 2016). Due to the well-established associations between these vulnerabilities and SUD in other settings, we expected to find concurrently high scores of hazardous consumption in the AUDIT (Dévieux et al., 2013; Donovan & McEwan, 1995; Harbertson et al., 2013; Zablotska et al., 2006). It was therefore striking to see that not only were overall consumption levels lower than in the rest of Uganda, but that rates were also significantly lower than prior studies in the region, with 25.9% of men, 5.0% of women, and
14.2% overall reporting consuming any drinks containing alcohol (Ertl et al., 2016; Hahn et al., 2014; Roberts et al., 2011; Santos et al., 2014; Bonnie Wandera et al., 2015; Weiss et al., 2016; WHO, 2014). These findings similarly stood out against perceptions expressed in the qualitative interviews reported in Chapter 6, where most participants felt that alcohol rates were higher in the present time, than during the conflict. However, the interviews also helped elucidate some possible reasons for these discrepancies. The themes that emerged around perceptions of unrestrained SUD clustered on highly visible subsets of the population whose alcohol use likewise consisted with other derided behaviors and therefore stood out to an extent where they may have potentially overshadowed a lessening of use in the population as a whole.

As expected, there were significant gendered-associations with alcohol consumption both in the qualitative and quantitative findings, with males more than six-and-a-half times more likely to exhibit problematic drinking behavior, six times more likely to present with alcohol dependence, and over six times more likely to suffer from alcohol-related harm and consequences. This is consistent not only with findings from the rest of Uganda, but also those globally (J. P. Allen et al., 1997; Isidore S. Obot & Room, 2005; WHO, 2014). The qualitative interviews exposed the ways the known consequences of such gendered dynamics affected participants daily lives, with direct connections drawn to high levels of intimate-partner violence, increased HIV risk, participation in transactional sex, and family-level economic instability (Ezard, 2012, 2014; Gottert et al., 2017; Tumwesigye et al., 2012).

The multivariable analyses in Chapter 4 identified factors associated with hazardous alcohol use in a large representative sample of a post-conflict population. These analyses were stratified by participant sex due to the social, cultural, and tribal norms with regard to alcohol consumption. The scope of findings pertaining to women was limited due to the overall small number (n=25)
who screened for hazardous drinking even at the relatively low ≥3 AUDIT summation score cutoff level. However, among them, a few key findings still stood out. As expected, age remained significantly associated with hazardous drinking after adjustment, as did a variable associated with potentially risky sexual behavior, that of having more than three sexual partners. Despite the clear limits of over-extrapolation from such a small sample, they nonetheless indicate that further research is needed with regards to alcohol-related risk factors and protective behaviors for women in these setting. This is especially needed given the outsized nature of both the concern and the derision expressed in the qualitative interviews towards women who consumed alcohol. Though an exceedingly small subset of the population, these women faced significant levels of stigma and perceptions as to their behaviors, many of which may likewise put them at increased risk for IPV, GBV, and HIV.

The analyses of male participants in Chapter 4 identified many factors associated with hazardous alcohol use. Similar to women, age was a significant predictor of use, as were factors associated with sexual behaviors, including an over four-fold likelihood of hazardous drinking among those with more than three lifetime partners. The strong connection between risky-sexual behavior and alcohol use was further explored in the subset of men who were sexually active, where screening was three times more likely in those with syphilis, and over four-and-a-half time more likely in those who were unsure of their sexual partner(s) HIV status. This is unsurprising given the established connections between problematic substance use and known HIV risk factors, including a greater number of lifetime sexual partners, concurrent STIs, and limited awareness of partner(s) statuses (Drumright et al., 2004; Hanson et al., 2008; Morris & Kretzschmar, 1997). Despite the association between sexual behavioral and hazardous drinking, they did not consequently appear to manifest in a higher prevalence of HIV in these participants. This
diverged from the dissertation proposed in Hypothesis 3.4, derived from established evidence that problematic alcohol use can heighten vulnerability for HIV through increased high-risk sexual behaviors, poor adherence to medication regimes, and other factors such as IPV (Annan & Brier, 2010; Cohen et al., 2001; Fritz et al., 2010; Palfai et al., 2014; Samet et al., 2004).

The lack of an association between screening for depression or PTSD and alcohol use behaviors is also of note for its deviation from the *a priori* hypotheses in this dissertation and associations seen in other settings (Ezard, 2012; Stappenbeck et al., 2014; Weaver & Roberts, 2010). This is despite a consistency between the reported rates of those screening for both PTSD and depression in the CLP and those found in other large studies in the region (Malamba et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). It also stands out given that the men in the study with suicidal ideation had an almost three times higher likelihood of hazardous drinking. While some of this may be explained by the unexpectedly low overall consumption rates, and the lower power possible to detect small associations with regards to this hypothesis, other potential drivers appeared in the qualitative findings in Chapter 6. Even among the participants who noted mental anguish associated with the conflict, few cited it as a significant factor that manifested in their lives in the post-conflict phase. Therefore, while the legacy of conflict-associated traumas may see such people screening positive for criteria associated with PTSD and depression in quantitative scales, it may not affect their daily lives in a manner that pre-disposes them towards self-medicating behaviors through alcohol. Similarly, the impact of the LRA’s role in influencing this relationship cannot be understated, as quantitatively, abduction was found to have a protective effect on problematic drinking among men, despite abductees’ much greater likelihood of screening for PTSD and depression (Malamba et al., 2016;
S. Patel et al., 2013). This helps to explain the limited association between depression or PTSD and alcohol use behaviors as those were abducted were more likely to be depressed or have PTSD and yet were not prohibited from using substances as coping mechanisms. Indeed, as seen in Chapter 6, the LRA’s strict prohibitions against the use of any substances, including alcohol and cigarettes, were brutally enforced and their legacy may be continuing to depress associations where they may otherwise appear (Soto, 2009; Vlassenroot & Doom, 1999).

