REFUGEE HEALTHCARE IN BRITISH COLUMBIA: HEALTH STATUS AND BARRIERS
FOR GORVERNMENT ASSSISED REFUGEES IN ACCESSING HEALTHCARE

by

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Abstract

Background: Government-Assisted Refugees (GARs) have greater health needs than other immigrants due to their pre-migration and Canadian resettlement experiences. There is a lack of detailed research into their health status and access to healthcare services. This thesis investigated factors associated with reported health, mental health problems, number of annual physician visits and difficulties obtaining healthcare from a sample of GARs.

Methods: Secondary data analysis was conducted on data from a study of GARs in BC who attended the Bridge Refugee Clinic during the 26 month period from April 2005 to May 2007. Multivariate logistic regression was used to model the factors associated with excellent health, mental health problems, physician visits and difficulties obtaining healthcare.

Results: There were 177 participants in the study. Excellent health was inversely associated with being female, having financial burden, having no English proficiency and having a diagnosed health condition. Factors associated with mental health problems were being female, west Asian, and having financial burden. Attending refugee clinics was inversely associated with reporting mental health problems. Factors associated with physician visits were unemployment, while not having English proficiency and no access to a regular doctor were inversely associated with the number of visits. Young Age, no access to a regular doctor and health region were associated with difficulties obtaining healthcare, while not being married had an inverse relationship with reporting difficulties.

Conclusion: Findings highlight sex and English proficiency as important factors associated with GARs' health and utilization of services. It is recommended that specialized health literacy classes, health programs and support groups for GARs, especially women, be developed. These interventions would benefit from active participation of ethnic communities.

Preface

The research presented in this thesis was approved by the UBC Behavioural Research Ethics Board (ID # H11-00069).

This thesis consisted of secondary data analysis from the *"Refugee Health Care in BC: What Facilitates Access to General Practitioner Care"* study conducted by Mayhew and colleagues (2010). Setareh Rouhani wrote the thesis, conducted the literature review, contributed to the methodologies, conducted all analyses and interpreted findings with guidance from Dr. Jane Buxton (Supervisor), Dr. Arminée Kazanjian and Dr. Maureen Mayhew (thesis committee members).

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List of Abbreviations

BC: British Columbia

CHA: Canada Health Act

CIC: Citizenship and Immigration Canada

CCHS: Canadian Community Health Survey

GARs: Government Assisted Refugees

IRPA: Immigrant and Refugee Protection Act

ISS: Immigrant Services Society

LSIC: Longitudinal Study on Immigrants to Canada

NGO: Non-Government Organization

PHAC: Public Health Agency of Canada

PTSD: Post Traumatic Stress Disorder

UN: United Nations

UNHCR: United Nations High Commissioner of Refugees

WBLSMS: World Bank Living Standards Measurement Study

WHO: World Health Organization

Acknowledgements

Dedication

To the Baha'is of Iran

1 INTRODUCTION

1.1 Purpose

Canada has long been perceived to be a country providing fair, equitable, healthcare coverage to all its residents in all provinces and territories. Through the establishment of the Canada Health Act (CHA) in 1984 its five basic principles were a means to ensure a publicly administered, health system with equitable access to health services (Health Canada, 2005). Despite Canada's universal healthcare system, it has been recognized that certain populations, including immigrants and refugees, are under-served by the Canadian healthcare system (Gagnon, 2002). Since the creation of the CHA, Canada has become home to a large number of immigrants who today comprise approximately 20% of the Canadian population (McDermott et al., 2010). As such demographic change is having an impact on modern Canadian society; it has had an even greater impact on healthcare.

Research has shown that access to and utilization of health services among newly arrived immigrants is significantly less than for the general population (McDermott et al., 2010). Furthermore, despite the principles of equal access to health services, embodied in the CHA, there still remains variation in the health status of immigrant subgroups such as government-assisted refugees (GARs) (Levitt, 2007; Gagnon, 2002). The literature suggests that GARs have greater health needs than other immigrants, due to their pre-migration and resettlement experiences in Canada (McKeary and Newbold, 2010). Despite this, there is a lack of detailed research into the health status of GARs and their access to healthcare services. In order to identify areas in policy and practice for interventions, there must be reliable information of the shortfalls in healthcare services.

The following points summarize the major research gaps:

1) <u>There are no population-based studies addressing the question of refugees' access to and utilization of health services.</u> Most of the existing research on refugee health targets only a segment of this varied population. This makes generalizations to the broader refugee population difficult.

2) <u>There exists very little research specific to refugees in Canada.</u> Most studies have focused on immigrants as a whole. Only a small subset of studies used separate analyses for refugees. As a result, the immigrant population is treated as a homogeneous group.

However, research has indicated that differences among immigrant groups exist, and aggregation of data under-estimates differences and confound results.

3) <u>Very few follow-up studies have examined GAR's access to health services, difficulties in obtaining care, or both.</u>

4) <u>There is a significant lack of refugee health research in Canada.</u> Most of the existing literature around the health of refugees has taken place internationally. The application of these findings to the Canadian, refugee population is limited.

5) <u>The literature shows that the health needs and problems experienced by the refugee population differ from the broader immigrants' health needs after long-term settlement in Canada.</u> As such, specific interventions, approaches and practice guidelines need to be developed and implemented for GARs.

1.2   Reasons for Current Thesis

This thesis is a first step towards identifying these gaps in knowledge of GARs in British Columbia. This study focuses specifically on GARs, thereby avoiding the confounding effects of other immigration classes, such as economic and family reunification class immigrants. By examining GARs in British Columbia, this study provides a preliminary examination and analysis of this population's health status, and access to and utilization of the provincial healthcare system.

The purpose of this research is to better identify factors pertaining to refugee health and barriers in accessing healthcare services in British Columbia.

1.3   Research Objectives

The specific research objectives of this thesis are:

1) Investigate the factors associated with reported excellent health status among GARs.
2) Investigate the association of factors related to access to healthcare and reported mental health problems.
3) Investigate factors associated with family physician visits among GARs.
4) Investigate factors associated with reported difficulties obtaining primary healthcare.

Findings from this thesis, described in the following sections, are expected to inform healthcare planning for refugees in British Columbia and possibly, Canada. Knowledge of

refugees' health status and access to healthcare can further evidence-based planning regarding refugee healthcare, providing a basis for health policy makers and service planners to implement effective and equitable health services and policies.

1.4   Thesis Overview

This thesis is comprised of five sections. Section 1 (INTRODUCTION) provides the purpose, reasons for the current thesis and research objectives. Section 2 (BACKGROUND AND LITERATURE REVIEW) provides a background of the historical overview of migration, resettlement, and legislation and polices on immigration. It leads to the literature review providing an in-depth examination of rates of health service utilization of immigrants and refugees, research paradigms on immigrant health, and the health status of GARs. It also provides an overview of definitions and measures of access to health services, and barriers to care for newcomers.

The conceptual framework and empirical evidence from the literature that informed the context and analysis of the study is discussed. The literature on determinants of access to healthcare services is then synthesized.

Section 3 (METHODOLOGIES) presents the study methods, followed by the results, which are described in Section 4 (RESULTS). Section 5 (DISCUSSION) focuses on the research findings, study strengths and limitations, future directions for research, policy implications and concluding remarks.

2 BACKGROUND AND LITERATURE REVIEW

2.1 Background

2.1.1 Historical Overview of Migration and Resettlement

A Global Perspective

Rates of international migration have drastically increased over the past century. Changes in the global socio-economic and political climate have contributed to this wave of migration. In 2006, international migration rates reached up 200 million globally, composing approximately 3.1% of the World's population (Cymbal & Bujnowski, 2010; United Nations, 2009; International Organization for Migration, 2010).

Three major groups account for global migration:

1) Temporary migrants,

2) Immigrants (including Convention refugees), and

3) Non- Convention refugees (asylum seekers).

According to the United Nations High Commissioner for Refugees (UNHCR), temporary migrants are people who have moved to a foreign country for a period of time, without the intention of taking up permanent residency (UNHCR/Arnold, 2008). They include visitors, international students, temporary foreign workers and tourists. An immigrant is someone who takes up permanent residency in a foreign country other than their original homeland. This category includes economic immigrants, who move for financial reasons, family reunification immigrants, who are privately sponsored by family members in another country, as well as Convention Refugees who resettle in another country (UNHCR/Arnold, 2008). The 1951 Convention relating to the Status of Refugees defined a refugee as

> "… *someone who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country…*" (UNHCR/Arnold, 2008, p. 6)

An asylum seeker is a person who has made a claim they are a refugee, but is waiting for that claim to be either accepted or rejected. Depending on their case, someone may or may not be recognized as a Convention refugee (UNHCR/Arnold, 2008). Table 2.1 provides a summary of the three major groups accounting for global migration.

Table 2.1 Summary of the three groups accounting for global migration		
TEMPORARY MIGRANT	**IMMIGRANT**	**NON- CONVENTION REFUGEE**
• People who move to a foreign country • No intention for permanent residency • Includes: visitors, international students, temporary foreign workers, tourists (UNHCR/Arnold, 2008)	• People who move to a foreign country with intention of permanent residency • 3 types: economic immigrant, family unification immigrants, and Convention Refugees • Economic: move for financial reasons • Family reunification: sponsorship by immediate family members in the foreign country • Convention refugee: an individual whose refugee claim was accepted by the UNHCR, who cannot return to their country of origin and who resettles in a foreign country (UNHCR/Arnold, 2008)	• Globally known as Asylum Seeker • People who have made refugee claim, and awaiting for claim to be accepted or rejected • Not recognized as Convention Refugee (UNHCR/Arnold, 2008)

Over the past few decades the increase in the number of international migrants has generated income contributing to international, socio-economic development. However, according to 2009 data, there are more than 36 million people within this migrant population whose protection and safety are of concern to the UNHCR; 10.4 million of which are refugees (UNHCR/Macleod, 2009). The UNHCR has reported that 67% of the world's refugees are in developing countries, the majority being in areas of instability – resulting from conflict and war. These conflict zones extend from South-West Asia to the Middle East and central regions of Africa (UNHCR/Macleod, 2009).

The UNHCR was established in 1950 by the UN General Assembly in response to the displacement and resettlement of refugees during and after World War II, with a core mandate of protecting refugees around the world (UNHCR/Macleod, 2009; UNHCR, 2011). Originally, the creation of the UNHCR was intended for a three year term limited to persons fleeing from World War II events within Europe prior to January 1, 1951 (UNHCR, 2011). However, the problem of displacement, originally thought of as a temporary phenomenon, developed into an ever challenging global issue (UNHCR/Arnold, 2008; UNHCR, 2011). The 1951 Refugee Convention, initially signed by 26 countries, is the cornerstone of the protection of refugees around the world. The protocol defined the term 'refugee' and stipulated their rights. In 1967, an amendment followed the Convention by removing the temporal and geographic limitations that existed in the 1951 Protocol (UNHCR, 2011). At present, there are over 150 signatory countries to the UN Convention on refugees committed to the protection of the persecuted and stateless (UNHCR/Arnold, 2008). For over 50 years, the UN Refugee Convention has protected and assisted in the resettlement of over 50 million refugees (UNHCR/Arnold, 2008).

There has been an increase in the global refugee population since 2006, despite global population growth. This rise is largely due to the number of Afghan and Iraqi refugees, with over 3 million Afghan and 2.3 million Iraqi refugees worldwide (UNHCR/Arnold, 2008). In addition, there have been increasing numbers of refugees from Somalia, the Central African Republic, Chad, the Democratic Republic of Congo, Sudan and Myanmar (UNHCR/Arnold, 2008). Convention refugees who cannot return to their home countries out of fear of persistent persecution or continued conflict are assisted by UNCHR to integrate into and permanently resettle in another country. Twenty countries, including Canada, participate in the UNHCR resettlement programmes. These countries offer temporary protection and present the option of

permanent resettlement (UNHCR/Arnold, 2008). According to 2007 data, the top five countries of resettlement for refugees were: the United States, Australia, Canada, Sweden and Norway (UNHCR/Arnold, 2008). Each year, the number of refugees resettled is approximately 50,000 people. In 2007 the number of refugee submissions to resettlement countries exceeded the capacity with an additional 70,000 individuals (UNHCR/Arnold, 2008).

The Canadian Context

As one of the fundamental cornerstones of Canadian values, immigration and humanitarian efforts through foreign policy have played a key role in the shaping of core Canadian values embedded in its culturally rich identity. The Canadian census from 2006 indicates that 1-in-5 Canadians are foreign born, composing approximately 20% of the Canadian population (Cymbal & Bujnowski, 2010; Statistics Canada, 2006; Beiser, 2005). Statistics Canada projections estimate that by 2031 the proportion of foreign born Canadians will increase up to 28% (Cymbal & Bujnowski, 2010; Statistics Canada, 2009). Through its foreign policy to promote economic and social growth, Canada accepts on average around 250,000 immigrants annually; through its humanitarian efforts this number includes 20,000-30,000 Convention Refugees (Cymbal & Bujnowski, 2010; Citizenship & Immigration Canada, 2007; Beiser, 2005). Upon entry to Canada, immigrants and Convention Refugees are recognized collectively as landed immigrants with permanent residency status. They then have to reside in Canada for a minimum of three years prior to having the option to apply for Canadian Citizenship. After receiving Citizenship, they are considered naturalized Canadian Citizens, entitled to the same rights and liberties as other Canadians. As such, they are no longer referred to as permanent residents (Citizenship and Immigration Canada, 2011; Canadian Council for Refugees, 2011).

Canada's role in providing humanitarian aid within the international community is twofold. In its efforts and commitment to develop effective solutions to the emerging problems faced by refugees, Canada collaborates with other countries in the removal of the core problems associated with the creation of refugees (Citizenship & Immigration Canada, 2007). Canada also protects refugees through the Refugee and Humanitarian Resettlement Program, accepting on average 25,000 Convention Refugees annually from over 70 different countries, who seek protection and aid from abroad for resettlement as permanent residents (Citizenship & Immigration Canada, 2007). Refugees who settle in Canada are accepted based on the grounds that they cannot return to their country of origin, can no longer stay in the country from where

they sought protection and have no other resettlement options available. Upon approval of Citizenship and Immigration Canada, the accepted refugees undergo medical, security and criminal check screening (Citizenship & Immigration Canada, 2007). Since World War II, Canada has granted protection to over 800,000 refugees from around the world and has been among the top three resettlement countries since 2002. In 2005, Canada resettled over 10,000 refugees, who accounted for 13% of all refugees resettled globally (Citizenship & Immigration Canada, 2007). Since the 1960's Canada has sponsored and resettled thousands of individuals, including Vietnamese, Kurdish, Iraqi, Iranian, Somalian, Bosnian, Albanians from Kosovo, Afghans, Burmese Karen and Bhutanese refugees (Citizenship & Immigration Canada, 2007).

Canada categorizes refugees into two major groups, sponsored and unsponsored (summarized in Table 2.2). Sponsored refugees are Government Assisted Refugees (GARs), who are sponsored by the Government of Canada before arrival to Canada, and Privately Sponsored Refugees, from religious or organizational groups. They are also recognized as Convention Refugees (Citizenship & Immigration Canada, 2007). Unsponsored refugees are refugee claimants, non-status refugees, and asylum seekers. They include refugees who have sought out and applied for asylum after arrival to Canada. They are not recognized as Convention Refugees until a decision has been made to either accept or reject their claim by the Immigration and Refugee Board of Canada (Citizenship & Immigration Canada, 2007). Canada categorizes immigrants similar to international standards as described in Table 2.1.

Table 2.2 Canadian categorization of refugees	
CONVENTION REFUGEES	**NON-CONVENTION REFUGEES**

1) Government Assisted Refugees (GARs)
 	
   a) Sponsored by the Government of Canada prior to arrival in Canada (Canadian Council for Refugees, 2011)
 	
2) Privately Sponsored Refugees
 	
   a) Sponsored by religious/organizational groups, or individuals (Canadian Council for Refugees, 2011)
	1) Refugee Claimants
	
	   a) Internationally known as asylum seeker (described in table. 1.1), but is the standard name used in Canada (Canadian Council for Refugees, 2011).
	
	   b) Persons who have sought out and applied for asylum (protection) post-arrival to Canada. If claim is accepted, they become convention refugees.
	
	2) Non-Status Refugees
	
	   a) A protected person recognized under Canadian law as deserving protection for reasons such as danger of being tortured (Canadian Council for Refugees, 2011).
	
	   b) Person in need of protection that may not have met the definition of Convention refugee, but is found in a refugee-like situation (Canadian Council for Refugees, 2011).

A large number of GARs have settled in British Columbia over the past two decades. Each year approximately 800 GARs come to British Columbia, with the vast majority settling in the Lower Mainland Vancouver area (Brunner and Friesen, 2010). From 2005 to 2009, the top five source countries were Myanmar (21%), Afghanistan (18%), Iran (12%), Iraq (7%) and Somalia (3%). The remaining 39% were from 38 other countries (18 in Africa, 12 in Asia, 4 from the former Yugoslavia, 3 in Latin America, and one in the Middle East) (Immigrant Services Society, 2010). The majority of GARs who arrived during this time settled in Surrey (33%),

Burnaby (22%), and Vancouver (16%). The settlement patterns of GARs in the Lower Mainland Vancouver area has been changing in each city, where more GARs are now settling in suburban regions of the Lower Mainland area. The majority of settlement is roughly centered along routes used by the public transportation system, with large clusters in northwest Surrey, southeast Burnaby, southwest Coquitlam, and the City of Langley (Immigrant Services Society, 2010). Community-settlement assistance is provided by Non-Governmental Associations, such as Immigrant Services Society of BC, and refugee clinics such as the Bridge Community Health Care Clinic in Vancouver (the only clinic in Vancouver specializing in refugee health). Upon arrival in Canada, nursing staff from the Bridge Clinic visit the Immigrant Services Society (ISS) Welcome House where GARs temporarily stay within the first few weeks of arrival to Canada. At the Welcome House, GARs provided with basic health education tools, undergo screening tests for infectious diseases, information about the Bridge Clinic is provided, and appointments for first consultation made. Patients are eligible for healthcare at the Bridge Clinic for one year from arrival, and are encouraged to integrate into mainstream care after the initial year. Some GARs, continue receiving care at the Bridge Clinic because of their special needs, while many transfer out into the mainstream healthcare services. Patients requiring ongoing care from specialized refugee clinics are also referred to the New Canadian Clinics for healthcare services

Attendance at the New Canadian Clinic requires referral from physicians at the Bridge Clinic, where initial assessment, screening and follow up is done up to one year from arrival.. Like Bridge Clinic, the intent is for GARs to transition into utilizing regular mainstream healthcare (Fraser Health Authority, 2008).