7.2 Study strengths and unique contributions

7.2.1 Strengths

One of the greatest strengths present in this dissertation comes from its multidisciplinary approach and strong partnerships within the communities of northern Uganda. Methodologically, with the research both occurring on a subject matter and in a setting noted for their lack of inquiry, the concurrent use of qualitative and quantitative methodologies allowed for a comprehensive and holistic exploration of the vulnerabilities faced by the affected populations. In this dissertation, it allowed for the population-level quantitative results to be explored through the perceptions of the participants while enabling the embedding of objective data into the qualitative narratives. This proved especially critical in the exploration of the overall lower than expected rates of alcohol use in the population.

The study’s rigorous HIV testing protocols, utilizing side-by-side ELISA and confirmatory Western Blot test, provided a surety of results beyond what would have been possible via more commonly used rapid-tests. This was not only important in assuring data quality, but proved
critical to participant engagement, as many cited their trust in, and appreciation for, reliable CLP results as a reason for participating in the study. Likewise, the use of internationally validated screening tools for mental health (e.g. HTQ, HSCL-25) and substance use (e.g. the AUDIT) allowed for greater comparability within the larger realm of established epidemiological knowledge. Their initial testing within a pilot community, and subsequent analysis and adjustment as needed, further strengthened their representative nature of the cohort-level data. Specifically, with regards to the use of the AUDIT in this dissertation, the initial step of conducting a CFA to assess the test’s reliability was a critical strength. Though the test had been used previously in Uganda, the applicability of its factor structure had yet to be established. Therefore, the findings with regards to the CFA were critical to establishing a foundation for subsequent analyses.

Another powerful asset to this dissertation was the skill and dedication of the Ugandan research team. All staff, both those of the CLP and those independently hired by the candidate, worked diligently throughout the process to ensure that all data were of the highest quality. The team members independently hired by the candidate for the qualitative portion of the research were all bilingually fluent in Acholi Luo and English, and all had deep familial and cultural roots in the region. This allowed them to connect with participants and to establish a greater sense of comfort within the interview process. Further, this allowed for the capturing of idiomatic phrases and other culturally safe aspects of interviews through field notes and relevant lines of questioning. Their rigorous training, dedication, and care were critical to the fact that there were no adverse events that occurred during the course of this study.
Finally, the strengths for the qualitative portion of this study, comprising the primary data collection and analysis, derived heavily from the engagement of the CLP and CAB members through the entire research process. Under their guidance, this dissertation not only underwent the required ethical approvals both in Canada and Uganda, but also sought additional community level approval through engaging local traditional and elected leaders to gain their support for the study. Their engagement and participation from the study’s formulation on to preliminary knowledge translation activities ultimately has led to a deeper insight from which to approach, analyze, and interpret the data, and also helped to ensure that the results are relevant to informing actionable positive change.

7.2.2 Unique contributions

Amid the rising numbers of refugees and IDPs globally, conflict epidemiologists continue to highlight the understudied role of substance use within larger conflict and post-conflict frameworks despite its powerful potential to exacerbate well established vulnerabilities (Kerridge et al., 2016; Roberts & Ezard, 2015; Weaver & Roberts, 2010). Even when studied, research disproportionately occurs in developed countries, and the few studies that have occurred in low-and middle-income nations are limited by a lack of standardization in methodological approaches, validated measurement tools, and sampling issues (Ezard, 2012; Johnson, 1996; S. C. Kalichman et al., 2007). Therefore, the research contained within this dissertation represents a crucial step towards establishing a more rigorous evidence base. Further, to our knowledge, this is the first study to use a combined methodological approach to explore the role and impact of substance use within the network of HIV and mental health in conflict and post-conflict settings.
Ultimately the findings, when combined with future research, will allow for a field of literature from which meaningful interventions can be implemented.

The aims approached in each chapter likewise were unique in their scope and findings. Though significant research has occurred into the use of the AUDIT since its inception, and more recently into its subscales structure, studies continue to note the potential for cultural, ethnic, and social factors to influence its standard use and potential applicability (J. P. Allen et al., 1997; Doyle et al., 2007; Peng et al., 2012; Rist et al., 2009). This comes as the use of the AUDIT continues to grow across sub-Saharan Africa amidst the calls, noted above, for a more rigorous use of validated tools for assessing substance use in conflict and post-conflict settings. To our knowledge, the work presented in Chapter 4 is the first instance in which the factor structure and validity of the AUDIT has been tested in a representative sample of a conflict-affected population, and one of the few studies to do likewise in sub-Saharan Africa. The findings, demonstrating strong internal validity and applicability of one-, two-, and three-level approaches overall, and for men and women separately, therefore provides much needed grounding endorsing the use of, and findings from, the AUDIT in similar settings. It also continues to build on prior evidence demonstrating that the factor structure is not dependent on participant sex, and that non sex-stratified approaches do not bias toward one-factor models (Peng et al., 2012; Rist et al., 2009) Critically however, the findings in Chapter 4 demonstrate a superiority of three-over two-factor approaches to the test, in contrast with CFA from other settings, that record the ongoing potential impact that regional and cultural characteristics may have even on objective measurement scales. This highlights the need for scientists to engage members of the community and situate themselves within the understandings of the peoples who they study prior to initiating
Chapter 5 sought to directly address the paucity of research into the impact of alcohol use on HIV and mental health related disorders in conflict-associated settings. It is the first study in over a decade to explore alcohol use through a validated metric in northern Uganda in a representative sample of the population, despite the many changes occurring in the post-conflict phase (Roberts et al., 2011). Further, it is one of the first studies to specifically look at the relationship between the variables and conflict as a priori topics of interest (Ezard, 2012). The findings from Chapter 5 were reaffirmed by the contributions within Chapter 6, where participants were able to explore the relationships between factors based on their own histories and perceptions. In doing so, the chapter provided unique insight as to how purely quantitative metrics and approaches in such settings may miss critical connections. In addition, it allowed for study participants to share their concerns and suggestions for meaningful interventions. Chapter 6 was likewise unique in seeking to explore the recognized understudied field of conflict-associated SUD though a qualitative lens, specifically seeking to probe whether known epidemiological pathways of risk were similarly perceived by those most affected.

7.3 Implications and recommendations

The following section offers recommendations, implications, and areas for future research derived from a comprehensive assessment of this dissertation. Those specific to each individual section and methodology are described in the corresponding chapters.
7.3.1 Urgent need for further research

The unique contributions present within this dissertation pertaining to the field of substance use research within the context of conflict and post-conflict settings, lay bare the continued understudied nature of the field. Thus, one of the key recommendations conforms with those noted from other epidemiologists, namely that further research is critical to better understand the role of alcohol and other substances in conflict-associated risk (Roberts & Ezard, 2015; Weaver & Roberts, 2010). The evidence from Chapter 5 exposed the complexities with which known bilateral epidemiological pathways - between mental health and substance use, substance use and HIV, and HIV and mental health – can be affected by conflict and conflict-specific characteristics. This was reinforced in the qualitative findings of Chapter 6, underscoring the seemingly outsized role the LRA and their ideology have had on relationships in northern Uganda. The participant narratives also hinted at the protective effect of the post-conflict rebuilding process in interrupting the pathways, which were unable to be assessed quantitatively due to the cross-sectional nature of current data. The lack of an established body of evidence with which to compare these results makes it difficult to assess with any great accuracy whether such findings persist in other similar settings. This likewise highlights the need for qualitative participatory research within this field of study.

7.3.2 A dwindling unique opportunity

Northern Uganda currently faces a unique opportunity with regards to addressing substance use disorders, especially those pertaining to alcohol use. With community leaders and members of the broader population alike expressing concerns as the impact of SUD, there is a clear desire to act. This comes as the population-level quantitative findings demonstrate that alcohol use and
related hazardous drinking behavior in the region are not only much lower than the rest of Uganda but have also decreased since the encampment phase of the conflict (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Roberts et al., 2011; WHO, 2014). Further, both the quantitative and qualitative findings suggest that use remains contained within targetable specific geographic areas and small groupings of the population. As such, every effort should be made to identify these groups and individuals, and when possible offer treatment options as well as limit the extent to which they can influence those around them, especially younger generations. Practically speaking, in such a remote region and with limited resources this is likely most feasible through screening and interventions at the few primary care centers in the north. Those arriving at hospitals such as St. Mary’s Lacor or Gulu Regional Referral could easily be given the brief three-question AUDIT-C, and those scoring as potentially hazardous drinkers could receive counselling prior to discharge as merited by their classifications (T. Babor et al., 2001; Bush et al., 1998). In the long run, aid organizations should also heed the words of one of the study’s participants, who noted that treatment and prevention programs need to be in the villages among those most affected. First and foremost, given the quantitative findings, this means that substance use prevention programming efforts should focus in and around the remaining displacement settings and trading centers around old IDP camps where the majority of current use exists.

It appears that aspects of the rebuilding and resettlement process (e.g. the slow and uneven pace of the rebuilding processes, widely-dispersed population, and limited economic opportunities in rural areas) are likely hindering alcohol distribution networks, advertising, and purchasing capabilities outside of the larger urban areas, depressing use at least for the time being (Bryden et
al., 2012; IDMC, 2014; United Nations Development Program, 2015). Likewise, the qualitative interviews highlighted the power of engagement with the rebuilding efforts and reconnection to cultural traditions as directing participants away from consumption. Taken together, these findings suggest northern Uganda has a fortuitous opportunity to implement substance use treatment programs while the numbers of those in need currently remain relatively small. More so, the existing low numbers allow for the powerful potential for preemptive substance use prevention and education programs to limit the extent to which problematic behaviors expand as the region continues to develop.

While the current low rates of alcohol use in northern Uganda offer a unique opportunity for timely interventions to have lasting positive impacts, an absence of action may have detrimental and far-reaching consequences. Not the least of these is the potential for a rapid expansion of alcohol use and related individual- and community-level consequences as the region reintegrates with a country with one of the highest per-capita consumption levels in sub-Saharan Africa (WHO, 2014). Similarly, the protective effects of the rebuilding processes that were seen to partially mitigate the social and cultural drivers of problematic use during periods of conflict will likely diminish over time, and may in fact be accelerated by the ongoing challenges in the resettlement processes (IDMC & Norwegian Refugee Council, 2008; Mabikke, 2011; UN Joint Programme on HIV/AIDS (UNAIDS), 2014b). Therefore, the success of recent challenges to proposed legislation at the national level that were seen to facilitate land grabbing should be welcomed (Abdallah, 2017; Okello, 2017). Further, efforts must be made at the local and national level, and supported by both international governmental and non-governmental actors, to support the resettlement of previously displaced population back to traditional homesteads or
other viable lands. Not only will this assist in the economic viability of the region, but it will also, and perhaps more critically, help to resituate a connection to Acholi traditions and a sense of community across the north.

Finally, and perhaps most critically, the current low levels of alcohol use in northern Uganda appear to have limited the extent to which they are associated with the HIV epidemic. The potent connection between the two suggests the unsettling possibility that the absence of informed and timely interventions, the rise of consumption and associated behaviors could further contribute to the spread of HIV beyond its already higher than expected levels.