The New Canadian Clinics are specialized refugee clinics established in the Fraser Health Authority region. It covers the municipalities of Burnaby, Surrey, New Westminster, Coquitlam, Port Coquitlam, and Port Moody. These clinics were created in response to the high number of GARs settling in those areas (Fraser Health Authority, 2008). They also provide medical and social support for GARs whose healthcare needs are often complicated by language, knowledge and cultural barriers (Fraser Health Authority, 2008).

2.1.2 Legislation and Policies on Immigration

Historical precedence has played an important role in shaping Canadian immigration policies, influencing the way immigrants and refugees are selected, and the manner in which the

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Canadian government responds to their needs. An examination of past immigration legislation and policies is crucial to understanding Canada's rapidly evolving demographics and how they have contributed towards our current policy and practice frameworks (Beiser, 2005; Gushulak, 2010). Throughout the past two centuries, Canada had been relatively restrictive in the selection and admission of immigrants. Up to the mid-20th century the focus of immigration policy was largely influenced by social and political factors. Primary concern was on the spread of infectious diseases and the demands placed on Canadian health and social services (Beiser, 2005).

The development of the UN Convention in 1951 set an important precedent for Canadian immigration policies, which evolved from a series of exclusion criteria towards inclusion and a better understanding for the concern and well-being of immigrants and refugees to Canada. This concern was first demonstrated in 1960, the World Refugee Year, when Canada accepted over 3,000 refugees, 10% of which had tuberculosis (Gushulak, 2010).

Prior to 1960 over 90% of immigrants came from Europe or the United States. After 1960 a diversification in migration flow took place, gradually replacing Canada's traditional sources of immigration with countries predominantly in the Southern Hemisphere (Beiser, 2005). By 2002, Europe accounted for only 17% of immigration flow, where 58% of immigrants came to Canada from Asia, the Middle East and Africa (Beiser, 2005).

This shift in the Canadian demographic pattern corresponded to a series of policy changes and amendments in 1962.The federal government introduced new regulations in immigration policy, eliminating entry criteria based on race, religion and national origin (Beiser, 2005; Gushulak, 2010). In 1967 Canada introduced the point system for immigrant selection to attract skilled, educated and wealthy economic class immigrants. As well, Canada signed, in 1969, the United Nations Convention and Protocol Relating to the Status of Refugees (Gushulak, 2010).

The policy changes in 1967 were enforced in 1978, enabling individuals from outside Europe and the United States to immigrate to Canada. They also reinforced a medical inadmissibility criteria, where a person was not granted admission if they posed a danger to public health and excessive demands on the health or social systems (Gushulak, 2010; Kazanjian & Chen, 2003). This Act incorporated the United Nations definition of refugee into Canadian law and created the three types classifications of immigrants: economic, family and convention

refugee. It laid out policies recognizing that the different classes of immigrants have different needs (Gushulak, 2010).

The 2002 Immigrant and Refugee Protection Act (IRPA) shifted government focus from their ability to integrate into Canadian society to humanitarianism. The medical and social conditions of GARs, which previously were barriers to entering Canada, were removed. As a result, Canada has been accepting GARs who are more disadvantaged and less likely to quickly adapt to Canadian culture and provincial healthcare systems than previous immigrants (Beiser, 2005; Gushulak, 2010).

Consequently, government priorities shifted from aiding GARs to successfully settle in Canada to their protection and safety (Gushulak, 2010). As part of the Immigration Medical Exam, routine HIV testing was carried out. The presence of an HIV infection did not automatically result in a person's refusal for entry to Canada on the grounds of posing a threat or danger to Canadian public health (Gushulak, 2010).

The evolving Canadian immigration policies have had an impact on the demographic characteristics of refugees accepted and resettled in Canada. These policies influence the health status of incoming GARs, their likelihood to adapt to Canadian culture, ability to access and utilize Canadian healthcare services. Within the context of healthcare, IRPA refugees face greater susceptibility to poorer health and limited adaptation to Canadian culture than previous immigrants. There is concern of their ability to access and utilize health services.

In British Columbia fiscal and workforce constraints, have prevented systematic follow-up on GARs settlement success. A good understanding of their health services utilization, health status, rates of and issues concerning access to healthcare is needed to ensure that appropriate care and support is provided. Given their vulnerability in facing greater challenges and barriers than the average immigrant during their resettlement period, appropriate care and support could lead to improved adaptation and settlement into Canadian society, and have a positive impact on their health and ability in accessing and utilizing healthcare services.

2.2 Methods for the Literature Search

Studies were identified through searches of MEDLINE, PubMed, Cochrane Central and Sociological Abstracts. Articles were reviewed from October 2010 and March 2011. Search terms included "Health Status", "Health Services/Utilization", "health services accessibility",

"access to care", "barriers to healthcare" and "immigrant". Additional references were found through manual searching of selected studies. No date limits were placed on the searches, but they were restricted to English language studies.

In this thesis, the terms immigrant and refugee refer to the legal definition of their entry into Canada. It should be emphasized that under Canadian law an immigrant, whether a Convention refugee or an economic or family reunification class immigrant, is classified as a permanent resident upon arrival in Canada. In the literature review that follows, some studies refer to immigrants as a whole, while others distinguish between Convention refugees and economic and family reunification class immigrants. As used here, a refugee refers to Government-Assisted Refugees and excludes Non-Convention refugees.

2.3   Rates of Health Service Utilization of Immigrants and Refugees

Within Canada there are several immigrant sub-groups, including immigrant populations under-served by the healthcare system compared to the general population. Most studies which report on health service utilization among immigrants seldom provide separate analyses for refugees. Although some differences based on ethnicity and immigration have been reported, the findings are often contradictory due to differences between the study populations and the methodologies employed in the research. With the dearth of information available on refugee health service utilization and access to healthcare, the following review aims to summarize findings from existing studies on immigrants, including a small number on refugees, from the relevant English, language literature.

Examination of previous research on immigrants to Canada shows mixed results of healthcare utilization compared to their native born counterparts. A collaborative, pan-Canadian, National Immigrant Health Assessment Project undertaken by Citizenship and Immigration Canada and the Public Health Agency of Canada in 2000 examined health services use of immigrants and refugees to Canada (DesMeules et al., 2005). Findings showed overall that all immigrants had 5% to 24% fewer annual doctor visits, and 36 to 54% fewer annual hospital discharges than Canadian residents (McDermott et al., 2010). In 1996, Wen et al., found that immigrants, specifically newly arrived Asians, were less likely to report use of emergency and health services, compared to the general population.

While some studies did not find significant differences in the healthcare utilization of immigrants and Canadian born adults (Laroche, 2000), others found greater use of health services by the immigrant population (Newbold, 2005; Wen et al., 1996; Blais & Maiga, 1999)and higher hospital use in areas with high numbers of recent family class immigrants and refugees (Glazier et al. 2004).

Study design may explain some of the discrepancies observed in these studies, since estimates of these analyses have primarily stemmed from cross-sectional data, pooled, cross-sectional data or first event, healthcare utilization data (Setia et al., 2010).

Evidence in the literature has suggested that several determinants need to be taken into account to explain the disparities in health services use among immigrants. Such factors include: region of origin, time (year) of arrival, cohort effects, forced or voluntary migration (refugee versus economic/family class immigrant), as well as personal characteristics such as age and sex (Newbold, 2005). The amount of empirical research describing the rates and patterns of health services utilization by immigrants is limited. Nevertheless, the majority of Canadian studies report lower utilization in all forms of health service use, specifically among immigrants from the non-traditional (non-European) source countries (Fenta, Hyman 2007; Vega et al., 1999; Globerman, 1998; Gross et al., 2001; Muenning & Fahs, 2002; Carrasquillo & Pati, 2004; Yu et al., 2004; Han & Liu, 2005; Chen & Kazanjian, 2005).

The lower rates of health service utilization by immigrants can be explained in two ways. First, immigrants may generally have fewer health problems and, therefore, a lower, perceived need for health services. The second explanation may be that they are not accessing health services in spite of their need for healthcare, or possibly seeking care from alternative medicine practitioners not covered under the provincial, health services plan. To address the first, possible explanation, it is important to describe the major research paradigms on immigrant health.

2.4   Research Paradigms on Immigrant Health

There exist several paradigms of immigrant health which emphasize changes occurring in the health status of this population post-migration (Beiser, 2005). Numerous studies have suggested that newly arrived immigrants have, on the whole, a better health advantage (i.e. are in better health) than natives of the resettlement countries. Over time, however, they gradually lose

this advantage and their health becomes similar to the average health of the non-immigrant population (Beiser, 2005).

This phenomenon, known as the *"healthy immigrant effect",* has been cited and used most frequently in the literature to describe the health of recent immigrants (Ali 2002; Chen et al., 1996; Dunn and Dyck, 2000; Laroche, 2000; Newbold et al., 2003; Deri et al., 2004; Beiser, 2005; DesMeules et al., 2006). This effect can be largely explained by the fact that immigration medical screening procedures for economic and family class immigrants have typically sought the healthiest and most adaptable immigrants to Canadian society (Beiser, 2005).

Two widely used models of immigrant health address this healthy immigrant effect: the convergence and acculturative stress models. Both provide possible explanations why and how the health of immigrant populations deteriorates in their host country.

According to the convergence paradigm (Kliewer and Smith, 1995a; Kliewer and Ward, 1988; Dunn and Dyck, 2000) exposure to the physical, social, cultural and environmental effects of a resettled country leads to deteriorating health among immigrants gradually becoming similar to the average health of the resettlement country (Beiser, 2005).

The acculturative stress model argues that socio-economic factors such as unemployment and poverty have an amplifying affect on the stress of immigration and resettlement (Beiser, 2005). Factors such as acculturation are unique to the resettlement experience and have a potential impact on health. According to Beiser (2005),

> *"...acculturation is a process resulting from inter-group contact, during which individuals whose primary learning has been in one culture take on characteristics (attitudes, values and behaviours) from another culture."* (Beiser, 2005, p. 6)

A third, more complex model, known as the interaction paradigm emphasizes that interacting factors determine health status. The factors in this interaction include acculturative stress, predisposing (genetic and developmental), social and cultural environments (Beiser, 2005).

An understanding of the common models employed in immigrant health research provides valuable insight into the determinants of immigrant health. It further directs the attention of policy makers and practitioners to the importance of post-migration health, including access to

preventive and remedial services (Beiser, 2005). Research on immigrant health in Canada identifies various issues, including acculturation, poverty, resettlement stress and access barriers, that impact the health of all newcomer groups, irrespective of their immigration classification (Hyman, 2010).

2.5   Health Status of Government Assisted Refugees

In Canada, the health of refugees are under-researched; the majority of research being focused on settlement issues related to housing, income (Picot & Hou, 2003), and access to employment (Wahoush, 2009; Friesen et al., 2002; Frisken and Wallace, 2002; Kilbride, 2001). Research findings have, however, suggested that the healthy immigrant effect does not apply to refugee populations (Hyman, 2010; Miedema & Hamilton, 2008; DesMeules et al., 2005). Evidence of such differences was found by DesMeules et al. (2005), where data from a sample of Canadian immigrants and refugees landing between 1980 and 1990 was linked to the Canadian Mortality Database. Results indicated that while recently arrived immigrants enjoyed *"the healthy immigrant effect"*, by having lower rates of all-cause mortality, a stratified analysis of the refugee group showed an increased risk of mortality when compared to the Canadian-born group (DesMeules et al., 2005). Such findings can be attributed to factors such as psychosocial effects of trauma, direct and indirect effects of war and conflict, refugee camp internment, and long-standing lack of access to curative and preventive healthcare prior to arrival in Canada; all of which are unique to refugee populations (Hyman, 2010; Canadian Task Force, 1986; Beiser, 2006; Rousseau & Drapeau, 2004).

Within the past decade a larger number of refugees with greater susceptibility to health problems and difficulty adapting to Canadian culture and healthcare system, have been resettling in Canada. This can be partly explained by the IRPA revision in 2002, when the medical and social inadmissibility barriers, which had previously restricted refugees from entering Canada, were lifted (Hyman, 2010). Furthermore, refugees often arrive from refugee camps in low-income countries and/or war-torn regions where they likely did not have adequate access to healthcare (Hyman, 2010). Refugees also face greater difficulty during the migration voyage, having been prone to increased risks of accidents, hunger and/or exposure to infectious and other preventable diseases; all of which could aggravate latent health problems (Hyman, 2010; Pottie et al., 2006; Oxman-Martinez and Hanley, 2005). Common physical health problems among

newly arrived refugees to Canada include anemia, nutritional deficiencies, lack of proper immunization, respiratory infections, intestinal parasites and dental problems (Hyman, 2010; Pottie et al., 2007; Fowler, 1998; Dillman et al., 1993).

In Canada, a major challenge to conducting research on refugee health is the dearth of information available. Although there exist population based health surveys in Canada, immigrants as a whole are generally underrepresented, and they do not capture information specific to refugees (Hyman, 2010). Other Canadian studies of refugees employed descriptive or case studies of specific groups of refugees; making the generalization on their health status difficult (Hyman, 2010).The limited research on refugee health has generally focused on infectious diseases and mental health problems.

The remainder of this section provides a closer look at mental health problems, infectious and chronic diseases among refugees.

2.5.1   Mental Health Problems

Although there has been some research on the mental health status of refugees, most studies have been conducted in refugee camps (Redwood-Campbell, 2003). Research shows despite readjustment and stress during the arrival and resettlement period, Canadian immigrants as a whole, experience fewer mental health problems than non-immigrants, demonstrating the healthy immigrant effect (Hyman and Jackson, 2010). However, as refugee health issues vary from immigrants, different interventions and approaches need to be taken to account for such differences (Hyman, 2010). There is a lack of large scale epidemiological research on the health of GARs, and an even bigger gap around their mental health status post-settlement to Canada (Hyman, 2010).

Typically, refugees of all ages are at an increased risk of developing mental health problems. They may exhibit depression, post-traumatic stress and anxiety disorders, all of which can be the result of forced migration, war, torture, and famine (Hyman, 2010). Donla-Farry (1997) reported that refugees may experience more subtle mental health problems such as social withdrawal, appetite disturbances , difficulties with daily functions, and sleep disruptions as a result of forced migration (Hyman, 2010).

Hyman (2010) has also suggested that socio-demographic and historical differences between refugee populations lead to different impacts on health pre-migration. Furthermore, traumatic life

events may also trigger stress related outcomes, as well as having an impact on refugee health by reducing their ability to cope with acculturation (Matheson et al., 2007; Hyman, 2010).

More recently, an analysis of data from the Longitudinal Study on Immigrants to Canada (LSIC) revealed that refugees have a greater risk of developing mental health problems compared to other immigrant groups (Robert & Gilkinson, 2010). The majority of studies, however, have been largely community focused.

In Toronto, ON, a study initiated in 1997, examined healthcare utilization and mental health among a sample of Ethiopian immigrants and refugees (Hyman, 2010). This study examined mental health, personal and social resources, in addition to pre- and post-migration stresses. Major findings from this study were that although the prevalence of depression was only slightly higher than in the general Ontario population, the prevalence was three times higher compared to Ethiopians living in Southern Ethiopia (Fenta et al., 2004). Furthermore, the risk of depression increased with the number of years spent in Canada.

Results from the multivariate analysis indicated that factors such as post-migration, stressful life events, time spent in a refugee camp, pre-migration trauma, young age, and low educational levels, were associated with a higher risk of developing depression. In the study sample, the rates of depression were higher among males than females. These findings are contrary to the conclusions of other studies (Fenta et al., 2004; Hyman, 2010).

Most studies suggested that differences in socio-demographic and historical factors lead to different mental health outcomes. A study conducted in Hamilton, ON compared the mental health and adaptation of Kosovar and Czech Roma refugee groups, representing two different types of refugee resettlement processes (Redwood-Campbell et al., 2003; Hyman, 2010). Results indicated that a significant proportion of Kosovars suffered from Post Traumatic Stress Disorder (PTSD) compared to no incidents among the Czech Roma refugees.

Furthermore, after controlling for age and PTSD, Kosavars were more likely to report poorer adaptation to Canada than Czech Roma refugees. The Kosovar refugees were older; less educated, and had experienced greater pre-migration stress than the Czech Roma refugees (Redwood-Campbell et al., 2003; Hyman, 2010). Finally, in one study examining the health status of refugees settled in Alberta, the results indicated that being employed and having received higher numbers of settlement services were associated with improvements in both

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mental and physical health (Maximova and Krahn, 2010). In addition, having a higher education in one's home country and a perceived economic hardship were associated with a greater decline in mental health, compared to refugees with lower educational levels. Neither age nor sex was statistically significant factors in this study (Maximova and Krahn, 2010).

2.5.2 Infectious Diseases

Several major categories of vaccine preventable, infectious diseases have been well documented among GARs. High rates of hepatitis B and HIV have been observed among those arriving from refugee camps, war torn regions, and areas with poor sanitation and access to proper medical care (Hyman, 2010). Rates of HIV infection have been estimated to be approximately 12 times higher among refugees from Africa and the Caribbean than the general Canadian population (Hyman, 2010; Boulus et al., 2006). In addition, many adult refugees are not immunized against common vaccine preventable diseases such as measles, mumps and rubella due to the late introduction of childhood vaccinations in many low-income countries (Hyman, 2010).