7.3.3 Adjusting approaches to existing interventions

The higher than expected prevalence of HIV and persistent screening levels of PTSD and depression seen in the CLP and elsewhere clearly demonstrate that interventions aimed at addressing them are meeting with limited success in northern Uganda (Malamba et al., 2016; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). With regards to substance use, no participants noted any treatment or prevention programs aimed at addressing non-alcoholic substances, and only a handful noted ones focused on alcohol, primarily through religious organizations. It appears that the lower rates seen in the region are thus occurring in spite of, rather than due to, any meaningful efforts towards addressing the issue. For most participants, health programmatic efforts of every sort were hindered due to uneven levels of care, distances to facilities, and the fact that most comprehensive options remain centered in the large urban areas. This clearly illustrates that the much-needed substance use interventions called for above
must be deliberate in both their outreach to rural communities, and occur in a deliberate manner that ensures a continuity of quality care so as not to preemptively alienate the target population.

Current iterations of HIV prevention and treatment programs are all too often built upon unrealistic perceptions of agency in decision-making (e.g. Test and Treat, ABC: Abstinence, Be faithful, use Condoms, and 90-90-90) that overlook the limited extent to which this is possible among those most at risk for infection (UN Joint Programme on HIV/AIDS (UNAIDS), 2014a; M. J. Westerhaus et al., 2007; WHO, 2016). Further, such programs fail to take into account the epidemiological pathways by which SUD manifests as HIV risk, largely through diminished perceptions of risk and inhibited decision-making processes, ones that mirror many of those associated with mental health and trauma. In conflict settings, and others of extreme deprivation and limited economic opportunity, these established programs also run the risk of ignoring the limited sexual-decision making abilities of young women and girls who turn to transactional or survival sex work. HIV prevention approaches that rely heavily on agency may therefore not be appropriate in conflict and post-conflict settings if they do not correspond to the adequate provision of other basic necessities. Similarly, such programs in post-conflict settings cannot hope to fully inhibit the spread of the disease absent consideration of the potential for unaddressed mental health needs to limit testing and treatment adherence. Finally, as evident by the personal story of one of the study’s HIV-positive participants, even significant knowledge of and intention towards preventative behavior can fall away in the face of substance-induced diminished decision making.

The extent to which trauma and HIV permeated the narratives of participants at both the personal
and community levels clearly demonstrates how pervasive the presence of both are in northern Uganda today. When this reality is considered alongside the growing quantitative evidence base from the region, the underlying assumptions guiding interventions that target perceived and highly vulnerable subsets of the population are challenged (Epstein, 2007; Malamba et al., 2016; Mugisha et al., 2015; S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014). This is especially true with regards to former abductees, who are often targeted for research and prevention programs, even though the data and narratives from abductees themselves note the complex ways in which they may have in fact faced lower risk in some areas than the rest of the population. Interventions in northern Uganda must therefore recognize the specific characteristics of the conflict to overcome preconceived conceptions of who is most in need. Similar programs in other conflict or post-conflict settings should also seek first to understand the impact through which factional ideology may influence the impact of traditional approaches to aid.

These findings are especially critical for women and girls who are often at particular risk in conflict and post-conflict settings due to their limited political capital with which to influence decision making processes around aid allocation (R. Jewkes, 2007; Kerridge et al., 2016). As seen in the qualitative narratives, cultural expectations can also see women bearing disproportionate scrutiny and stigma when perceived to engaging in frowned upon behaviors. However, efforts to address this will be complex. Normalizing and destigmatizing alcohol use among women may be seen to conflict with tradition, while a full-scale approach to promote traditionally protective behaviors for women may be seen to reduce young women’s agency. Consequently, future research should examine the potential of interventions to build on
traditional assets while acknowledging the current lived realities and changing dynamics of the people of northern Uganda. Interventions should include strategies to promote the education and promotion agency and decision-making rights of women and girls with regard to sexual decision-making, while recognizing the wider communally led calls for these to incorporate aspects of the traditional fireplace and Wayo/Nero approaches to dissemination of safe sexual behavioral practices (S. Patel, Schechter, Sewankambo, Atim, Kiwanuka, et al., 2014; Spittal et al., 2008). The potential positive impact of such efforts may already be evident in the borderline protective effect seen coming from education on hazardous drinking among women in Chapter 5. These mirror a global evidence base on the overall benefits of educating and empowering women in the developing world (UNICEF, 2009). These efforts should likewise engage men and boys in the process to help break down entrenched gender-based stigmas and further increase the recognition and rights of young women to take active roles in their community (Plan International, 2011). Throughout, young people should be engaged in the process of implementing the interventions to increase their agency in mapping out their futures, and the interventions should also incorporate the teachings of traditional elders in order to re-establish healthy cultural traditions within society.

7.3.4 Integrating cultural traditions with established programming efforts

It is critical for externally run interventions to not only recognize the universal nature in which the conflict and its legacy can and have impacted the population in northern Uganda, but to also seek to engage on-the-ground collaborators who can help adapt externally-derived programs to the local context. This imperative likewise applies to the many research projects that are being conducted in the region. It is worth noting that the study team was frequently asked how and
when the results would be disseminated back to the community (a topic not originally included as an area of inquiry for this dissertation), not only by officially engaged participants, CAB members, and government officials, but also by passers-by in the communities where interviews were taking place. Many people would approach the team and recall a study or studies that they had participated in and comment that they never heard from the researchers again, or that the research never seemed to result in meaningful change in their lives. Left unaddressed, this research-fatigue runs the risk of hindering future outreach efforts and researchers’ ability to trace risk patterns and derive effective interventions. Therefore, both researchers and interventions need to listen, and be responsive to, the populations with whom they work. With that end in mind, knowledge translation activities based on this dissertation have already begun throughout partner communities in Uganda, both at the local level and in collaboration with district and regional medical personnel. These efforts will continue following the completion of the dissertation as well.