Malaria and tuberculosis have been recurring causes of mortality and morbidity and of great concern among refugee populations. Malaria is also a health concern among various immigrant and refugee groups in Canada, as there are currently no protocols for its screening among immigrants and refugees (Hyman, 2010; Ndao et al., 2004). Tuberculosis is a major communicable disease that occurs in both immigrants and refugees. In 2004, 64% of all cases were attributed to these two groups (PHAC, 2007; Hyman, 2010).

2.5.3 Chronic Diseases

There is a lack of information on chronic diseases among refugee groups in Canada. Many refugees arriving in Canada have major health problems. Respiratory diseases, such as Chronic Obstructive Pulmonary Disease, and an increased risk of developing cancer, heart disease and Type II diabetes after resettlement in Canada are quite common (Hyman, 2010; PHAC, 2005; Pottie et al., 2008). Findings from the DesMeules et al., (2005) data linkage study reported that refugees have a higher incidence of and higher mortality rates for cancer, respiratory, infectious and cardiovascular diseases than other immigrants.

Although high rates of preventable and treatable infectious diseases exist among the refugee population, the majority experience improved health with time. Such improvements would take place if they have access to adequate healthcare services and receive appropriate healthcare, treatment and follow up (Hyman, 2010; Hyman, 2001; Pottie, Orti & Kur Tuile, 2008). Further in depth research is needed on the disease patterns of refugees to inform best practice guidelines, policy and directions for future research (Hyman, 2010).

The research thus far indicates that refugees are a vulnerable population with various preventable and treatable diseases, with low rates of healthcare utilization, which may be related to the access barriers they experience rather than being healthy.

2.6 Access to Health Services

2.6.1 Definition and Measures of Access to Health Services

Research on accessibility to health services provides another perspective in examining the issues relating to healthcare utilization. It has also been a central research topic in health services research and policy development since the 1960's (Goldsmith, 2007; Davis, 1991). The core principles of Canada's universal healthcare system, embodied in the Canada Health Act, ensure reasonable access to health services for all Canadians, regardless of their socio-economic access. Despite such efforts, there still remain research questions and policy concerns on facilitating appropriate use, impeding unnecessary use, enhancing quality, improving health outcomes and increasing patient satisfaction (Canada Health Act, 1984; Goldsmith, 2007). Several definitions of access exist in the health services literature. According to a 2001 definition of Andersen and Davidson (2001), access is the:

> "…*Actual use of personal health services and everything that facilitates or impedes their use. It is the link between health services systems and the populations they serve. Access means not only getting to service but also getting to the right services at the right time to promote improved health outcomes*." (p.3)

Access to healthcare services is conceptualized as having two key components: *'potential access'*, the process of accessing care, and 'realized access', defined as the actual use of healthcare services (Sanmartin & Ross, 2006; Aday and Andersen 1974, 1980). Over the years, access has been measured in several levels including the healthcare system and the individual

(Goldsmith, 2007; Berk & Schur, 1998). Healthcare system measures include indicators of realized access such as healthcare supply rates, disease outcome rates, and population utilization rates such as physician visits, hospitalizations, surgery and use of diagnostic tests (Goldsmith, 2007; Millman, 1993; Sanmartin & Ross, 2006; Statistics Canada and CIHI 2005; CIHI, 2004). Access at the individual level measures service use relative to need, structure or process of care, consumer perspectives on barriers to needed care, and satisfaction with the care received (Kasper, 1998; Goldsmith, 1997).

National health surveys and health services data have been used to measure access by examining health status and socio-demographic data. This was done to examine who is accessing services, and what clinical and non-clinical factors may affect service use (Sanmartin & Ross, 2006; Roos & Mustard, 1997; Dunlop et al., 2000; Finkelstein, 2001; Glazier et al., 2000; Black et al., 1995; Roos et al., 2003). However, information found in health surveys and health services data inform researchers about realized access (Goldsmith, 2007). Potential access measures the experiences of patients in the process of accessing care, unmet healthcare needs, and whether or not individuals face difficulties obtaining the care they need. These indicators are also measures of individual level access (Sanmartin & Ross, 2006).

2.6.2 Access to Care: Defining 'Needs' within the Context of Healthcare

As access to care continues to be the driving force in policy and health services research, there comes a question as to how researchers, policy makers, and planners define 'needs'. The concept of 'needs' can have different implications when measuring the difficulties individuals face accessing and obtaining care. The assessment and definition of 'needs' within the context of health and healthcare has been a topic of interest for decades (Asadi-Lari et al., 2003). The definition of needs can have a variety of meanings in healthcare, and *"is a subjective feeling state that initiates the process of choosing among medical resources"* (Davis, 1955; Asadi-Lari et al. 2003 p. 1). From a societal view, needs is categorized into: *normative* (based on previous provision of services), *felt* (the wants, desires, and wishes of people), *expressed* (a demand for services, vocalized needs, or how people utilize services), and *comparative* (needs in comparison with other population needs) (Rawaf, 1998; Bradshaw, 1972; Asadi-Lari et al., 2003). This taxonomy has had practical use in health services research, but also received criticism for not including a cost containment component (Asadi-Lari et al., 2003). Economists argue that one has

to combine satisfactory services with cost-effective measures (Asadi-Lari et al., 2003). The most widely used definition of needs by economists is *"the ability of people to benefit from health care provision"* (NHSME, 1991; Stevens & Gillam, 1998; Asadi-Lari et al., 2003 p. 4). They argue that a need exists only when there is a capacity to benefit from a particular healthcare service, and is assumed to exist under the condition that there is an effective treatment or health gain (Gillam, 1992; Culyer & Wagstaff, 1993).

The terms *'health needs'* and *'healthcare needs'* are often used interchangeably, when differences exist. Health needs are related to the overall aim of a healthier population, and healthcare needs relate to identified health-related problems which can benefit from preventive treatment and care measures (Rawaf, 1998). Furthermore, health needs are influenced by socio-economic status, housing, environment, culture, religious beliefs, customs and social background (Rawaf, 1998). Healthcare needs are influenced by a healthcare professional's perception of benefits, and scientific evidence on the effectiveness of the intervention (Rawaf, 1998). The social values built through an individual's perceptions of health, illness, experiences, and expectations of health services are also influential in the way needs are expressed (Rawaf, 1998). An individual's needs change over time, and subject to wide interpretation in different places, settings and cultures (Rawaf, 1998).

Rawaf (1998) distinguishes "needs," from "demands" and "wants". Needs are what people can benefit from, and demands are services people ask for, which may or may not be needed and supplied. Wants are what people desire regardless of whether they are translated into demands. Stevens and Gabbay (1991) illustrate the overlaps of need, demand and supply shown in Figure 2.1. There are seven possible scenarios, but Stevens and Gabbay (1991) focus on four described as 1) there is a need, but is neither supplied nor demanded, 2) a service that is supplied but neither needed or demanded, 3) a service that is demanded and supplied, but not needed and 4) a service that is needed, demanded, and supplied. The latter, is described as the most efficient scenario in healthcare (Rawaf, 1998; Stevens & Gabbay, 1991). The use of this model illustrates how best a community can be served. It helps in priority setting, targeting resources to individuals most in need by using the most effective interventions (Rawaf, 1998).

Figure 2.1 Relationships between Needs, Demand and Supply
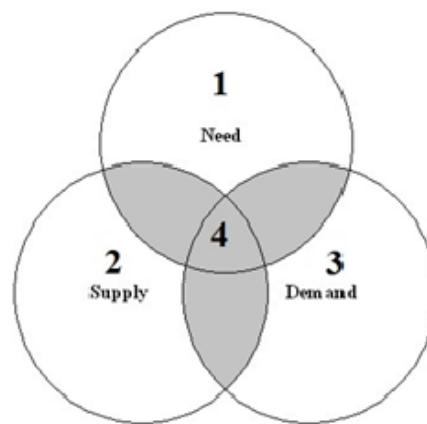
Adapted from Stevens and Gabbay (1991) and Rawaf (1998) on the relationship between needs, demand and supply

One must remember the subjective nature of 'need' when describing difficulties individuals face in accessing the care they need, and define it within the context of healthcare. Furthermore, the measures of a patient's experience in accessing the needed healthcare are often self-reported, leading to potential bias and subject to wide interpretation. Given the diversity of cultures, perceptions and experiences people have with the healthcare system, a need may actually be an individual's 'want,' a combination of a need and want, or simply a desire. Acknowledging such differences will assist researchers and policy makers into understanding the difficulties people face in accessing healthcare. This in turn will inform effective interventions that supply a service both needed, and demanded by a population.

2.6.3   Concerns on Difficulties Accessing Care

There have been concerns about lengthy wait times and timely access to healthcare in Canada. These concerns have generated greater interest on 'potential access', and patient's difficulties accessing healthcare (Sanmartin et al. 2002). More recently, measures on access difficulties have been included in national health reports. Results have indicated that one-in-four Canadians requiring primary and immediate care faced difficulties in accessing healthcare (Sanmartin et al. 2002). The key problems identified were barriers contacting a healthcare provider, and long wait times (Sanmartin & Ross, 2006; Sanmartin, Gendron et al. 2004).

Findings from the Sanmartin and Ross (2006) study also indicated that new immigrants were ten times more likely than Canadian-born respondents to identify a barrier related to transportation, language, cost or navigating the healthcare system.

Concerns have been raised about a patient's experiences in the process of accessing care, because individuals who experience such difficulties may underuse preventive healthcare services. They may also delay obtaining proper treatment, placing them in greater risk of complications following a delayed diagnosis (Sanmartin & Ross, 2006). This may, in turn, impose greater financial and resource pressures on the healthcare system if more individuals enter the system sicker and stay longer (Sanmartin & Ross, 2006). Given that refugees have a greater health risk, it is important to investigate and understand the difficulties they face in obtaining the healthcare they need. In order to do so, one must understand the barriers associated with the process of obtaining healthcare.

2.6.4 Barriers to Care for Newcomers

Refugees in Canada face difficulty overcoming certain key barriers in accessing and navigating the Canadian healthcare system. Common barriers that have been identified in the literature include lack of English proficiency, poverty, unfamiliarity with the health system, and low levels of education (Hyman, 2004; Wu et al., 2005; Caulford & Vali, 2006).The fee-for-service payment for physicians in Canada creates an additional barrier through discouragement of culturally sensitive care for refugees. It does so by rewarding physicians for conducting frequent, rapid visits. This limits culturally sensitive care, a process requiring additional time through the use of interpreters (Hyman, 2004; Wu et al., 2005; Caulford & Vali, 2006).

In order to establish the impact of such barriers, it is important to understand the determinants of access to healthcare. This would assist service planners, policy makers and healthcare practitioners to target sub-populations in Canada who are most at risk of being under-served by the Canadian healthcare system. This will help identify reasons for differences in access, as well as provide evidence-based knowledge into developing effective intervention strategies.

2.7 Conceptual Framework: The Andersen Model of Health Care Utilization

In seeking to understand the determinants of access to healthcare, a number of important demographic, socio-economic, health related and system-level variables have been identified in the literature. The Andersen model of healthcare utilization is the most frequently referenced conceptual model in health services research (Wahoush, 2009; Shibusawa & Mui, 2008; Sanmartin & Ross, 2006; Chen, 2006; Wu et al., 2005; Fenta & Hyman, 2007; Goldsmith, 2007; Honda, 2004; Dunlop et al., 2002; Broyles et al., 2000; Champion & Menon, 1997; Leclere et al., 1994). The majority of the studies in this literature review were guided by this model, and others identified variables which could be summarized by its sub-components.

The model assesses equity of access in healthcare, by identifying components where interventions and policies can improve access to care. It was initially applied to the 1964 data on American families' utilization of health services, where the unit of analysis was the family (Aday & Andersen, 1974). The model associated each component with all types of health service use such as physician visits, hospitalization, and dental care (Chen, 2006). Over the past 30 years, it has undergone several changes and revisions; shifting focus towards the study of access, and into the development of the field of health services research (Goldsmith, 2007).

2.7.1 Initial Model

The first model postulated three components of healthcare utilization – Predisposing, Enabling, and Need Factors (Andersen, 1968).

Predisposing factors include age, sex, family composition, social class, ethnicity, and health belief (Andersen, 1968).

Enabling factors are the family resources to obtain healthcare, and availability of healthcare in the community (Andersen, 1968).

Need factors include illness, and the family's response towards the illness (Andersen, 1968).

Andersen's model conceptualized health service use as taking place in these three stages. Predisposing Factors predict the propensity of a family to using health services; Enabling Factors allow the family to utilize health services, and Need Factors are the immediate determinants of health service use (Andersen, 1968). Among the three components, the Need Factor has the

strongest correlation with the volume of health services, followed with Predisposing and Enabling Factors respectively (Andersen, 1968).

One of the advantages of the model is versatility, where different subcomponents are introduced specific to a population. For example, the model has been widely use in studies involving marginalized populations, where vulnerable domains are added to each component. For example, the Gelberg-Andersen model has been widely used across under-privileged populations such as the homeless (Gelberg, Andersen & Leake, 2000). Several revisions have been made to the model since it was developed by Andersen. This was done to address the structural, organizational and societal changes in relation to healthcare (Andersen & Newman, 1973; Andersen, 1995; Andersen & Davidson, 2001). The major changes over the years include:

1) The unit of analysis shifted from the family to the individual (Andersen, 1995).

2) The addition of contextual characteristics, i.e. organization of the healthcare system, health legislations, and the development and refinement of health technologies, all of which were recognized as impacting an individual's decision and access in obtaining healthcare (Andersen, 1995).

3) Significant expansions in the contextual aspects of the model including: expanding the environment dimension, changing the categorization of individual enabling characteristics (from individual and community to financing and organization), and adding a component representing provider-patient interactions (named the process of medical care) (Goldsmith, 2007; Andersen & Davidson, 2001.

4) The need component expanded to include perceived and evaluated need. The former is measured by self-reported health status and symptoms, and influenced largely by social context. Evaluated need is indicated by a healthcare professional's judgment of a person's health status, and their need for medical care (Andersen, 1995; Goldsmith, 2007; Chen, 2006).

5) Personal health practices and the process of medical care were added to the health behavior component of the model (Andersen, 1995; Chen, 2006).

6) Feedback loops were incorporated into various components of the model, illustrating the interaction among some of the components (Andersen & Davidson, 2001; Goldsmith, 2007; Chen, 2006).

7) The final stage of the model became health outcomes, which included perceived & evaluated need for care, as well as consumer satisfaction (Andersen & Davidson, 2001 Goldsmith, 2007; Chen, 2006).

Figure 2.2 represents an adapted version of the Andersen model of healthcare utilization.

In conjunction with the literature review, the model conceptualized access as both *potential* and *realized*. The model stipulates that access can be measured as both healthcare utilization, and consumer satisfaction (Andersen & Davidson, 2001). It further emphasizes that these two measures are the result of process (the predisposing and enabling components), and outcome indictors (health behavior and outcomes) (Aday & Andersen, 1974; Aday, Andersen & Fleming, 1980). The Anderson model also connects healthcare access with four health policy objectives which are health services use, social justice, effectiveness and the efficient health service delivery (Goldsmith, 2007; Anderson & Davidson, 2001).

Andersen further proposes a hierarchy of access into effective, efficient and equitable access (Andersen & Davidson, 2001). Effective access is when utilization of health services improves health outcomes. Efficient access is when maximum improvement is achieved at minimum expenditure (Andersen, 1995; Andersen & Davidson, 2001; Chen, 2006). Equitable access is said to exist when factors such as age and sex correlate to illness levels, and Need Factors account for differences in utilization. However, when factors such as ethnicity, health beliefs and socio-economic status determine healthcare utilization, there is inequitable access (Andersen, 1995; Andersen & Davidson, 2001).

Both the initial, as well as the revised versions of the Andersen model discuss mutability, defined as: *"the extent to which a given component can actually be altered to influence the distribution of health services"* (Andersen & Newman, 1973, p.118). Mutability is the criterion which policy-makers and program planners should use in selecting factors subject to change. By examining the various components of the proposed model, the majority of Predisposing Factors, such as socio-demographic variables are immutable (Andersen & Newman, 1973; Andersen & Davidson, 2001). Mutable variables are said to include Enabling and some of the Need Factors. Andersen and colleagues describe perceived and evaluated needs as mutable if proper health education is provided and practice guidelines are applied respectively (Andersen & Newman, 1973).

Figure 2.2 Andersen Model of Health Care Utilization
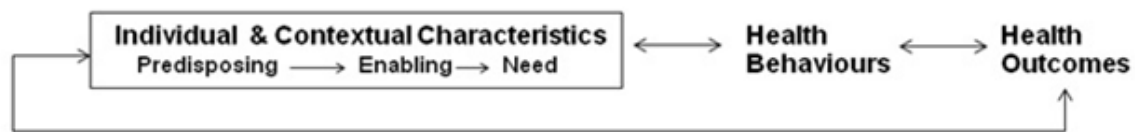
Source: Fletcher, J (2011) Cervical Cancer Screening in Immigrant Populations in British Columbia: Participation Rates and Sociodemographic Characteristics of Use (Unpublished Master's Thesis, SPPH UBC).

2.8 Determinants of Access to Health Care: Predisposing, Enabling and Need Factors

Factors summarized in the Andersen Model were examined and reviewed from the literature. Information on each factor was collected and grouped according to Andersen's conceptualization of health services utilization. Articles that described either individual or health systems level access were included in the review. All studies reviewed included at least one or both indicators of access to care – potential and realized access. Most of the factors associated with access to care in immigrant and refugee groups are common to the general population including age, sex, marital status, race & ethnicity, socio-economic status, health beliefs & attitudes, availability of provider, evaluated and perceived need for care. However, other factors are salient to immigrants and refugees including place of birth, acculturation, and English Proficiency.