7.3 Study limitations

A number of method-specific limitations are described in each of the discussion sections of Chapters 4 through 6. Briefly, although the CLP itself is a five-year cohort study, the results contained in this dissertation are cross-sectional in nature, representing the first results of the incorporation of the AUDIT. Therefore, definitive statements with regards to temporality cannot be made at this time, and will require analyses of future rounds of the study. The relatively high level of loss-to-follow-up among CLP participants also remains a concern. Analyses of those lost to follow up are ongoing, and at the time of submission of this dissertation, no significant
differences have been found between participants who had remained, and those who had been lost.

The AUDIT also seeks to measure standard units of alcohol, which is a globally challenging issue as alcohol percentages per unit can vary significantly (Kerr & Stockwell, 2012). This challenge is further compounded in areas such as northern Uganda, where traditional brewed beverages are consumed via communal containers. As testing for the biomarkers of hazardous drinking was beyond the scope of this study, caution should be taken with regard to the exactitude of the ≥3 AUDIT score cutoff as defining ‘hazardous drinking’. Also, while the AUDIT was designed to correspond to clinical biomarkers, they were not independently used in this study and therefore results are described in terms of screening rather than diagnoses (T. Babor et al., 2001). However, this and similar cutoffs are used frequently in Uganda and elsewhere around the globe, and the use of a lower threshold cutoff serves to increase the AUDIT’s sensitivity, capturing those at risk of developing problematic behaviors, a useful metric especially where rates remain low as is the case in northern Uganda.

The cross-sectional nature of the quantitative data makes it difficult to ascribe causality with the associations seen regarding hazardous drinking. While the use of qualitative interviews and acknowledgement of existing empirical literature did help to provide context to the quantitative findings, future explorations of the cohort data should be undertaken to address this issue.

Finally, it is impossible to rule out the presence of response bias within both the qualitative and quantitative portions of this dissertation. With the exception of blood test results, this could lead
to the misclassification of exposure and/or outcome variables based on participants’ willingness to disclose potentially sensitive personal information. Similarly, many of the questions pertained to historical information - further injecting the potential for recall bias to affect the data. There is also the potential that the precision of some information, especially in the qualitative portion of the research, was lost due to the necessity of translation between Acholi Luo and the English language. Nonetheless, we are confident that these biases were mitigated to the greatest extent possible through the rigorous methodological approaches used, including the testing of all quantitative questionnaires in a pilot community, and the strenuous efforts to ensure that participants felt comfortable engaging with research staff. Evidence from the qualitative interviews suggest that these efforts were largely successful, as participants willingly disclosed sensitive personal information that largely correlated with their quantitative results.

7.5 Conclusions

In conclusion, it is important to note that this dissertation marks an important foray of initial inquiry into a field of research whose lack of study is widely acknowledged. The findings held within these pages record that the complex ways in which mental health, substance use, and HIV manifest and interact with each other in relation to conflict and at times both adhere to, and seem to contrast with evidence from, non-conflict settings.

First, the findings of this study indicate that despite widely held perceptions within the communities of northern Uganda, from government and non-governmental actors, and evidence from non-conflict settings, substance use does not appear to be pervasive in the region. Unlike other studies we did not find an association between hazardous drinking and screening for PTSD.
or depression, or testing positive for HIV. Kinship, deeply rooted within the return and resettlement processes may have played a role in mitigating established mental health and substance use pathways through the creation of positive avenues that address underlying drivers while simultaneously supporting resilience in the population. However, consistent with other studies we did find an association between HIV risk behavior and increased alcohol use especially among men. The gendered dynamic around alcohol use is consistent with studies globally, both in terms of consumption patterns being more extreme among men and, as clearly illustrated in the qualitative interviews, women and girls often bearing a disproportionate burden of the resulting consequences including economic insecurity, sexual assault, IPV, and rape.

While the use of validated psychometric tools, substance use scales, and objective laboratory tests were noted for their applicability, the incorporation of participant narratives were critical for informing the larger population-level associations, especially where they stand out against prior preconceptions and hypotheses. The ways in which the specific nature of the conflict in northern Uganda between the LRA and GoU forces continue to manifest in the region suggests that there may not be one overarching framework that can comprehensively explain the entirety of the intersection of substance use, mental health, HIV and conflict. Therefore, these finding show that public health actors need to continually reevaluate the evidence base from which they plan interventions and include community-informed and culturally safe programming if they are to achieve a meaningful impact.

Nothing other than a major commitment by aid organizations and local and national actors will be enough to result in meaningful and lasting change for the communities in northern Uganda. It
is clear that the return to traditional homesteads and aspects of the rebuilding and resettlement processes are crucial in helping to mitigate some of the negative sequelae associated with the conflict. The slow pace of development in the region, and increased instances of land grabbing are therefore likely to be detrimental in the long run as they strip away protective barriers and inhibit the growth of others. Therefore, aid to the region must incorporate the best efforts of donors to support culturally safe programming, rooted in Acholi traditions and understandings that include vocational training and educational opportunities especially for women and girls. However, external aid alone will not achieve what is most needed, namely the reestablishment of an economic, health, and cultural infrastructure in the region that is self-supporting and sustaining. This will take time and a great deal of work, especially as many of the approaches currently in place appear to ineffective, as seen in the higher than expected HIV rates in the region. Yet amidst this there is room for hope, as both the qualitative and quantitative data suggest that despite expectations to the contrary, alcohol and other substance use in the region is far lower than expected. Future efforts to support the people of norther Uganda should further explore the basis for these positive findings and build on them.
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Appendices

Appendix A: Informed consent and assent documents presented to participants as part of the qualitative recruitment process

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Substance Use, Trauma, and HIV: untangling the complex web of health vulnerabilities among conflict-affected populations in Northern Uganda

In-Depth Interview Informed Consent Form:

The Principal Investigator is:
Patricia Spittal, PH XXXXXXXXXX, Fax: XXXXXXXXXX, Associate Professor, School of Population and Public Health, University of British Columbia, Vancouver, Canada

The co-investigator of this study are:
Alden Blair, PH: (USA) XXXXXXXXXX, (UG) XXXXXXXXXX Fax: XXXXXXXXXX, PhD. candidate, School of Population and Public Health, University of British Columbia, Vancouver, Canada

Herbert Muyinda, PH: XXXXXXXXXX, Fax: XXXXXXXXXX, Child Health and Development Centre, Makerere University, Uganda

Martin T. Schechter, PH: XXXXXXXXXX, Fax: XXXXXXXXXX, Director, School of Population and Public Health, University of British Columbia, Vancouver, Canada

Introduction:

You are being invited to participate in an in-depth interview because you have been involved with the Northern Uganda Program on Health Sciences (NUPHS) study on the HIV risks faced by the Acholi people. Although Acholi people make up a small part of the population in Uganda, they are getting HIV disease more than other people in the country. The number of Acholi people living with HIV and AIDS appears to be rising in our district, though very few people get tested. One of the major ways HIV is being transmitted is through unprotected sex, which is often linked to the use of alcohol and other substances. Young people between the ages of 13 and 49 are particularly vulnerable. Because little is known about how the history of displacement and
war affect people’s choice to use alcohol and other substances and their risk for HIV, we are inviting you to participate in this research study. The study is designed to explore how Acholi people experience exposure and vulnerability through the resettlement process to substance use, HIV and AIDS. Our hope is this research would lead to more culturally appropriate and safe intervention programming for Acholi people.

**Who is conducting this study:**
This study is being conducted in partnership with the University of British Columbia’s School of Population and Public Health (SPPH) and Makerere University School of Public Health (Mak-SPH). This study receives funding from the US National Institutes of Health (NIH) National Institute on Drug Abuse (NIDA).

**Who can participate in the In-depth interview study?**
If you are already enrolled in the main study, “Determining the HIV related Vulnerabilities of war affected populations living in Amuru and Gulu districts, Northern Uganda” you may also enroll in this study. You can choose to not participate in this study without any affect on your enrollment in the main study.

For young people who are still living at home and are under the age of 18 we request that parents or guardians provide consent. If both parties do not consent ten the young person is not eligible to participate.

After you review this form with us, if you need or want more time to read the information carefully, take the needed time. You are welcome to discuss the information with your family, friends, and doctor before you decide whether to participate or not. If you decide to participate, you will be asked to sign this form.

**Voluntary Participation and Withdrawal:**
Your choice to participate in this study is entirely voluntary. You have the right to refuse to participate in this study. If you decide to participate, your decision is not binding and you may choose to withdraw from this study at any time without negative consequences to the medical care, education or other services you may receive from us. The researchers may also decide to discontinue the study at any time, or withdraw you from the study at any time, if they feel it is in your best interest.

**Study design and method:**
We would like to learn more about your life, your experiences during the war, displacement camp living, your feelings around alcohol and other substance use personally and in the community, how HIV affects your family, and the sex and drug related harms you face living in a post-conflict region. We would also like your advice on how to plan programs that address HIV/AIDS and substance use.

If you are willing to participate we will ask you to:
1. Agree to allow one of our interviewers to spend time talking with you. The researcher will be of your gender and will interview you wherever you feel the most comfortable talking. The in-depth interview will take between one to two hours. You can stop the interview or refuse to answer any question at any time. If you choose to end the interview process we will ensure that your contributions will be immediately destroyed.

2. The interview will be like having a conversation with the interviewer. It will last up to two hours and will be recorded on a digital audio device. The information collected during the interview will be transcribed by someone who does not know you, and then the interview is entered into a software program to help us evaluate the interview to identify important themes. Your confidentiality is guaranteed at all times and your name is not linked to the information you provide. When the study is over all the recordings will be destroyed.

**In-depth Interview:**

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<thead>
<tr>
<th>Interview</th>
<th>It asks questions about:</th>
<th>Time Required</th>
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<tbody>
<tr>
<td>You and the interviewer</td>
<td>1. Living in the bush and/or a camp</td>
<td>1 to 2 hours</td>
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<tr>
<td></td>
<td>2. Experience of displacement</td>
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<td>3. Transition from camp/bush living to towns and/or traditional villages</td>
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<td>4. HIV and other sexually transmitted infection (STI) risks and fears associated with post-conflict living</td>
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<td></td>
<td>5. Perceptions regarding alcohol and other substance use and the extent of their use in the community</td>
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<td></td>
<td>6. Perceptions of the availability and/or barriers to prevention and treatment services for HIV/AIDS and substance use</td>
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<td></td>
<td>7. Important cultural matters regarding links between substance use, displacement, and HIV/AIDS including dry sex (having sex without vaginal lubrication) and transactional sex.</td>
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</table>

**Confidentiality:**

Your confidentiality will be respected at all times and all information will be kept confidential. This means that we will never attached your name to the information you give us or to any audio tapings. Five years after the study is completed all the recordings will be destroyed. All the information we collect will remain confidential at all times and only will be used for the research purposes of this study. Researchers are committing themselves not to divulge your name or any information that could identify you at any point, and to take all the necessary precautions during the interviews to preserve their coded character to make sure that you will not be recognized. Any and all results from this study are only for scientific communication and to better inform evidence based programs and interventions.

All the study information will be kept in a secure database that will only be accessible to certain study staff and investigators. Your name and any identifying information will not be recorded in any of our files. The information you provide is coded through the use of a numerical ID number that is held on a secure, password-protected computer in a locked room at the research center. All data for the study (transcriptions, audio recordings, etc.) are kept in locked offices with watch-persons providing security both day and night.
Research records that may identify you may be inspected in the presence of the investigator or his or her designate, by representatives of Health Canada, and at the University of British Columbia/Providence Health Care (UBC/PHC) Research Ethics Board for the purposes of monitoring this research. In most cases, your personal information or information that could identify you will not be revealed without your express consent or when required by law or legislation.