2.8.1 Predisposing Factors

Age

Findings from several studies have shown that age plays a significant role in access to health services. A study by Garrett et al. (1998) examined barriers to healthcare for adult immigrants and non-immigrants. Results indicated that being of younger age could act as a barrier for accessing care for both immigrant and non-immigrant patients. Results from other population-based studies have confirmed similar findings (Setia et al., 2010; Wu et al., 2005; Gerritsen et al., 2006). A Canadian longitudinal study of the National Population Health Survey examined access to health-care in Canadian immigrants. After adjusting for the covariates, including length of

time from arrival to Canada, access to healthcare increased with older age for both men and women (Setia et al., 2010). Another study compared immigrant status and unmet healthcare needs. Age was significantly associated with unmet healthcare needs, but its effect did not explain differences between immigrants and non-immigrants (Wu et al., 2005). A population-based study in The Netherlands investigated utilization of health services among adult refugees from Afghanistan, Iran and Somalia. Older age (38 years and older) was associated with a greater use of healthcare services (Gerritsen et al., 2006).

Sex

Before examining the role of sex on access to healthcare, it is important to distinguish sex from gender. According to the Institute on Gender Health (2011), gender *"refers to the array of socially constructed roles and relationships, personality/traits, attitudes, behavior, values, relative power, and influence that society ascribes to women and men."* It is often referred to as 'feminine' or 'masculine', but as research has indicated, there exists a gender continuum (IGH, 2011). Consequently, sex is defined as *"the biological characteristics, such as anatomy and physiology that distinguish people identified as 'female' from people identified as males"* (IGH, 2011).

Several studies in North America and Europe have shown that after controlling for pregnancy, women are more likely than men to access and utilize health services. In the United States, a longitudinal study of Americans aged 70 years and older investigated the effect of sex and ethnic disparities on the healthcare utilization of men and women from Hispanic, African American, and White ethnic groups (Dunlop et al., 2002). There were no statistically significant sex differences in physician contacts, but interaction terms indicated substantial sex disparities. While African American men were less likely to see a physician than their White counterparts, African American women reported more physician visits. The results suggested that minority men may delay seeking healthcare, and thus require more medical attention when the care is eventually obtained (Dunlop et al., 2002). A cross-sectional study in The Netherlands examined healthcare utilization among various ethnic groups including its indigenous population, and individuals originally from Morocco, Netherlands Antilles, Turkey and Surinam. After controlling for other variables, results indicated that women from Morocco and the Netherlands Antilles had greater access to healthcare services than men from the same countries. The study's

findings concluded that the use of health services by women was higher compared to that by men (Gerritsen et al., 2009).

One Canadian study on access to healthcare for Canadian immigrants did not show any significant differences in sex. After adjusting for all covariates, both immigrant men and women had similar odds of having regular access to care as the Canadian born group. However, analyses within the "immigrant-only" group found that immigrant women were more likely to have regular access to healthcare than males (Setia et al., 2010). Two cross-sectional studies in Canada and The Netherlands examined health services utilization specific to refugees. The Canadian study looked at Ethiopian refugees in Toronto. The findings reported that a higher proportion of females utilized healthcare services in the past year compared to males. Findings were consistent after adjusting for age, marital status, pregnancy level of education, English language proficiency, employment status, mean age at immigration, years in Canada, perceived discrimination, pre-migration trauma, chronic illness and social networks (Fenta et al., 2007). Results from the study in The Netherlands found that female sex was associated with a higher use of healthcare services in a group of refugees from Afghanistan, Iran and Somalia after controlling for pregnancy (Gerritsen, 2006). Similar findings were observed in other immigrant focused studies (Leclere et al., 1994; Van der Stufyt et al., 1989; Chen et al., 1996; Vega et al., 1999; Globerman, 1998; Johnson et al., 2000).

Marital Status

Studies have shown that marital status plays an important role in an individual's access to health services. A study among Vietnamese immigrants analyzed the role of marital status and its relationship between access to healthcare and use of preventive care (Jenkins et al., 1996). The research findings concluded that being married was one of the most influential determinants of healthcare access among Vietnamese immigrants (Jenkins et al., 1996). Jenkins et al. (1996) suggested that marriage provided a point of entry into the healthcare system because of pregnancy and childbirth. Other studies had similar findings, one which examined barriers to healthcare access for Latino children, and the other on attitudes towards use of home care in older Japanese-Americans (Flores & Vega, 1998; McCormick et al., 1996).

In a study investigating the social determinants of health in Canada's immigrant population, the authors utilized data from the National Population Health Survey to examine access to health

services (Dunn & Dyck, 2000). Immigrants and non-immigrants who were not married were more likely to report an unmet healthcare need compared to those who were married. The relative odds among immigrants were much greater than the Canadian born (Dunn & Dyck, 2000). Wu et al. (2005) also found that marital status influences unmet needs and access to care for the Canadian-born and immigrant population. Individuals who were separated or divorced were more likely to report difficulties accessing healthcare services compared to individuals who were married (Wu et al., 2005).

A pilot study in 2000 linked immigration data from CIC to the Manitoba and British Columbia provincial database containing hospital and physician claims. The study examined health status and medical services utilization of recent immigrants to these provinces (Kliewer & Kazanjian, 2000). Results indicated that while immigrants of all marital statuses had lower physician utilization than other residents, separated immigrants had the least physician visits in Manitoba. In British Columbia, married women had more physician visits than widowed and single women after adjusting for contraception use and pregnancy (Kliewer & Kazanjian, 2000). Two studies did not find any significant differences in marital status and access to healthcare (Setia et al., 2010; Hoerster et al., 2010).

<u>Race/Ethnicity</u>

Race and ethnicity have routinely been included as demographic variables in health services research. There is evidence that racial and ethnic minorities have a tendency of under-utilizing health services and receiving lower quality of care than their non-minority counterparts (Egede, 2006). Several studies published in the United States provided valuable insight to contributing factors to racial and ethnic disparities in healthcare (Egede, 2006).

In order to establish the role of race and ethnicity as a determinant, it is important to highlight its limitations. Egede (2006) describes there are several limitations in most research studies on ethnic differences. He also highlights there are questions as to whether racial/ethnic disparities in healthcare are the result of race & ethnicity, race OR ethnicity, socio-economic interaction, race/ethnicity & socio-economic status, or an unmeasured factor (Egede, 2006).

Research on racial variations have largely been driven by a 'genetic model' with the assumption that race is a valid biological category. This model stipulates that the genes determining a persons' race are linked with the genes that determine health (Egede, 2006).

However, recent studies have shown there exists more genetic variation within races than between races; therefore, race encompasses more of a social construct (Egede, 2006). The Statistical Policy Division from the Office of Management and Budget (OMS) in the US determines the federal standards for reporting race and ethnicity (American Anthropological Association, 1997). They define race in the US Census as: *"social and cultural characteristics as well as ancestry"*, and not on genetic factors (American Anthropological Association, 1997). There are, however, problems with the validity and reliability of race. Self-reported race is the most reliable measure, and has shown to be the most preferred method (Egede, 2006). Ethnicity, has been widely accepted as non-biological., and represents more of a cultural, linguistic social and political meaning (Moscou, 2008). This is consistent with other reports defining ethnicity as 'members who identify one another through a common heritage, language and culture' (Seidner, 1982). Ethnicity and race combined together provide reliable information if they are conceptually defined (Egede, 2006).

There has been supporting evidence around one's racial and ethnic background acting as a determinant in accessing care. After controlling for other factors influential to access, racial and ethnic minorities have more problems accessing healthcare compared to white persons (Goldsmith, 2007; Collins et al., 2002). Research has also indicated that minorities are less likely to receive preventive, acute, and chronic care services, and more likely to report having difficulty accessing care than their white counterparts (Goldsmith, 2007; Agency for Healthcare Research and Quality, 2005; Corbie-Smith et al., 2002; Fiscella et al., 2002; Hargraves & Hadley, 2003; Kirby et al., 2006; Mayberry et al., 2000; Mueller et al., 1998; Shi, 1999; Weinick et al., 2000; Smedley et al., 2002).

A study in the United States on disparities in healthcare by race, ethnicity, and language found that Spanish speaking Hispanics showed significantly lower use of health services than non-Hispanic white patients (Fiscella et al., 2002). Another study on gender and ethnic/racial disparities in healthcare utilization showed that African American men had fewer physician contacts when controlling for various factors. Furthermore, minority white women used fewer services compared to non-Hispanic Whites (Dunlop et al., 2002).

In Canada, a report funded by the Strategic Initatives and Innovations Directorate of the Public Health Agency of Canada, examined racialized inequities in access to healthcare (Hyman, 2009). The report defined racialized groups as individuals of non-Caucasian race, or non-white

colour (Hyman, 2009) Despite Canada's universal healthcare policies, racialized patients do not have equal access to healthcare, and have more unmet needs (Hyman, 2009; American College of Physicians, 2004; Bhugra, Harding and Lippett, 2004; Haas et al., 2004; Fiscella et al., 2002). In a study conducted by Quan et al. (2006) researchers examined ethnic variations in rates of physician contacts and hospital admissions. They found that members of racialized groups were less likely to utilize health services. Results from the 2007 CCHS data also indicated that recent immigrants were significantly less likely to have secured a regular family doctor compared to the Canadian-born population (Hyman, 2009; Statistics Canada, 2008).

In a study measuring access to care, health status, and health disparities in the United States and Canada, researchers used a population-based data from a joint Canada/US Survey of Health (Lasser et al., 2006). Results indicated that non-Whites in both countries were more likely to report difficulties accessing care, and less likely to have access to a physician. The racial differences in access to care were less marked in Canada than in the United States. Moreover, income disparities did not explain all the racial disparities in health for both countries (Lasser et al., 2006).

The literature has identified several 'individual' level factors decreasing racial and ethnic disparities. They include having higher income, higher education, English proficiency, as well as health insurance. Community level effects associated with decreased disparities include a community's racial and ethnic composition, and socioeconomic conditions. It is important to note that such factors do not eliminate racial and ethnic disparities, but only decrease the effect (Goldsmith, 2007; Hargraves & Hadley, 2003; Mayberry et al., 2000; Mueller et al., 1998; Weinick et al., 2000; Zuvekas & Taliaferro, 2003; Fiscella et al., 2002; Kirby et al., 2006; Haas et al., 2004).

Place of Birth

Place of birth overseas plays a role in the use of health services for immigrants and refugees. A study on the health services use among immigrants and refugees to Canada reported that immigrants from the Eastern Pacific region (e.g. China) utilized health serves much less frequently than immigrants from other regions (McDermott et al., 2010). Immigrants and refugees from Southeast Asia, Africa and the Eastern Mediterranean region utilized outpatient

physician services more frequently that non-immigrants in Ontario and British Columbia (McDermott et al., 2010).

2.8.2 Enabling Factors

Socio-economic status

There is evidence in the literature on the relationship between socio-economic factors and access to health services. Several studies have concluded that lower socioeconomic status can act as a barrier to healthcare (Garrett et al., 1998; Jenkins et al., 1996; Jones et al., 2002; Cheung & Spears, 1995). However, as different measures of socio-economic status have been used, findings cannot be compared across studies. The lack of financial resources or poverty has shown, not surprisingly, to be a barrier to healthcare (Flores & Vega, 1998; Jones et al., 2002; Smith et al., 2000). Wu et al. (2005) found that low income was significantly associated with greater odds of reporting an unmet health need among and non-immigrants (Wu et al., 2005). A twelve year longitudinal analysis on Canadian immigrants found that men and women with the lowest income had greater difficulty accessing healthcare (Setia et al., 2010). A cross-national population-based survey in the United States and Canada showed that higher income was significantly associated with health services utilization. Lower income was strongly associated with reporting difficulty accessing care (Lasser & Himmelstein, 2006).

Low education has shown to act as a barrier to the access of healthcare, but findings have not always been consistent. A study on difficulties accessing health services in Canada found that having lower education (high school/some post-secondary less than high school vs. post-secondary degree/diploma) was significantly associated with experiencing difficulties accessing care among the general Canadian population (Sanmartin & Ross, 2006). These findings were also supported by Wu et al. (2005) which found a statistically significant association between having a lower education and reporting an unmet healthcare need among immigrants and non-immigrants. One study did not find any statistically significant association between education and difficulty accessing healthcare among immigrants and non-immigrants (Setia et al., 2010).

<u>Availability of Provider</u>

There is some evidence that availability of family physicians is related to greater use of health services. Evidence from the literature among immigrants has shown that regional and geographic disparities also add a barrier to the use of health services (Flores & Vega, 1998). Living in remote and low populated areas, where there may be fewer practitioners creates a barrier in accessing and utilizing health services (Sheppers et al., 2006). A study examined experienced difficulties accessing health services in Canada and found that residents of eastern Canadian provinces were more likely to report difficulties accessing routine care than residents of western provinces. Furthermore, individuals without a regular family doctor were more than twice as likely to report difficulties accessing routine care than those with a regular doctor (Sanmartin & Ross, 2006). Rural residents (i.e. residents not in an urban community) were more likely than their urban counterparts to report difficulties accessing immediate care (Sanmartin & Ross, 2006).

<u>English Proficiency</u>

Lack of English proficiency has been shown to act as a barrier in several studies. It is one of the major barriers impeding the use of health services for immigrants and ethnic minorities (Sheppers et al., 2006). It does so by limiting effective communication between the patient and the healthcare provider (Sheppers et al., 2006; Blais & Maiga, 1999; Flores & Vega, 1998; Garrett et al., 1998; Cheung & Spears, 1995; Diaz, 2002; Jirojwong & Manderson, 2002; Watt et al., 1993). Poor English language skills have an adverse effect on the patient, by yielding additional stress and discomfort (Sheppers et al., 2006). It can be detrimental to the patient's ability to comprehend treatments, remedies and instructions. It also hampers the physician's ability in obtaining medical history (Sheppers et al., 2006). Many patients unable to speak fluently in English may use an interpreter. The interpreter is either provided through healthcare services, or from a family or friend. However, the use of an interpreter has shown to create additional communication barriers (Sheppers et al., 2006). There are also concerns about the accuracy of translations when an untrained interpreter is used (Sheppers et al., 2006).

<u>Acculturation</u>

Low levels of acculturation can act as a barrier in accessing and utilizing health services (Sheppers et al., 2006). A higher level of acculturation is hypothesized to enhance ethnic

minority and immigrant patient's ability to utilize westernized health services (Sheppers et al., 2006). A person's attitudes and beliefs can influence the level of their acculturation and how successfully they will enter and access the health services provided in their host country (Beiser, 2005). Many researchers have commonly used length of stay in the resettlement country as a proxy measure of acculturation, which has been shown to be problematic (Beiser, 2005). First, a person's length of stay in the new country has different implications depending on whether they immigrated during childhood, adolescence or adulthood. Second, a person's place of residence has an effect (Beiser, 2005). Length of stay will have less effect on the acculturation process of immigrants who settle in their ethnic communities, and therefore makes it difficult to assess whether acculturation is a determinant of healthcare utilization (Beiser, 2005; Maxwell et al., 2000; Salant & Lauderdale, 2003).

<u>Health Beliefs and Attitudes</u>

Few studies in North America have addressed the association of health beliefs and attitudes with access to healthcare. The majority of studies reviewed were population-based using survey data. The studies did not directly examine health beliefs and attitudes in relation to access and utilization of health services. The studies collected in this literature review found that differences in health beliefs between patient, provider and health system acts as a barrier on utilizing health services. The studies emphasized that ethnic and/immigrant patients have a set of beliefs grouped under three major categories as: 1) a holistic view of health integrating the body, mind and soul, 2) external factors such as family relationships cause illness and personal problems, and 3) external causes are supernatural by nature, or *"the Act of God"* (Scheppers et al., 2006). Differing perceptions and attitudes towards health services can also act as a barrier, especially when ethnic minority patients are skeptical about the benefits of such services (Garrett et al., 1998; ten Have & Bijl, 1999; Diaz, 2002; Jirojwong & Manderson, 2002).

2.8.3 Need Factors

<u>Evaluated Need of Care: Diagnosed Health Condition</u>

Evaluated need of care is defined as a medical need diagnosed by a health professional through the presence of a chronic or acute condition (Andersen, 1995). Several studies have confirmed the significant effect of "medical needs", on an individual's access and utilization of health services. Wu et al. (2005) found that the presence of a chronic condition was significantly

associated with reporting difficulty accessing healthcare (Wu et al., 2005). A cross-sectional study on healthcare utilization across various ethnic groups in the Netherlands found that the presence of at least one chronic condition in the past 12 months was strongly associated with greater healthcare utilization across all ethnic minority groups in the study (Gerritsen & Devillé, 2009).

<u>Perceived Need of Care: Reported Health Status</u>

In addition to evaluated need, the perceived need of care by the individual on their own health has been documented in several studies. In the general population and among immigrants, studies show that perceived need of care has a strong impact on access to and utilization of health services. Self-reported health is a validated tool, and is strongly associated with morbidity, mortality and utilization of health services (Pottie et al., 2008; Miilunpalo et al., 1997; Chiswick et al., 2006). Sanmartin and Ross (2006) found reported poor health status to be significantly associated with having problems accessing routine care. Respondents reporting, poor, fair, or good health, were more likely to report difficulties than individuals reporting very good or excellent health (Sanmartin & Ross, 2006). Wu et al. (2005) also found that self-reported health status was significantly associated with reporting an unmet healthcare need.

Findings from research in the Netherlands among Afghan, Iranian and Somali refugees found that a poor general health status was associated with a higher use of healthcare services. (Gerritsen et al., 2006) A similar study also found that reporting a poor or fair general health status was strongly associated with higher use of healthcare utilization (Gerritsen & Devillé, 2009).