**Referral to care**

Medical and social services are available to you whether or not you choose to participate in the study, and study personnel will make particular efforts to refer you to services if the need arises. We have made arrangements for you to gain fast access to counseling, and if you wish to be tested for HIV or have any other health related concerns we can help to make appropriate and confidential referrals on your behalf. Further, you can choose not to participate in this sub-interview process without affecting in any way your participation in the main study.

Participants requiring trauma-related care will have access to counselors on the study time during or after the interview. All study staff have information for referral purposes to the U.S. based Peter C. Alderman Foundation Center in Gulu, which provides psychological support. The contact person at the clinic is Dr. Eugene Kinyanda, a psychiatrist who specializes in war-related trauma.

**Risks and Benefits**

There is no direct benefit or risk to you if you chose to participate in this study. However, discussing war related experiences and speaking about HIV or substance us may be difficult for you. You may refuse for any reason to answer question(s) that make you uncomfortable. There will be no negative impact to you, your access to care nor or in the future if you choose to do so.

If you wish to debrief or seek services after being interviewed, you can ask the interviewer for assistance. The interviewer may also ask you if you need assistance if s/he thinks you are having difficulty.

**Reimbursement to You**

A small payment will be made as a reimbursement to you for your time following the interview. You will receive $3000 Ugandan Shillings (~$1.50 USD) after agreeing to participate and signing this form.

**Rights and Compensation**

As you are aware, the war is over and a majority of people have moved back to their homes from displacement camps. The subject matter of this interview is not politically sensitive or related to the LRA’s conflict agenda: therefore, the project itself will not put participants at enhanced risk. We follow Uganda, Canadian, and United States policy with regards to confidentiality and no information will be released without written consent.
You can refuse to participate in this interview if you wish. You may choose not to participate or to withdraw from the study at any time with no consequence. You are in no way waiving your legal rights if you chose to sign this form and you do not release the study or other participating institutions from their legal and professional duties. There will be no costs to you for your participation in this study. You will not be charged for any aspect of the study. If you become ill or physically injured as a result of participation medical treatment will be provided at no additional cost to you.

**Who can you contact if you have questions**

If you have any questions or concerns about this study please do not hesitate to contact:

1. Dr. Patricia Spittal, University of British Columbia PH XXXXXXXXXX
2. Alden Blair, University of British Columbia PH (US) XXXXXXXXXX, (UG) XXXXXXXXXX Gulu Field Office
3. Dr. Herbert Muyinda, Child Health and Development Centre, Makerere University, Uganda PH: XXXXXXXXXX

If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

You may also contact Makerere University School of Public Health through Dr. Suzanne Kiwanuka XXXXXXXXXX or XXXXXXXXXX.
INFORMED ASSENT – Unemanacipated Minor under 18 with a parent/guardian

PARTICIPANT CONSENT AND SIGNATURE PAGE
If I have any questions about my rights as a participant in the study or my experiences while participating in this study, before, during or after my participation, I can contact Alden Blair (US) XXXXXXXXXX (UG) XXXXXXXXX. If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

I understand the above statement, and:

- I agree to participate in the Substance Use, Trauma, and HIV: Northern Uganda in-depth interview. I have read the consent form entirely, or it has been have read to me, and I have understood the technical language used.
- I have been able to ask all my questions to the researcher, and understand that I will be able to communicate with him or her later if I have additional questions during the course of the study.
- I will participate in the in-depth interview that consists of questions regarding my living situation, HIV, the war, substance use and the resettlement process.
- I acknowledge that I may request or be given referral information regarding any counseling.
- I understand that I can withdraw from the study at any time and it will not affect my legal rights or access to any health care.
- I understand that I have the right to refuse to answer any question.
- I have been told I will receive a signed and dated copy of this form.

Signed (thumbprint if illiterate)                  Print Name                  Date

CONSENT OF PARENT OR GUARDIAN:
The research above has been explained to me and the informed consent has been read. I agree to allow the participation of my son/daughter or ward. I also understand that s/he also has the right to voluntarily refuse to participate in all or part of the study.

Signed  - Parent Guardian                  Print Name                  Date

Principal Investigator                  Print Name                  Date

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Substance Use, Trauma, and HIV: untangling the complex web of health vulnerabilities among conflict-affected populations in Northern Uganda

Emancipated Minors Informed Consent:

PARTICIPANT CONSENT AND SIGNATURE PAGE

If I have any questions about my rights as a participant in the study or my experiences while participating in this study, before, during or after my participation, I can contact Alden Blair at (US) XXXXXXXXX (UG) XXXXXXXXX. If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

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- I understand that I have the right to refuse to answer any question.

- I have been told I will receive a signed and dated copy of this form.

____________________       ______________________       ___________
Subject Signature (thumbprint if illiterate)  Print Name  Date

____________________       ______________________       ___________
Witness  Print Name  Date

____________________       ______________________       ___________
Principal Investigator  Print Name  Date
Appendix B: Qualitative interviewer topic guideline form for suggested areas of inquiry

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INDEPTH INTERVIEW FIELD NOTE FORM AND TOPIC GUIDELINES

Updated May 13, 2014

1. Family and Community
   • Place from which family originates
   • Place of birth of participant
   • Description of family origin (adoption/foster family) including parents and siblings
   • Description of place of childhood and adolescence (family village, IDP camp, bush, town, military setting)
   • Current place of residence (town, traditional village, transition camp)
   • Level of schooling and where attained
     o Family level of schooling prior to conflict
   • Where participant identifies community now (family, co-workers, drinking companions, friends)
   • Role of community in providing support
   • Meaning of safety: does participant feel safe? What does ‘safe’ mean?
   • Meaning of a healthy community: what does your culture mean to you?
   • Who are leaders in the community? Who do you look up to?

2. History of Conflict (camp, bush, military living)
   ● Length of time spent in the bush and/or IDP camps
   ● Experiences with war, fear, hunger
   ● Abduction related experiences (personal, family, friend)
     o Length of time abducted
     o Role following abduction (soldier, labor, wife)
     o How abduction ended
     o Extent/type of substances used in abduction/LRA settings
   ● Experiences in IDP CAMPS: how it differed from abduction/town living and substance use
   ● Night commuting experiences (personal, family, friend)
   ● HIV related vulnerabilities and experiences related to physical or sexual violence
   ● Use of substances and availability during conflict: In BUSH? In TOWN? In IDP CAMP?

3. Experiences of Trauma
   ● Use various definitions/concepts of social/sexual/physical violence to triangulate the presence of a history of violence and/or trauma and/or abuse as a child
     o As child: experiences of sexual/social/physical violence
     o As adolescent: experiences of sexual/social/physical violence
     o As adult (if applicable): experiences of sexual/social/physical violence
     o Experiences of abduction

4. Substance use (be sure to probe especially among women)
   ● Community level substance use
     o Types of substances individuals in their communities tend to use
       o Differences in males and females (drinking around holidays or special occasions)
     o Availability of each substance (from whom/Where)
     o Perceived frequency of use for each substance
     o Where substances tend to be used (home, bar, street)
     o Influence of culture: Acholi? Ugandan? Other?
       o Stigma against certain groups using substances (women)
       o Change in use from or during the conflict
       o Perceptions of participant regarding substance use
• Who uses each (marijuana, alcohol, khat, kuber, cocaine leaf, etc)
• What does each do to a person
• Why do they use them
  o Cessation: If a person wants to stop using a substance what resources are available?

• Personal relationship with substance use
  o Decision to use/not use substances (friends? Family? Work colleagues? LRA/army?)
  o For EACH substance: If substance user or former user:
    § type of substance(s) used
    § Age of initiation for each substance
    § Decision/circumstances to use each substance (peer pressure, interest, forced, etc.)
    § Locations associated with substance use
    § Frequency of usage (e.g. if alcohol: more than six drink in a sitting?)
  o If former user: reasons for stopping substance(s)
  o If former user: way in which stopped (with aid, solo)

5. Partnership Histories
• Age of initiation into sex and setting
  a. Difference between men and women
  b. Differences between villages and town
  c. Differences now vs. in the past (before conflict)
• Nature of sexual relationship(s) ([arranged marriage, dating/friend, transaction, non-consensual]
  a. Differences in culture for men and women: who is allowed to pursue who?
  b. Number of partners allowed between men and women
  c. Differences or changes occurring now from the past (e.g. women more allowed to pursue men?)
• Frequency of condom use
  a. Aspects of decision making: who chooses when or if to use a condom
• Other prophylactic usage (IUD, spermicides, etc)
• Partnership decision making (who chooses to use condom, when to initiate, etc)
  a. Does the use of substances affect this?
• Role of substance use in personal partner histories (if it changes dynamics)

6. Sexual and Reproductive Health
• Concepts around condom usage (availability, frequency, with whom, cultural acceptance)
• Access to sexual and reproductive health education (culturally sensitive and accessibility)
• Use of services (self medicate, drug shops, clinics)
• Attitude towards STI testing: do they trust the results? Can the health centers provide tests?
• Association between substance use and sexual dynamics
• Impact of war and how it impacts community views on sexual health (rape, early sex, abductions) and changes (new/old taboos)
• Protective structures for young people?
• Transactional Sex
  o Influence of substance use and transactional sex
  o Transitions into transactional sex/sexual slavery in the bush
  o Subsistence sex (for alcohol/drugs, food, shelter, clothing, school fees)
  o Vulnerability during transition from IDP camps to transitional camps to ancestral villages.
  o Condom usage during transactional sex
  o Extent of men/boys participating in transactional sex
• HIV associated questions
  o Availability of testing facilities (always available, distance to access)
  o Availability of pre/post test counseling
  o Reasons for testing/not testing
  o Perceptions around disclosure (spouse, partner, casual friend, co-worker)
  o Cultural feelings around HIV diagnosis and ramifications of a positive diagnosis (availability to return to family, social stigmas, etc.)
    ▪ Are people judged for getting tested (is participant judged for getting tested with the NUPHS study)
    ▪ Once getting tested do people disclose their status?
    ▪ Once getting tested do health workers or others disclose status of those getting tested?
• Potentially culturally sensitive sexual/reproductive health questions
  o Frequency of/preference for dry sex in men and women [Dry sex is both initiating prior to the woman being wet but also the preference of men and/or women to have dry sex]
7. **Post-conflict Experiences**
   - Changes in beliefs/cultural norms associated with
     - Sexual relationships (casual sex, forced sex, dry-sex practices)
     - Substance use (stigmas/taboo)
     - Mental health/trauma issues
     - Who are the senior figures of the community (e.g. Wayos)? Do they still have a role in their communities?
       - Differences in villages vs. towns

8. **For HIV+ participants (those who are positive or recently seroconverted)**
   - Expiration of the event and context in which it occurred
   - Relationship to trauma/coercion/gender
   - Meaning of the diagnosis personally (stigma, issues of disclosure to various family friends co-workers and casual partners)
   - Ramifications of positive test on current life and future prospects
   - Availability of treatment, whether it will be sought
   - Relationship with health system in lieu of diagnosis
   - Concepts of Blame: who gave it to whom? If one participates in a risky behavior are they responsible?

9. **Role/influence of Muono/Foreigners/Chinese/Indian/etc in the above topics?**