2.9   Determinants Examined in the Thesis

In accordance with the Andersen model, the factors that will be examined for GARs who arrived in Canada during a twenty-six month period include the Predisposing Factors of age, sex, marital status, and ethnicity. The individual Enabling Factors include the socio-economic status indicators of education, employment status, reported household income, source of income, financial burden, food security, English Proficiency, and possession of a vehicle. The contextual Enabling Factors include access to a regular doctor, sources of care and health region. The Need Factors examined include perceived and evaluated need of the individual. While some of these factors are considered immutable, knowledge of their relationship to access to healthcare will

draw attention to GARs at greatest risk of being underserved, as well as identify effective interventions to address such inequities.

3   METHODOLOGIES

3.1   Primary Data Source

This research is a cross-sectional analysis of data originally collected by Mayhew et al. (2011) in a Vancouver –based study entitled *"Refugee Health Care in BC: What facilitates access to general-practitioner care?"*(Mayhew et al., 2011) The study employed a mixed methods approach in examining access to a regular family doctor and self-reported health status of Government-Assisted Refugees (GARs) in comparison to the general population of Lower Mainland Vancouver. The study also determined the most significant factors for GARs accessing a regular family physician

3.1.1   Subjects

Eligible participants were GARs who arrived in Vancouver, registered, and were attended by staff at the Bridge Refugee Clinic within a twenty-six month period of April 2005 through May 2007, even if they continued to receive healthcare at the Bridge Clinic after 2007. The inclusion criteria stipulated that participants be 16 years or older. The study was approved by the University of British Columbia and Vancouver Coastal Health Ethics Review Board. All study participants provided telephone consent prior to commencing the interview.

3.1.2   Setting

The Bridge Clinic is one of fifteen refugee clinics in Canada, and is the only clinic in Vancouver which specializes in the healthcare of refugees. It is one of few Vancouver clinics that provide in person or through telephone translation for any language required. Every year, the clinic attends to approximately 8,000 patients, of which 1,800 to 2,000 are new refugees to Canada. Eight hundred (800) are GARs, and 1200 refugees are claimants, and the top three reasons for visits to the clinic were identified as: general medical concerns, mental health reasons and screening for infectious diseases (which is typically conducted within two months of arrival to Canada) (Telford and Friesen, 2007).

The Bridge clinic was established in 1994 in response to the growing challenges and unmet healthcare needs of refugees (both GARs and refugee claimants), and is continuously funded by Vancouver Coastal Health (Telford and Friesen, 2007). The operation of the clinic is centered on the rationale that due to their pre-arrival conditions, when compared to immigrant and general

populations, refugees experience higher rates of certain health conditions (Telford and Friesen, 2007). The clinic aims to improve health outcomes for refugees, while encouraging patients to eventually access and utilize existing mainstream health services in their respective communities. The Bridge clinic faces the challenge of encouraging existing patients who have lived in Canada for more than one year to transition to the mainstream healthcare system, in order to serve the needs of the new annual cohort of incoming refugees (Telford and Friesen, 2007).

The Bridge clinic is connected to a large network of refugee organizations in Vancouver, such as Immigrant Services Society of BC and the BC Multicultural Health Services Society. This enables the clinic to track refugees who have transferred to other care facilities, such as the New Canadian Clinics in Burnaby and Surrey (Telford and Friesen, 2007). To ensure confidentiality, the Bridge Clinic has an administrative, password protected database called the Primary Access Regional Information System (PARIS), in which contact information for all patients is recorded. Accessibility varies between VCH staff and authorized personnel.

3.1.3 Sampling Design

The original sampling design in the Mayhew et al. study (2011) consisted of a random sample of GARs from a PARIS listing of approximately 1,700 individuals who attended the Bridge Clinic from April 2005 to May 2007. All GARs who were admitted to Bridge Clinic prior to April 2005 or after May 2007 were excluded. Due to difficulty in successful contact 5 to 6 years after their admission to the Clinic, refugee claimants were excluded. Potential participants were first contacted by a letter explaining the study and consent form, followed by telephone contact through trained, third party interpreters. No remuneration was provided to participants for the telephone survey.

Potential participants were randomly selected from the PARIS listing. Randomization was accomplished by random number generation of a six digit number and selection of the unique administrative identifier number in PARIS that was closest to the number generated. If two PARIS identifiers were equally distant from the random number generation, the higher number was chosen. Selection of GARs was further restricted to only one individual per family unit. A family unit was identified through shared home addresses, phone numbers as well as a unique family unit ID. If GARs were randomly selected from the same family unit, the one with a date of birth closest to April 1st was selected.

Four hundred and twenty (420) households were eligible to participate in the survey. Eligibility was based on whether the household ever attended the Bridge Clinic. Twenty five (25) households could not be contacted because had moved out of the province. In total, 395 surveys were allocated to interpreters to contact potential participants. There were 177 participants who completed the survey, 27 who refused to participate and 191 who failed to be contacted. The contact and fail to contact rates were 52 % and 48% respectively. Figure 3.1 provides a schematic representation of how the final sample size was achieved.

The main reasons for failure to contacting potential participants included inability to contact the individual with a working telephone number, or having a wrong or out of service telephone number. Interpreters classified an individual as having been "failed to contact" if they attempted calling all available numbers at least three times during different times/days, after contacting Canada 411 for alternate telephone numbers under the same last name, and after verifying with community groups and Immigrant Services Society for updated contact information.

Figure 3.1 Survey Completion Rates and how Final Sample Size was Achieved
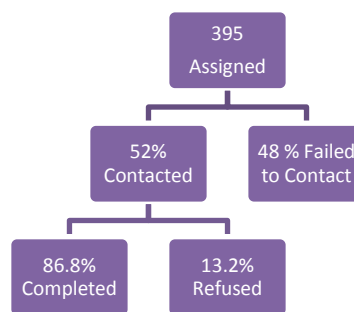
3.1.4 Data Collection

A telephone-survey questionnaire was developed by Mayhew et al. (2011) using a subset of multiple choice questions from the Canadian Community Health Survey (CCHS) cycle 4.1 2008, and modified questions from the World Bank Living Standards Measurement Study (WBLSMS, 2011). Categories of questions in the telephone questionnaires included: 1) demographic and language aptitude (CCHS, 2008); 2) chronic disease characteristics (WBLSMS, 2011) 3) self-reported health status, perceived stress and access to a regular medical doctor (CCHS, 2008); 4) Primary Healthcare Utilization (CCHS, 2008); and 5) socio-economic status (CCHS, 2008; WBLSMS, 2011). The survey was translated and validated by pre-testing and revising the final instrument for each language group. Interviews were conducted by reliable, experienced

translators or multi-lingual medical students. Training consisted of translating and conducting the survey in each language group with another participant, and back-translating for verification and accuracy.

3.2 Secondary Data Analysis

The work presented in this thesis comprises secondary analysis of data collected from the primary research study described above. The conceptual framework is guided by the Andersen model of healthcare utilization (Andersen & Davidson, 2001). Several steps were taken in the process of collecting, managing and analyzing the data for the specific research objectives of this thesis. These include: management and cleanup of the data, variable selection from the dataset, derivation of important variables pertinent to the thesis, data exploration (including descriptive analysis of the sample), statistical analysis (logistic regression modeling) for each research objective, as well as statistical approaches undertaken in analyzing the data.

3.2.1 Data Management

All data were initially entered into an Excel database, and subsequently transferred to SPSS Statistical Software, Version 19.0 (IBM SPSS, 2011). Data entry was verified twice by reviewing each completed survey. Each survey was cross-checked with the database to check for accuracy in data entry. Data were further examined through file matching to ensure that cases were correctly matched with each corresponding variable in the database. To enhance statistical integrity, all raw data were carefully examined prior to analysis. Variable definitions were clarified to minimize misclassification bias. When necessary, variables were re-coded for consistency, where accurate variable names, labels and values were entered. Potentially important variables were identified, the selection being guided by the literature review. This included both the outcome measures and independent variables to be used in the analysis. Other important variables that were not readily available in the dataset were derived or dichotomized from existing variables. A list of all the outcome measures, independent and derived variables that were created and used are described below under "Measurement".

3.3 Measurement

3.3.1 Outcome Measures

Health Status

This thesis measures "self-reported" health using two indicators among the GARs sample.

The first indicator measures "excellent reported health status" as a primary outcome variable. This indicator was derived from a question in the data source stating:

- In general, would you say your health is:
    a. Excellent
    b. Very Good
    c. Good
    d. Fair
    e. Poor

Self-reported health was further dichotomized as *"Excellent"* and *"Not Excellent"*, the latter including all other reported health statuses: very good to poor. Since health is an important predictor of settlement in Canada, we investigated which factors best predict excellent health among GARs.

This study measured reported health conditions as the second indicator of health status. The most frequently reported health problems experienced by GARs in this study were mental, musculoskeletal and digestive health problems. The outcome variable of interest was limited to *"mental health problems"*, because it is one of the most frequently cited health problems experienced by GARs in the literature (Hyman, 2010).

"Mental health problems" was measured based on three survey questions:

- Have you had a medical condition for more than 3 months? If yes:
- Has this medical condition been diagnosed by a health professional?
- What type of medical condition or disability affects you? (Mental health was listed as one of the categories. An open-ended response option was also available).

Responses to the third question were based on participants answering 'yes' to the first two questions. All responses were inspected, classified and dichotomized according to major

physiological health problems including "mental health", which was defined as 'anxiety, worry, too much anger or sadness'.

Access to Healthcare

This study measures both *"potential"* and *"realized"* indicators of healthcare access within the sample of GARs.

Potential healthcare access is measured by examining *"difficulty obtaining primary* health*care"* as the primary outcome variable according to three questions found in the data source.

- Have you seen or talked to a family doctor in the past 12 months about your health?
- In the past 12 months did you ever experience any difficulties getting the care you needed? *This question screened respondents with "difficulty getting care needed" from those without. Those who answered "yes" to this question were asked:*
- What types of difficulties did you experience in getting the care that you needed? *This question touched on issues of availability, long wait times, financial constraints, language problems, family responsibilities, and any other reasons.*

In order to carefully analyze difficulties in getting care, we restricted the number of cases who responded "no" to having 'difficulties getting the care needed', by examining *"self-reported health status"*. Respondents were classified as *false negative* if they never saw a doctor in the past 12 months, responded *"no"* to having "difficulty getting care needed", and reported an excellent health status. In these analyses, these individuals did not seek care during the past year, driven in part by their excellent health status. *True negatives* were comparable respondents who did attempt to seek care during the past year by visiting a family doctor, and reporting "Non Excellent" health status in the survey.

Realized healthcare access is measured by examining reported number of *"family physician visits"* as the primary outcome variable for primary health services utilization according to the following two questions from the data.

- Have you seen or talked to a family physician in the past 12 months about your health? *If respondents answered "yes", they were asked:*
- How many times in the past 12 months?

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The variable measuring number of family physician visits was dichotomized to "more than three visits", and "three or less visits". This dichotomy was determined by the median number of visits among respondents in this sample, which was three. For this particular outcome variable, individuals who reported not visiting a family physician in the past 12 months were included, and therefore a value of zero family physician visits was considered valid. Due to a high number of participants reporting no visits in the past 12 months, the median number of family physician visits was reduced to three visits.

3.3.2 Independent Variables

The independent variables used in all analyses were guided by factors in the Andersen model of healthcare utilization categorized as Predisposing, Enabling and Need Factors. The description and categorization of the variables used are depicted under Table 3.1. Below is a summary of all the variables.

Predisposing factors include the demographic variables of: age, sex, marital status, and ethnicity.

Enabling resources at the individual level include: education; English proficiency; owning a vehicle and reported annual income at time of interview. Other measures of socio-economic status included main source of income (reported at time of interview), food security and financial burden. At the contextual level the Enabling Factors are: access to a regular family doctor, source of care and health region.

Need factors include: self-reported health status at time of interview and one year prior to the interview, reported life stress at time of interview, having a chronic condition more than three months, musculoskeletal & digestive health problems, and presence of chronic medical condition diagnosed by a healthcare professional.

Table 3.1 Variables used in the analyses[1]

VARIABLE	DEFINITON AND CODE
OUTCOME VARIABLES	
Excellent Health Status	Excellent health status
Mental Health Problems	Mental health problems
Family Physician Visits	Median family physician < 3 or ≥ 3 visits per year
Difficulty Obtaining Primary Healthcare	Difficulty obtaining healthcare
INDEPENDENT VARIABLES	
Predisposing Variables	
Age[2]	Age in years grouped into quartiles
(16-28)	Reference category
29-36	
37-43	
44+	
Sex[3]	
(Female)	Reference category
Male	
Ethnicity	Categorization based on primary language
(Other)	Reference category
West Asian	
East & Southeast Asian	
Marital Status	
(Married/Cohabiting)	Reference category
Separated/Divorced/Widowed	
Single	

Table 3.1 Variables used in the analyses[1]

VARIABLE	DEFINITON AND CODE
Enabling Factor Variables	
<u>Individual Level</u>	
Education	Highest level attained
(Post-Secondary)	Reference category
	Vocational, University & Post-Secondary
Secondary	
Primary	
None	
English Proficiency	Ability to carry on a conversation in English
(Yes)	Reference category
No	
Possession of a Vehicle	At least one vehicle (car, truck or motorcycle) owned by family unit
(Yes)	Reference category
No	
Employment Status	Worked in the past 12 months
(Yes)	Reference category
No	
Reported Income	Estimated total annual income before taxes and deductions
($\geq$\$30,000)	Reference category
< \$30,000	
Not Reported	
Main Source of Income	Main source of household income over the last year
(Wages & Salaries)	Reference category
	Includes self-employment
Welfare (ONLY source of income)	
Employment & Unemployment Cycle	Cycling between employment and unemployment.

Table 3.1 Variables used in the analyses[1]	
VARIABLE	**DEFINITON AND CODE**
Food Security	Amount of food household needed to eat in the past year
(Always Had Enough)	Reference category
Did Not Have Enough	Did not always, sometimes, or did not have enough
Financial Burden	Reported numbers of times household was able to pay all monthly bills in the past 12 months
(Always Paid Bills)	Reference category Bills paid 12 times a year
Not Always	Bills paid < 12 times a year
Contextual Level	
Access To a Regular Doctor	
(Yes)	Reference category
No	
Source of Care by Refugee Clinics	Source of care dichotomized according to attending refugee specialized clinics or not
(Non- Refugee Clinics)	Reference category
Refugee Specialized Clinics	
Source of Care when Sick	Source of care categorized by cost common place respondent visits when sick
(Doctor's Office)	Reference category
Multiple Sources of Care	
Other Source(s) of Care Only	
Health Region	Health region based on residential postal codes
(Vancouver Health Region)	Reference category
Fraser Health Region	
Need Factor Variables	
Health Status Now	Self-reported health status at time of interview
(Excellent)	Reference Category
Very Good/Good	
Fair/Poor	

Table 3.1 Variables used in the analyses[1]

VARIABLE	DEFINITON AND CODE
Health Status 1 Year Ago	Self-reported health status one year prior to interview
(Excellent)	Reference category
Very Good/ Good	
Fair/Poor	
Life Stress	Self-reported stress level at time of interview
(Not at all Stressful/Not Very Stressful/Bit Stressful)	Reference category
Quite a Bit Stressful/ Extremely Stressful	
Chronic Condition > 3 Months	Self- reported chronic condition(s) greater than 3 months
(Yes)	Reference category
No	
Number of Reported Health Problems	Self- reported numbers of health problems
(None)	Reference category
One Chronic Condition	
Two Chronic Conditions	
More Than Two Chronic Conditions	
Musculoskeletal Health Problems	Self- reported type of health problem
Yes	
(No)	Reference category
Digestive Health Problems	Self- reported type of health problem
Yes	
(No)	Reference category

Table 3.1 Variables used in the analyses[1]

VARIABLE	DEFINITON AND CODE
Diagnosed Chronic Condition	Has a chronic medical condition diagnosed by a health professional
Yes	
(No)	Reference category

[1] Not all variables were used for specific objectives in the analysis

[2] For the outcome variables "excellent health status" and "reported mental health problems", the reference category for age is 16-28

[3] For the outcome variables "excellent health status" and "reported mental health problems", the reference category for sex was being male

3.3.3   Derived Independent Variables

Four variables were derived and re-categorized from existing variables in the original survey. They include ethnicity, source of care, health region, and English Proficiency. The derivation is explained below.

Ethnicity

A variable was created as "*Primary Language*". This was derived from information found in PARIS on primary language, as well as two variables in the survey: "*Language surveyed*" and "*Language(s) you can converse in*". Primary language was then used to determine language grouping according to the Statistics Canada (2006) mother tongue and home language classification. As described in the literature, primary language, similar to country of origin can be used as a proxy for ethnicity in health research (Egede, 2006). Cross references were then made to the Statistics Canada (2006) classification of ethnic origins used in CENSUS Canada reports, allowing to group appropriate ethnic categories. "*West Asian*" and "*East & Southeast Asian*" were selected as the two major categories, as they represent the major ethnic groups [based on respondent's primary language] in the study sample. The sample sizes of the remaining ethnicities were too small to individually group as ethnic categories, and were therefore grouped as "*Other*".

West Asian individuals are: Afghan, Armenian, Assyrian, Azerbaijani, Georgian, Iranian, Israeli, Kurd, Pashtun, Tatar, Turk and West-Asian not included elsewhere (Statistics Canada,

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2006). In the GARs sample, the "West-Asian" group represents many of the ethnic origins from this area. The primary languages from the "West Asian" region in the GARs sample include: Persian (Afghan/Tajik Dari, Iranian Farsi), Turkish (Azeri, Uzbek), Kurdish and Pashto. Respondents were classified under the "*West Asian*" ethnic category if their primary language was listed above.

"*East & Southeast Asian*" individuals are: Burmese, Cambodian, Chinese, Filipino, Hmong, Indonesian, Japanese, Khmer, Korean, Laotian, Malaysian, Mongolian, Singaporean, Taiwanese, Thai, Tibetan, Vietnamese, and East or Southeast Asian not identified elsewhere (Statistics Canada, 2006). In the GARs sample, the "East and Southeast" group represents many of the ethnic origins from this region. The primary language(s) from the "East & Southeast Asian" area in the GARs sample included: Tibeto-Burman (Burmese, Karen, Chin), Mandarin, Indonesian (including Achenese), Vietnamese and Jarai. Respondents were classified under the "East & Southeast Asian" ethnic category if their primary language was included in this list.

The "*Other*" ethnic group includes: Spanish, Russian, Albanian, Arabic (including Sudanese), Somali, Ethiopian (Amharic, Tigrinia, Oromo), Hindustani (Urdu, Hindi, Punjabi), and various Subsaharan African languages (including Swahili, Kirundi, Kissi, Dinka).

<u>Source of Care</u>

Source of care was derived and redefined from two existing variables in the survey.

The variable "*Source of Care by Refugee Clinic*" was created to distinguish individuals who still sought healthcare from specialized refugee clinics from individuals who sought healthcare from mainstream sources in the provincial healthcare system. Individuals were classified as "receiving healthcare from specialized refugee clinics" (either sometimes or always), or just the "mainstream provincial healthcare system" based on the following two survey questions:

- Are you still attending the Bridge Clinic?
- Are you attending a New Canadian Clinic?

Respondents who answered "*yes*" to either question were classified as "receiving healthcare from specialized refugee clinics". If respondents answered "*no*" to both questions, they were classified as "not receiving care from specialized refugee clinics".

The GARs data contained 14 names where information on attendance to the New Canadian Clinic was missing. A staff member with access to the PARIS database verified their information, in order to determine whether they were discharged to the New Canadian Clinics after leaving the Bridge Clinic. It was also confirmed that if individuals were to be discharged to the New Canadian Clinics, a request form would have been filled out by the physician at the Bridge Clinic, and sent to the New Canadian Clinic approval. If the patient's request was approved, the staff member would then enter the New Canadian Clinic as the new care center for the patient into the database (ML, personal communication, 2011). Upon inspection, none of the 14 individuals were sent to the New Canadian Clinic after leaving the Bridge Clinic. In order to maintain statistical power, the 14 individuals with this missing information were not excluded, and were classified under the "not receiving care from specialized refugee clinics" category.

The second *"Source of Care when Sick"* variable did not examine whether individuals sought care from specialized refugee clinics or not. Within the context of these objectives, source of care was operationalized to where individuals sought care within the overall healthcare system. The variable was derived from the following question:

- Where do you usually go when you are sick?

The original design of this question allowed respondents to provide multiple responses. As a result, responses overlapped and exclusive categories could not be created. In order to minimize the overlap, *"Source of Care when Sick"* was categorized as:

- Doctor's Office
- Other Sources of Care, and
- Multiple Sources of Care (Doctor's Office + Other Sources of Care)

"Doctor's Office" included refugee clinics (Bridge Clinic and New Canadian Clinics), community health centers, and private physician's office but did not include "walk-in clinics".

"Other Sources of Care" included walk-in clinics, appointment clinics, telephone health line, hospital emergency room, hospital outpatient clinic, religious leader, family member, and traditional healer.

<u>Health Region</u>

Respondent's contact information was available through PARIS, which initially enabled interpreters to contact individuals to participate in the survey. Such information included home and/ or mobile telephone number(s), home address, and residential postal codes. The residential postal codes were entered into the database for each respondent in the survey, and then cross checked with Canadapost.com (2011) to determine municipality of residence, which in the sample included: Vancouver, Burnaby, Coquitlam, Surrey, New Westminster, Richmond, Port Moody, and Pitt Meadows.

Municipalities were then re-grouped according to "Health Regions" based on the CCHS (2008) data dictionary categorization. The health regions used in the analysis of this thesis included:

- Vancouver & Richmond Health Service Delivery Areas (HSDAs)
- Fraser North & East HSDAs
- Fraser South HSDAs

For the multivariate logistic regression analyses, Health Region was dichotomized as "Vancouver Health Region" and "Fraser Health Region". Vancouver Health Region included the cities of Vancouver and Richmond. Fraser Health Region included the cities of Burnaby, Coquitlam, Port Moody, Pitt Meadows and New Westminster (located in the Fraser North & East HSDAs). Fraser South HSDAs included the city of Surrey.

<u>English Proficiency</u>

We defined English proficiency as the ability to carry on a conversation in the English language without the assistance of an interpreter. The variable was created to identify and distinguish individuals who can converse in English from those who cannot. Individuals were categorized with having sufficient English proficiency based on the following two questions in the survey:

- Are you able to carry on a conversation in the "English language"? (*Responses were dichotomized, and participants were able to answer "Yes" or "No)*
- Do you use an interpreter when you speak to healthcare workers? *(Responses were dichotomized as "Yes" or "No").*

The first question allowed respondents to select multiple responses for languages they can converse in, including English. The question was re-coded and each response was dichotomized as a 'yes' or 'no'. After recoding, data on respondents who responded "yes" to speaking English was cross checked with whether they use an interpreter when speaking to healthcare workers.

Respondents were classified as having English proficiency if they answered 'yes' to speaking English, and 'no' to using an interpreter. Such individuals were defined as having English proficiency to carry on a conversation in the English language without the assistance of an interpreter. Individuals with any other combined form of responses were categorized as "not having English proficiency".

Respondents who answered '*yes*' to speaking English and using an interpreter were not classified as having English proficiency because they may have some ability to speak in English, but not enough without the help of an interpreter. Respondents who answered 'no' to speaking English and 'no' to using an interpreter were also classified as not having English proficiency. Such individuals may be seeking care from healthcare workers who can speak other languages which they could converse in other than English, and therefore not requiring an interpreter. They may also not be accessing healthcare due to language barriers.

Respondents who answered '*no*' to speaking English, and '*yes*' to using an interpreter, were not classified as having English proficiency. Such individuals may be communicating to healthcare workers through an interpreter in another language other than English. This may be due to reporting bias, and possibly applicable to individuals from countries with multiple ethnic groups speaking several dialects and languages. These individuals may be seeking care from healthcare workers who speak an official language from their country of origin, but not their particular dialect. The interpreter in this case would have the ability to converse in that particular dialect or language of the patient.

3.4   Data Exploration

3.4.1   Data Exploration: Phase I

The first part of the data exploration aimed to uncover any trends particular to this sample. This was specifically important for categorical variables, where contingency table analysis was conducted to determine the best variable grouping possible for the sample. Decisions on variable groupings were based on the literature review, cell size of categories which showed the frequencies of each grouping, as well as whether individuals in different categories demographically differed from one another. The latter were indicated by the significance of the p-values for each grouping. Special attention was given to low cell counts, which in turn, informed statistically appropriate and consistent grouping of variables, as per the literature review. For variables where large numbers of missing information was present (e.g. refusal to answer), descriptive sub-analyses were carried out. This was particularly important for questions measuring socio-economic status, where data on reported income were missing in 23.6% of responses. As respondents with missing data on reported income differed demographically from other respondents, missing values for reported income were treated as a separate group.

3.4.2   Data Exploration: Phase II

The second part of the data exploration stage consisted of baseline descriptive data of GARs based on socio-demographic, healthcare access & utilization, and need related characteristics. This included data on health status, why health is not excellent, and type of health problems. The baseline descriptive data is reported in frequency tables and percentages. In order to identify potential candidates for multicollinearity, univariate analysis was conducted between all independent variables.

3.5   Statistical Analysis

The statistical analysis reflects the objectives of each research question:
1) To investigate factors associated with excellent reported health status among GARs.
2) To investigate factors associated with reported mental health problems.
3) To investigate factors associated with family physician visits among GARs.
4) To investigate factors associated with GARs facing difficulty obtaining primary healthcare.

The data were analyzed using SPSS Version 19.0 (IBM SPSS, 2011). For all four objectives stated above, logistic regression modeling was used to investigate factors associated with each outcome variable.

3.5.1 Research Objective 1

Univariate logistic regression analyses were conducted, using Pearson's chi-squared ($\overline{X}^2$) test to obtain unadjusted estimates of the odds ratio (OR) with the 95% Confidence Intervals (CIs) to determine factors associated with reported "excellent health status". The variables included in the univariate analysis were age, sex, ethnicity, marital status, education, employment status, English proficiency, reported income, sources of income, food security, financial burden, access to a regular medical doctor, health region, source of care, reported life stress and presence of a chronic condition. Multivariate logistic regression analyses were conducted to model independent variables associated with excellent health status.

3.5.2 Research Objective 2

Univariate logistic regression analyses were conducted, using Pearson's $\overline{X}^2$ test to obtain unadjusted estimates of the odds ratio with the 95% CI to determine factors associated with reported mental health problem. The variables included in the univariate analysis were age, sex, ethnicity, marital status, education, employment status, English proficiency, reported income, sources of income, food security, financial burden, access to a regular medical doctor, health region, source of care by refugee clinic, reported life stress, presence of a chronic condition, as well as reporting a musculoskeletal and digestive health problem. Multivariate logistic regression analyses were conducted to model independent variables associated with reporting having a mental health problem.

3.5.3 Research Objectives 3 and 4

Univariate logistic regression analyses were conducted, where variables were analyzed using Pearson's $\overline{X}^2$ test. Unadjusted estimates along with their 95% CI were obtained using logistic regression analysis to determine factors associated with each outcome variable (family physician visits and difficulty getting care). The variables included in the univariate analysis were age, sex, ethnicity, marital status, education, employment status, English proficiency, reported income, sources of income, food security, financial burden, possession of vehicle, access to regular

medical doctor, health region, source of care, self-reported health status at time of interview and one year prior to interview, reported life stress, and presence of chronic condition. Multivariate logistic regression analyses were conducted to model independent variables associated with our two outcome variables (family physician visits and difficulty getting care).

3.6 Logistic Regression Model Building Protocol

Several steps were undertaken to obtain the final multivariate logistic regression model for each outcome variable of interest. This comprised of strategically selecting variables to include in the multivariate model, inferential tests to use in model selection, diagnostic measures in addressing multicollinearity, and finally assessing the goodness-of-fit of the models.

Variable Selection

The logistic models for each objective considered potentially important variables with p-values greater than 0.05 as candidates for inclusion in the multivariate logistic regression models. Hosmer and Lemeshow (2000), recommend this method to identify variables that may be important, but fall outside the predetermined range of significance. For each objective in this study, variables with p-values ≤0.20 were considered for inclusion in the multivariate logistic regression analysis (Hosmer and Lemeshow, 2000). Predictor variables in the final multivariate analysis models were determined statistically significant at $p < 0.05$. Interaction terms were also tested in each model, based on evidence in the literature, as well as on individual predictors in the model.

Inferential Tests for Model Selection

Once variables were entered into the multivariate logistic regression model, two types of inferential tests were used in obtaining the final model by testing individual predictors and assessing goodness-of-fit (Tabachnick and Fidell, 1996).

Individual predictors were tested to assess the contribution of each variable in the model. First, the Wald statistic and respective p-values of each variable was examined to evaluate the significance of each predictor. Changes in the regression coefficient for every variable were noted between models. However, evidence shows using the Wald test has several limitations when the standard error becomes too large as a result of a large regression coefficient (Tabachnick and Fidell, 1996). The likelihood ratio test was an alternative test of individual

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predictors that was used in the analyses. This test compares models by evaluating the effect of adding or removing a predictor (Tabachnick and Fidell, 1996). For both tests described above, a significant change in the model indicated the significant contribution of the predictor with the outcome variable of interest (Tabachnick and Fidell, 1996). Predictors found not to be statistically significant with the outcome variable, determined by the likelihood ratio test, were considered for inclusion in the final model. The decision for selection between two models was whether the log-likelihood changed significantly with the addition or removal of predictor(s) (Tabachnick and Fidell, 1996).

If a variable was not statistically significant with the outcome of interest, the literature was an a priori guide before the analysis to determine if the independent variable was an important predictor in other similar studies. For example, age and sex were controlled in the multivariate analyses, irrespective of their contribution to the model. Interaction terms were also tested, and added one variable pair at a time. Their significance was also assessed using the likelihood ratio tests by comparing the model with the interaction term to that without. Interactions found to be significant were added to generate the final model.

Multicollinearity

In order to address multicollinearity, informal diagnostics and remedial measures proposed by Neter, Wasserman and Kutner (1990) were applied. All independent variables that significantly correlated with one another in the univariate analyses were carefully re-examined in the multivariable regression. This approach was undertaken to observe whether the inclusion of one variable neutralized the significance of the other when holding all other variables constant. Other important diagnostic measures suggested by Neter et al. (1990) included observing for significant changes in the estimated regression coefficient of each variable when other variables were added or removed. Close attention was paid to the standard deviation of regression coefficients, and whether the value became increasingly large. This would occur if there are other independent variable(s) highly correlated with the variable of interest. If multicollinearity was detected, the multivariate logistic regressions were re-run with the inclusion of the variable that was more significantly associated with the outcome variable of interest (Neter et al., 1990).

<u>Goodness-of-fit test</u>

Finally, each model was assessed for goodness-of-fit, and to ensure that the assumptions of logistic regression analysis have been satisfied. A series of diagnostics discussed by Field (2009) were applied to determine whether the model fit the observed data well, or if it was influenced by a small number of cases (Field, 2009). Residual and deviance statistics were examined to identify points where the model fit poorly, and cases that exerted greater influence on the model (Field, 2009). These statistics included Studentized residuals, Cook's distance values, Leverage values, DFBetas and Variance Inflation Factors (VIFs).

1)   Studentized residuals, which are residuals divided by an estimate of their standard deviation were calculated. The percentage of studentized residuals with an absolute value greater than 1.96, 2.58 and 3.29 were calculated and reported (Field, 2009).

2)   Cook's distance values were examined to assess the influence of a case on the model, where large values above 1 indicated a cause for concern.

3)   Leverage values that were above or below three times the average value were also examined. Leverage is a measure of influence that gauges the influence of the observed value of the outcome variable over the expected (Field, 2009).

4)   DFBetas were calculated and examined. It is a measure of deviance that measures the difference between the parameter estimated using all cases, and when one case is excluded. Close attention was paid to large values above 1 (Field, 2009).

5)   A series of collinearity diagnostics were applied for a final inspection of multicollinearity. This included an examination of the Variance Inflation Factors (VIFs), which indicates whether a predictor has a strong linear relationship with the other predictors in the model. A value of 10 or greater was indicative of potential multicollinearity. The tolerance statistic was also examined, which is a reciprocal of the VIF. Values below 0.2 warrant concern for multicollinearity.

If the goodness-of-fit tests indicated apparent problems such as multicollinearity, the model in question was assessed and necessary changes were made. As such, the goodness-of-fit tests were re-run. A summary of the test for each final model is reported in the Appendix.

The results of Objectives 1, 2, 3 & 4 analyses are reported in section 4 Results.

4 RESULTS

4.1 Data Exploration

A summary of the socio-demographic, health related and primary health service utilization characteristics of Government Assisted Refugees (GARs) in the study sample is presented in Tables 4.1a, 4.1b and 4.1c. Overall, 177 GARs participated in the study, including 91 (51.4%) women, and 86 (48.6%) men. Almost two-thirds of the participants were married (63.6%), while the remainder, (36.4%) were not married at the time of the interview. One hundred and fourteen (65.5%) participants held at least a secondary school diploma, while 60 (34.4%) reported having less than a secondary school education.

From a socio-economic status perspective, just over half (56.5%) of the GARs reported an annual household income of less than $30,000 per year and 60.2% reported not having enough food security. In terms of health characteristics, 77 (43.8%) reported having an excellent health, while 63 (35.6%) of GARs reported having a chronic condition diagnosed by a healthcare professional.

With regard to their reported utilization of health services, 142 (80.7%) of GARs reported having access to a regular medical doctor and 43 (24.3%) still attended specialized refugee clinics for healthcare. The percentage of GARs using an interpreter with a healthcare provider was 36.6%. In terms of potential healthcare access, 53 (30.1%) GARs reported having difficulty obtaining healthcare. Getting an appointment and language problems were the top reasons for specific types of difficulties in getting healthcare.

Table 4.1a Socio-demographic characteristics of GARs N = 177	
Characteristics	**Percentage in Sample N (%[1])**
Age (N = 177)	
44+	44 (24.9)
37-43	47 (26.6)
29-36	34 (19.2)
16-28	52 (29.4)
Sex (N = 177)	
Female	91 (51.4)
Male	86 (48.6)

Table 4.1a Socio-demographic characteristics of GARs N = 177	
Characteristics	**Percentage in Sample N (%[1])**
Ethnicity (N = 177)	
West Asian	78 (44.1)
East & Southeast Asian	55 (31.4)
Other	44 (24.9)
Marital Status (N = 176)	
Married/Cohabiting	112 (63.6)
Separated/Divorced/Widowed	21 (11.9)
Single	43 (24.4)
Education (N = 174)	
Post-Secondary	40 (23.0)
Secondary	74 (42.5)
Primary	38 (21.8)
None	22 (12.6)
English Proficiency (N = 161)	
Yes	77 (47.8)
No	84 (52.2)
Possession of Vehicle (N = 177)	
Yes	91 (51.4)
No	86 (48.6)
Employment Status (N = 177)	
Employed	106 (59.9)
Not Employed	71 (40.1)
Reported Income (N = 177)	
≥ $30,000	36 (20.3)
< $30,000	100 (56.5)
Not Reported	41 (23.2)
Main Source of Income (N = 173)	
Wages & Salaries	77 (44.5
Welfare	45 (26.0)
Employment & Unemployment Cycle	51 (29.5)
Food Security (N = 171)	
Always Had Enough	68 (39.8)
Did not Have Enough	103 (60.2)
Financial Burden (N = 175)	
Always Paid Bills on Time	136 (77.7)
Not Always	39 (22.3)

Table 4.1a Socio-demographic characteristics of GARs N = 177	
Characteristics	**Percentage in Sample N (%[1])**
Health Region (N = 169)	
Vancouver Health Region	50 (29.6)
Fraser North & East Health Region	80 (47.3)
Fraser South Health Region	39 (23.1)
[1]Percentages for variables with missing information were calculated using valid frequencies	

Table 4.1b Health related characteristics of GARs	
Characteristics	**Percentage in Sample N (%[1])**
Health Status Now (N = 176)	
Excellent	77 (43.8)
Very Good/Good	63 (35.8)
Fair/Poor	36 (20.5)
Health Status 1 Year Prior to Survey (N = 177)	
Excellent	74 (41.8)
Very Good/Good	64 (36.2)
Fair/Poor	39 (22.0)
Life Stress (N = 170)	
Not at all Stressful/Not Very Stressful	52 (30.6)
A Bit Stressful	59 (34.7)
Quite a Bit Stressful/Extremely Stressful	59 (34.7)
Medical Condition More Than Three Months (N = 177)	
Yes	68 (38.4)
No	109 (61.6)
Diagnosed Chronic Condition (N = 172)	
Yes	63 (35.6)
No	109 (63.4)
Number of Reported Chronic Conditions (N = 177)	
None	114 (64.4)
One Chronic Condition	31 (17.5)
Two Chronic Conditions	11 (6.2)
More Than Two Chronic Conditions	21 (11.9)

Table 4.1b Health related characteristics of GARs

Characteristics	Percentage in Sample N (%[1])
Type of Health Problem[2] (N = 68)	
Chronic Respiratory	8 (4.5)
Cardiovascular	20 (11.3)
Digestive	18 (10.2)
Musculoskeletal	39 (22.0)
Mental Health	29 (16.4)
Other	16 (9.0)
Reasons Why Health is Not Excellent[3] (N = 104)	
Chronic Condition	4 (2.3)
New Physical Condition	24 (13.6)
Problem Related to Stress	36 (20.3)
Other Reasons	5 (2.8)

[1] **Percentages for variables with missing information were calculated using valid frequencies**
[2] **Only applicable to respondents who answered yes to having a medical condition for more than 3 months**
[3] **Respondents were not included if they reported "Excellent" to both health status now and 1 year ago**

Table 4.1c Access to primary healthcare and utilization characteristics of GARs

Characteristics	Percentage in Sample N (%[1])
Access to Regular Medical Doctor (N = 176)	
Yes	142 (80.7)
No	34 (19.3)
Why No Regular Medical Doctor[2,3] (N = 34)	
Not Available in Area	7 (4.0)
Not Taking New Patients	6 (3.4)
Have not Tried to Contact One	10 (5.6)
Had a Medical Doctor who Left/Retired	2 (1.1)
No Medical Doctor Speaks Same Language	10 (5.6)
Source of Care When Sick (N = 175)	
Doctor's Office	69 (39.4)
Multiple Sources of Care	65 (37.1)
Other Sources of Care Only	41 (23.4)
Source of Care by Refugee Clinic (N = 177)	
Attending Specialized Refugee Clinics	43 (24.3)
Not Attending Specialized Refugee Clinics	134 (75.7)

Table 4.1c Access to primary healthcare and utilization characteristics of GARs	
Characteristics	**Percentage in Sample N (%[1])**
Seen a Medical Doctor in last 12 Months (N = 177)	
Yes	148 (83.6)
No	29 (16.4)
Family Physician Visits in Past Year (N = 175)	
Less than 3 times a year	89 (50.9)
3 or More times in a year	86 (49.1)
Difficulty Obtaining Healthcare (N = 164)	
Yes	53 (30.1)
No	123 (69.9)
Types of Difficulty Getting Healthcare[3] (N = 53)	
Wait for Appointment at Clinic or ER Long	3 (1.7)
Contacting a Physician	10 (5.6)
Getting an Appointment	22 (12.4)
Do not have a Regular Physician	8 (4.5)
Language Problem	22 (12.4)
Do not Know Where to Go	6 (3.4)
Other Reasons	12 (6.8)
Use of an Interpreter (N = 161)	
Yes	59 (36.6)
No	102 (63.4)
Type of Interpreter (N = 59)	
Family Member or Friend	33 (18.6)
Provided by Clinic	30 (16.9)
Provided by Clinic Over Phone	2 (1.1)
[1] Percentages for variables with missing information were calculated using valid frequencies **[2] Respondents were excluded if they answered "yes" to having access to a regular medical doctor** **[3] Responses are not exclusive; participants were able to select more than one answer**	

4.2   Research Objective 1: Reported Excellent Health among GARs

The first objective of this thesis was to investigate factors associated with reported "excellent health" among GARs. Table 4.2 presents the univariate analysis results of the Predisposing, Enabling, and Need Factors associated with excellent health. Overall, 77 (43.8%)

participants reported having excellent health, while 99 (56.3%) did not. Excellent health was more prevalent among participants who were 16 to 28 years of age (61.4%) than among those aged 29 to 36 (34.6%), 37 to 43 (40.0%) and 44 or older (40.4%). Among the 91 females who reported their health status, 38.5% (35/91) reported having excellent health. Correspondingly, 42 of 85 males (49.4%) reported excellent health.

In terms of Enabling Factors, excellent health was higher among participants with no "financial burden" (49.0%, 66/135) compared to those who reported "having a financial burden" (23.2% (9/39). The likelihood of reporting excellent health increased among individuals with "English proficiency" (48.7%, 37/76) compared to 37.0% (31/84) without.

When utilization of services was considered, the likelihood of excellent health increased among participants having "three or less family physician visits" per year (55.7%, 49/88), compared to participants with "more than three visits" each year (31.4%, 27/86). Participants were also more likely to report having excellent health if they "did not have a chronic condition diagnosed by a healthcare professional" (59.3%, 64/108), than those with a chronic condition (17.5%, 11/63).

Table 4.2 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported excellent health status at time of interview among GARs				
	Health Status			
Variable	**Excellent N (%)**	**Not Excellent N (%)**	**Odds Ratio (95% CI)**	**_p_-value**
Age				**0.06**
16-28	27 (61.4)	17 (38.6)		
29-36	18 (34.6)	34 (65.4)	0.33 (0.15 - 0.77)	0.01
37-43	13 (39.4)	20 (60.6)	0.41 (0.16 – 1.03)	0.06
44+	19 (40.4)	28 (59.6)	0.43 (0.18 – 0.99)	0.05
N (Total = 176)	77	99		
Sex				
Male	42 (49.4)	43 (50.6)		
Female	35 (38.5)	56 (61.5)	0.64 (0.35 – 1.17)	**0.14**
N (Total = 176)	77	99		

Table 4.2 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported excellent health status among GARs

Variable	Health Status		Odds Ratio (95% CI)	*p*-value
	Excellent N (%)	Not Excellent N (%)		
Ethnicity				0.30
Other	16 (36.4)	28 (63.6)		
West Asian	39 (50.0)	39 (50.0)	1.75 (0.82 – 3.73)	0.15
East & Southeast Asian	22 (40.7)	32 (59.3)	1.20 (0.53 – 2.73)	0.66
N (Total = 176)	77	99		
Marital Status				
Married/Cohabiting	46 (41.1)	66 (58.9)		
Not Married	31 (49.2)	32 (50.8)	1.39 (0.75-2.59)	0.30
N (Total = 175)	77	98		
Education				
Secondary Diploma or Greater	50 (44.2)	63 (55.8)		
Less than Secondary Diploma	26 (43.3)	34 (56.7)	0.97 (0.51 – 1.81)	0.91
N (Total = 173)	76	97		
English Proficiency				
Yes	37 (48.7)	39 (51.3)		
No	31 (36.9)	53 (63.1)	1.62 (0.86 – 3.05)	**0.13**
N (Total = 160)	68	92		
Possession of Vehicle				
Yes	32 (35.2)	59 (64.8)		
No	45 (52.9)	40 (47.1)	0.48 (0.26 – 0.88)	**0.02**
N (Total = 176)	77	99		
Employment Status				
Employed	49 (46.7)	56 (53.3)		
Not Employed	28 (39.4)	43 (60.6)	0.74 (0.40 – 1.37)	0.34
N (Total = 176)	77	99		
Reported Income				0.88
≥ $30,000	14 (40.0)	21 (60.0)		
< $30,000	45 (45.0)	55 (55.0)	1.23 (0.56 – 2.68)	0.61
Not Reported	18 (43.9)	23 (56.1)	1.17 (0.47 – 2.93)	0.73
N (Total = 176)	77	99		
Main Source of Income				0.68
Wages & Salaries	35 (46.1)	41 (53.9)		
Welfare	17 (37.8)	28 (62.2)	0.71 (0.34 – 1.51)	0.38
Employment & Unemployment Cycle	22 (43.1)	29 (56.9)	0.89 (0.44 – 1.82)	0.75
N (Total = 172)	74	98		

Table 4.2 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported excellent health status among GARs				
	Health Status		**Odds Ratio (95% CI)**	**p-value**
Variable	**Excellent N (%)**	**Not Excellent N (%)**		
Food Security				
Always Had Enough	67 (45.0)	82 (55.0)		
Did not Have Enough	6 (28.6)	15 (71.4)	1.20 (0.64 – 2.23)	0.58
N (Total = 170)	73	97		
Financial Burden				
Always Paid Bills on Time	66 (48.9)	69 (51.1)	0.31 (0.14 – 0.71)	
Not Always	9 (23.1)	30 (76.9)		**<0.01**
N (Total = 174)	75	99		
Health Region				
Vancouver Health Region	25 (50.0)	25 (50.0)		
Fraser Health Region	48 (40.3)	71(59.7)	0.68 (0.35-1.31)	0.25
N (Total = 169)	73	96		
Access to Regular Medical Doctor				
Yes	60 (42.3)	82 (57.7)		
No	17 (51.5)	16 (48.5)	1.45 (0.68 – 3.10)	0.34
N (Total = 176)	77	99		
Source of Care When Sick				0.56
Doctor's Office	32 (46.4)	37 (53.6)		
Multiple Sources of Care	25 (38.5)	40 (61.5)	1.05 (0.48 – 2.28)	0.91
Other Sources of Care Only	19 (47.5)	21 (52.5)	0.72 (0.36 – 1.44)	0.36
N (Total = 174)	76	98		
Family Physician Visits				
3 or less visits	49 (55.7)	39 (44.3)		
More than 3 visits	27 (31.4)	59 (68.6)	0.36 (0.20 – 0.68)	**<0.01**
N (Total = 174)	76	98		
Difficulty Obtaining Healthcare				
Yes	21 (39.6)	32 (60.4)		
No	44 (44.0)	66 (66.7)	1.30 (0.67 – 2.49)	0.56
N (Total = 173)	75	98		

Table 4.2 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported excellent health status among GARs

Variable	Health Status		Odds Ratio (95% CI)	*p*-value
	Excellent N (%)	Not Excellent N (%)		
Life Stress				
Not at all Stressful/Not Very Stressful/A Bit Stressful	56 (50.9)	54 (49.1)		
Quite a Bit/Stressful/Extremely Stressful	18 (30.5)	41 (69.5)	0.42 (0.22 – 0.83)	**<0.02**
N (Total = 169)	74	95		
Medical Condition More Than Three Months				
Yes	13 (19.1)	55 (80.9)		
No	64 (59.3)	44 (40.7)	0.16 (0.08 – 0.33)	**< 0.01**
N (Total = 176)	77	99		
Diagnosed Chronic Condition				
Yes	11 (17.5)	52 (82.5)		
No	64 (59.3)	44 (40.7)	0.15 (0.68 – 0.31)	**< 0.01**
N (Total = 171)	75	96		

N = 176 (Total number of participants who responded to the health status question)
CI = Confidence Intervals
Note: Variables were considered significant at *p* < 0.20

Multivariate logistic regressions were used to analyze factors associated with excellent health. Eleven variables that were moderately associated ($p < 0.20$) with excellent health were selected from the univariate analysis. They were directly forced into the logistic regression procedure.

These variables included the Predisposing Factors of "age", "sex", and "marital status"; the Enabling Factors of "English proficiency", "possession of a vehicle", "financial burden", "health region, and "family physician visits"; and the Need Factors of "life stress", "having a chronic condition for more than three months" and a "chronic condition diagnosed by a healthcare professional". When all variables were entered into the model the Wald statistics and *p*-values for possession of a vehicle, marital status and family physician visits suggested they were not statistically significant association with excellent health. When these variables were individually

removed and compared to the full model, the likelihood ratio tests, discussed in Section 2, provided evidence that they were not important factors associated with excellent health.

In addition to the statistical evidence to exclude these variables from the analysis other reasons were considered. In the literature 'possession of a vehicle' was not commonly used to model excellent health. 'Marital status' has been controlled for in previous studies which model excellent health, but was not found to contribute significantly to those models. There was no supporting evidence in the literature to keep these two variables in the final model. The 'family physician visits' variable was collinear with other variables, such as having a diagnosed chronic condition, and was dropped from the model for that reason. The predisposing variables age and sex were retained regardless of their contribution to the model, based on evidence in the literature describing their significant association with health status.

A series of diagnostic measures, described in Section 2, were employed to detect multicollinearity in the model. Large changes in the estimated regression coefficients when a variable was added or removed indicated that it is collinear with other variables. Close attention was also paid to the standard error of the regression coefficients. A large increase was an indication that it was highly correlated with other independent variable(s). If multicollinearity was suspected, the multivariate logistic regressions were re-run with the least significant variable removed.

Two variables, 'having a chronic condition for more than three months' and 'life stress' were removed from the model. The former was found to be highly correlated with several Predisposing and Enabling Factors. These variables inflated the standard errors of variables with which it was highly correlated, an indication of collinearity. They were individually removed and the reduced models were compared to the full model. The likelihood ratio tests provided evidence that 'diagnosed, chronic health condition' made a more significant contribution to excellent health than 'having a chronic condition for more than three months'. Furthermore, there was evidence in the literature indicating that 'diagnosed, chronic condition' was more frequently used as a 'Need Factor', as opposed to 'having a chronic condition for more than three months' (Fenta et al., 2007; Sanmartin & Ross, 2006; Wu et al., 2005, Gerritsen et al., 2006). For these reasons the latter variable was removed.

Life stress was also correlated with 'diagnosed, chronic health condition', as well as 'financial burden'. Following the same statistical method described above, the evidence suggested that life stress should be removed from the model.

Finally, goodness-of-fit tests were done to determine if the model fit the data. The residual and deviance tests did not indicate that the model was highly influenced by any of the cases. Furthermore, the variance inflation factors (VIFs) were well below the suggested cutoff value of 10. A summary of the final model's goodness-of-fit tests are provided in Appendix C.

Table 4.3 presents the results of the final, multivariate model. Being female, having financial burden, not having English proficiency and having a diagnosed health condition were statistically significant at the 0.05 level. In increasing level of statistical significance, the results are no English proficiency (AOR = 0.42, 95% CI: 0.19 - 0.97, $p = 0.04$), being female (Adjusted Odds Ratio [AOR] = 0.43, 95% Confidence Interval [CI]: 0.19 - 0.95, $p = 0.04$), having a financial burden (AOR = 0.32, 95% CI: 0.18 - 0.89, $p = 0.03$), and having a diagnosed health condition (AOR = 0.11, 95% CI: 0.04 - 0.31, $p < 0.01$). All were negatively associated with or decreased the odds of having excellent health.

Table 4.3 Multivariate logistic regression analysis of factors associated with reported excellent health among GARs				
Variable	***p*-value**	**Adjusted OR**	**95% C.I**	
			Lower	**Upper**
Age	0.20			
(16-28)		1.00		
29-36	0.15	0.46	0.16	1.33
37-43	0.56	1.44	0.42	4.93
44+	0.58	1.37	0.44	4.25
Sex				
(Male)		1.00		
Female	**0.04**	0.43	0.19	0.95
Financial Burden				
(Always Paid Bills on Time)		1.00		
Not Always	**0.03**	0.32	0.18	0.89
English Proficiency				
(Yes)		1.00		
No	**0.04**	0.42	0.19	0.97
Health Region				
(Vancouver Health Region)		1.00		
Fraser Health Region	0.20	1.85	0.73	4.67
Diagnosed Chronic Condition				
(No)		1.00		
Yes	**< 0.01**	0.11	0.04	0.31
N = 143 **OR = Odds Ratio** **CI = Confidence Interval**				

4.3   Research Objective 2: Reported Mental Health Problems Among GARs

The second objective of this thesis was to investigate factors associated with "reported mental health problems". Table 4.4 presents the univariate analyses results for the Predisposing, Enabling, and Need Factors associated with mental health problems among GARs. Overall, 29 (16.4%) reported having a mental health problem, while 148 (83.6%) did not. Rates of reported mental health problems were higher among participants aged 44 and older (25.5%, 12/47) than respondents aged 37 to 43 (11.8%, 4/34), 29 to 36 (17.3%, 9/52) and 16 to 28 (9.10%, 4/44).

The likelihood of reporting a mental health problem was greater among females (24.2%, 22/91), compared to males (8.14%, 7/86). Rates were also higher among "West Asians" (23.1%, 18/78) than "East & Southeast Asians" (9.10%, 4/55). The corresponding rate for the "Other" ethnic group was 16.0% (7/44).

When Enabling Factors were considered, the likelihood of reporting a mental health problem was greater among participants with no English proficiency (23.8%, 20/84), compared to those with proficiency in English (10.4%, 8/77). Participants were also more likely to report having a mental health problem if they reported having a financial burden (36.0%, 14/39), compared to 11.0% (15/136) of those without. When source of care at a refugee clinic was considered, participants who still attend specialized refugee clinics (25.6% (11/43) were more likely to report having mental health problems than those who do not (13.4% (18/134).

When Need Factors were considered, participants who reported having a mental health problem were more likely to report having "musculoskeletal" (46.2%) and "digestive" (44.4%) health problems, compared to individuals with no musculoskeletal (7.97%) and digestive (13.2%) health problems.

Table 4.4 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported mental health problems among GARs

Variable	Mental Health Problems		Odds Ratio (95% CI)	*p*-value
	Yes N (%)	No N (%)		
Age				**0.18**
16-28	4 (9.1)	40 (90.9)		
29-36	9 (17.3)	43 (82.7)	2.01 (0.60 – 7.34)	0.25
37-43	4 (11.8)	30 (88.2)	1.33 (0.31 – 5.77)	0.70
44+	12 (34.3)	35 (64.7)	3.43 (1.01 – 11.6)	0.05
N (Total = 177)	29	148		
Sex				
Male	7 (8.1)	79 (91.9)		
Female	22 (24.2)	69 (75.8)	3.60 (1.45 – 8.94)	**<0.01**
N (Total = 175)	27	148		
Ethnicity				**0.07**
Other	7 (15.9)	37 (84.1)		
West Asian	18 (23.1)	60 (76.9)	1.59 (0.61 – 4.16)	0.35
East & Southeast Asian	4 (7.3)	51 (92.7)	0.42 (0.11 – 1.52)	0.18
N (Total = 177)	29	148		
Marital Status				
Married/Cohabiting	16 (14.3)	96 (65.3)		
Not Married	13 (20.3)	51 (79.7)	1.53 (0.68 – 3.43)	0.30
N (Total = 176)	29	147		
Education				
Secondary Diploma or Greater	15 (13.2)	99 (86.8)		
Less than Secondary Diploma	14 (23.3)	46 (76.7)	2.01 (0.90 – 4.51)	**0.09**
N (Total = 174)	29	145		
English Proficiency				
Yes	8 (10.4)	69 (89.6)		
No	20 (23.8)	64 (76.2)	0.37 (0.15 – 0.90)	**0.03**
N (Total = 161)	28	133		
Employment Status				
Employed	11 (10.4)	95 (89.6)		
Not Employed	18 (25.3)	53 (74.7)	2.93 (1.29 – 6.67)	**0.01**
N (Total = 177)	29	148		
Reported Income				0.31
≥ $30,000	5 (13.9)	31 (86.1)		
< $30,000	20 (20.0)	80 (80.0)	1.55 (0.54 – 4.49)	0.42
Not Reported	4 (9.76)	37 (90.2)	0.67 (0.17 – 2.72)	0.58
N (Total =176)	29	147		

Table 4.4 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported mental health problems among GARs

Variable	Mental Health Problems		Odds Ratio (95% CI)	*p*-value
	Yes N (%)	No N (%)		
Main Source of Income				**0.01**
Wages & Salaries	8 (10.4)	69 (89.6)		
Welfare	14 (31.1)	31 (68.9)	3.90 (1.48 – 10.2)	<0.01
Employment & Unemployment Cycle	7 (13.7)	44 (86.3)	1.37 (0.47 – 4.05)	0.57
N (Total = 173)	29	144		
Food Security				**0.06**
Always Had Enough	23 (15.3)	127 (84.7)		
Did not Have Enough	6 (28.6)	15 (71.4)	2.37 (0.95 – 5.90)	**0.06**
N (Total = 171)	29	142		
Financial Burden				**< 0.01**
Always Paid Bills on Time	15 (11.0)	121 (89.0)		
Not Always	14 (36.0)	25 (64.0)	4.52 (1.94 – 10.5)	**< 0.01**
N (Total = 175)	29	146		
Health Region				0.25
Vancouver Health Region	6 (12.0)	44 (88.0)		
Fraser Health Region	23 (19.3)	96 (80.7)	1.76 (0.67-4.62)	0.25
N (Total = 169)	29	140		
Access to Regular Medical Doctor				0.76
Yes	24 (16.9)	118 (83.1)		
No	5 (14.7)	29 (85.3)	0.85 (0.30 – 2.41)	0.76
N (Total = 176)	29	147		
Source of Care When Sick				0.08
Doctor's Office	9 (13.0)	60 (97.0)		
Multiple Sources of Care	15 (23.1)	50 (76.9)	2.00 (0.81 – 4.96)	0.13
Other Sources of Care Only	3 (7.32)	38 (92.7)	0.53 (0.13 – 2.07)	0.36
N (Total = 175)	27	148		
Source of Care by Refugee Clinic				**0.07**
Attending Refugee Clinics	11 (25.6)	32 (74.4)	2.22 (0.95 – 5.16)	**0.07**
Not Attending Refugee Clinics	18 (13.4)	116 (86.6)		
N (Total = 177)	29	148		

Table 4.4 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported mental health problems among GARs

Variable	Mental Health Problems		Odds Ratio (95% CI)	*p*-value
	Yes N (%)	**No** N (%)		
Family Physician Visits				**0.004**
3 or less visits	7 (7.87)	82 (92.1)		
More than 3 visits	21 (24.4)	65 (75.6)	3.79 (1.52 – 9.45)	**0.004**
N (Total = 174)	27	147		
Difficulty Obtaining Healthcare				0.48
Yes	11 (20.8)	42 (79.2)		
No	18 (16.2)	93 (83.8)	1.35 (0.59 – 3.12)	0.48
N (Total = 164)	29	135		
Life Stress				**<0.01**
Not at all Stressful/Not Very Stressful/A Bit Stressful	11 (9.91)	100 (90.1)		
Quite a Bit Stressful/Extremely Stressful	16 (27.1)	43 (72.9)	3.38 (1.45 – 7.89)	**<0.01**
N (Total = 170)	27	143		
Health Status One Year Ago				**<0.01**
Excellent	4 (5.41)	70 (94.6)		
Very Good/Good	14 (21.9)	50 (78.1)	4.90 (1.52 – 15.8)	<0.01
Fair/Poor	11 (28.2)	28 (71.8)	6.88 (2.02 – 23.4)	<0.01
N (Total = 177)	29	148		
Musculoskeletal Health Problems				**< 0.01**
Yes	18 (46.2)	21 (53.8)	9.90 (4.10 – 23.9)	**< 0.01**
No	11 (7.97)	127 (92.0)		
N (Total = 177)	29	148		
Digestive Health Problems				**<0.01**
Yes	8 (44.4)	10 (55.6)	5.26 (1.86 – 14.8)	**<0.01**
No	21 (13.2)	138 (86.8)		
N (Total = 177)	29	148		

N = 177 (Total number of participants who responded to the mental health problem question)
CI = Confidence Intervals
Note: Variables were considered significant at *p* < 0.20

Multivariate logistic regressions were used to analyze factors associated with reporting mental health problems. Fourteen variables that were moderately associated (*p* < 0.20) with mental health problems were selected from the univariate analysis. They were directly entered

into the logistic regression procedure. The variables included were the Predisposing Factors of "age", "sex", "ethnicity" and "marital status"; the Enabling Factors of "English proficiency", "employment status", "main source of income", "food security", "financial burden", "health region", "source of care by refugee clinic", "source of care when sick" and "family physician visits"; the Need Factors of "life stress", and "health status one year ago prior to the survey".

When all variables were entered into the model the Wald statistics and p-values for health region, source of care when sick, marital status, and main source of income were not statistically significant. When these variables were individually removed and the reduced models compared to the full model, the likelihood ratio tests provided further evidence that they were not important factors in having mental health problems.

The variables 'source of care when sick' and 'main source of income' originally allowed participants to provide multiple responses. In this analysis, decisions were made to categorize some multiple responses into one category. For example, individuals who indicated having income from employment and welfare were categorized into the employment/unemployment cycle group. In these instances, we do not know the 'true' main source of income and it is possible that some responses were mis-categorized. In mis-categorizing main income source some lose of accuracy occurred, possibly lost explaining the lack of statistical significance.

For 'source of care when sick' the same multiple response and categorization problems occurred, possibly resulting in mis-categorization leading to lack of statistical significance. Poor data quality was an additional reason for removing these variables from the analysis.

For the health region variable, there was no supporting information in the literature to keep it in the model, since it was not used in other research studying factors associated with mental health problems. The Predisposing Variables age and sex were kept in the model regardless of their contribution, due to the evidence in the literature concerning their statistically significant association with mental health.

The diagnostic measures summarized under research Objective 1 for multicollinearity were applied to this analysis. Five variables, life stress, health status one year ago prior to the survey, food security, employment status and English proficiency were individually removed from the model. Both life stress and health status one year prior were found to be highly correlated with the Predisposing and Enabling Factors such ethnicity and financial burden. The presence of life

stress and health status one year prior inflated the standard errors of other variables in the model. Life stress may have also served as a proxy for the outcome variable. This conclusion was supported by evidence in the literature, where some studies used 'life stress' as an outcome variable measuring 'mental health problems' (Robert and Gilkinson, 2010).

Food security was highly correlated with financial burden. Both variables were individually removed, and the smaller models compared to the full model. The likelihood ratio tests provided evidence that financial burden contributed more to the model than did food security. Employment status was also found to be correlated with education, as well as financial burden. Following the same method described above, the results suggested that employment status should be removed from the model.

In the literature, both employment and education have been previously been used to predict mental health outcomes. However, evidence indicated that education and employment are correlated. Education has also been cited as being a stronger predictor of mental health outcomes in the immigrant and refugee population than employment status (Maximova and Krahn, 2010; Sanmartin and Ross, 2006; Wu et al., 2005).

Finally, English proficiency was correlated with source of care by refugee clinic. This correlation occurs because language proficiency is one of the main reasons why refugees attend these clinics. When each variable was individually removed and the reduced models compared to the full model, source of care by refugee clinic contributed significantly more to the model than English proficiency.

An informed decision was made to exclude English proficiency, rather than source of care by refugee clinic because of the quality of the data. English proficiency is a compound variable derived from two survey questions, each with its own potential reporting bias. However, source of care by refugee clinic was one question, asking respondents if they presently attended either the Bridge or New Canadian Clinics.

Initially, when age was grouped into four categories, it was not statistically significant in the final, multivariate model. Age was dichotomized to increase power and to test if it achieved statistical significance, which it did not. However, when age was dichotomized, ethnicity became statistically significant with "Other" as the reference group. To investigate the relationships fully, the reference group for ethnicity (Other) was changed to "East and Southeast Asian". The change

resulted in a statistically significant difference between the "West Asian" and "East and Southeast Asian" groups ($p = 0.023$).

The goodness-of-fit test results indicated that musculoskeletal and digestive health problems needed to be removed from the final model. Their VIFs indicated they were presented concerns for multicollinearity. The goodness-of-fit test was re-run to determine if the model fit the data. The VIF diagnostics indicated that family physician visits should be removed because it was higher than the suggested cutoff value of 10. Once the variable was removed, the goodness-of-fit tests were run again. The residual and deviance tests did not indicate that the model was influenced by any of the cases. Furthermore, the VIFs were well below 10. A summary of the final model's goodness-of fit-tests are provided in Appendix C.

Table 4.5 presents the results of the final, multivariate analysis model. In order of increasing statistical significance the variables significant at the 0.05 level are ethnicity (AOR= 13.44, 95% CI: $1.44 - 25.27$, $p = 0.04$), sex (AOR = 5.17, 95% CI: 1.51-17.71, $p = 0.01$), source of care by refugee clinic (AOR = 0.14, 95% CI: 0.04-0.52, $p = 0.003$), and financial burden (AOR = 6.29, 95% CI: 1.97-20.08, $p = 0.002$).

Being female, West Asian, and individuals not having a financial burden were more likely to report having mental health problems, while those with a source of care from a refugee clinic were less likely to report problems.

Table 4.5 Multivariate logistic regression analysis of factors associated with reported mental health problems among GARs			95% C.I	
Variable	*p*-value	Adjusted OR	Lower	Upper
Age	0.12			
(16-36)		1.00		
37+	0.33	2.38	0.80	7.11
Sex				
(Male)		1.00		
Female	**0.01**	5.17	1.51	17.71
Ethnicity	**0.04**			
(East & Southeast Asian)		1.00		
West Asian	0.02	13.44	1.44	25.27
Other	0.22	4.43	0.41	48.48
Financial Burden				
(Always Paid Bills on Time)		1.00		
Not Always	**0.002**	6.29	1.97	20.08
Source of Care: Refugee Clinic				
(Not Attending Refugee Clinics)		1.00		
Attending Refugee Clinics	**0.003**	0.14	0.04	0.52
N = 142 **OR = Odds Ratio** **CI = Confidence Interval**				

4.4 Research Objective 3: Family Physician Visits Among GARs

The third objective of this thesis was to investigate factors associated with "having more than three family physician visits during the past year". Table 4.6 presents the univariate analyses results for the Predisposing, Enabling, and Need Factors associated with having more than three family physician visits per year among GARs. Since the outcome variable was dichotomized by the median number of family physician visits, the frequencies are 86 (49.1%) and 89 (50.9%), respectively.

The likelihood of reporting more than three family physician visits was higher among participants who were aged 29 to 36 (59.6%) and 44 or older (60.9%); compared to those aged 16 to 28 (28.0%) and 37 to 43 (44.1%). When sex was considered, 55.6% (50/90) of females

reported having more than three family physician visits in the last year compared to 42.4% (36/85) of males.

The Enabling Factors at the individual level indicated that 63.0% (44/70) of unemployed participants reported having more than three family physician visits in the past year compared to 40.0% (42/105) of those who were employed. Among participants who reported having no food security, 63.2% (12/19) reported having more than three family physician visits in the past 12 months, compared to 48.0% (72/150) of participants with food security.

The percentage of having more than three family physician visits was greater among participants with no English proficiency (61.0%, 50/82) than those with proficiency in English (36.4%, 28/77). At the contextual level, 55.7% (78/140) with access to a regular, medical doctor reported having more than three family physician visits, compared to 20.6% (7/34) without access.

When Need Factors were considered, 77.4% (48/62) of participants "with a chronic condition diagnosed by a healthcare professional" reported having more than three family physician visits, compared to 31.3% (34/108) individuals without.

Table 4.6 Univariate logistic regression analysis of predisposing, enabling and need factors associated with family physician visits a year among GARs

Variable	Physician Visits per Year		Odds Ratio (95% CI)	*p*-value
	More than 3 N (%)	3 or Less N (%)		
Age				**<0.01**
44+	28 (60.9)	18 (39.1)		
37-43	15 (44.1)	19 (55.9)	0.51 (0.21 – 1.25)	0.14
29-36	31 (59.6)	21 (40.4)	0.95 (0.42 – 2.14)	0.90
16-28	12 (27.9)	31 (72.1)	0.25 (0.10 – 0.61)	0.01
N (Total = 175)	86	89		
Sex				**0.08**
Female	50 (55.6)	40 (44.4)		
Male	36 (42.4)	49 (59.6)	0.59 (0.32 – 1.07)	**0.08**
N (Total = 175)	86	89		
Ethnicity				**0.20**
Other	20 (46.5)	23 (53.5)		
West Asian	44 (56.4)	34 (43.6)	1.49 (0.70 – 3.14)	0.30
East & Southeast Asian	22 (40.7)	32 (59.3)	0.79 (0.35 – 1.78)	0.57
N (Total = 175)	86	89		
Marital Status				**0.18**
Married/Cohabiting	59 (52.7)	53 (47.3)		
Not Married	26 (42.0)	36 (58.0)	0.65 (0.35-1.21)	**0.18**
N (Total = 174)	85	89		

Table 4.6 Univariate logistic regression analysis of predisposing, enabling and need factors associated with family physician visits a year among GARs				
Variable	**Physician Visits per Year**		**Odds Ratio (95% CI)**	**_p_-value**
	More than 3 N (%)	**3 or Less N (%)**		
Education				**0.05**
Secondary Diploma or Greater	49 (43.4)	64 (56.6)		
Less than Secondary Diploma	35 (59.3)	24 (10.7)	1.91 (1.01 – 3.61)	**0.05**
N (Total = 172)	84	88		
English Proficiency				**<0.01**
Yes	28 (36.4)	49 (63.6)		
No	50 (61.0)	32 (39.0)	0.37 (0.19 – 0.70)	**<0.01**
N (Total = 159)	78	81		
Possession of Vehicle				**0.20**
Yes	49 (53.8)	42(46.2)		
No	37 (43.0)	47(56.0)	1.48 (0.82 – 2.69)	**0.20**
N (Total = 175)	86	89		
Employment Status				**0.003**
Employed	42 (40.0)	63 (60.0)		
Not Employed	44 (62.9)	26 (37.1)	2.54 (1.34 – 4.73)	**0.003**
N (Total = 175)	86	89		
Reported Income				**0.17**
Income ≥ $30,000	13 (36.1)	23 (63.9)		
Income < $30,000	50 (50.5)	49 (49.5)	1.81 (0.82 – 3.96	0.14
Income Not Reported	23 (57.5)	17 (42.5)	2.40 (0.95 – 6.04)	0.06
N (Total = 175)	86	89		
Main Source of Income				**< 0.01**
Wages & Salaries	29 (37.7)	48 (62.3)		
Welfare	33 (76.7)	10 (23.3)	5.45 (2.35 – 12.71)	< 0.01
Employment & Unemployment Cycle	23 (45.1)	28 (54.9)	1.36 (0.66 – 2.79)	0.40
N (Total = 171)	**85**	**86**		

Table 4.6 Univariate logistic regression analysis of predisposing, enabling and need factors associated with family physician visits a year among GARs				
	Physician Visits per Year		**Odds Ratio (95% CI)**	***p*-value**
Variable	**More than 3 N (%)**	**3 or Less N (%)**		
Food Security				**0.02**
Always Had Enough	72 (48.0)	78 (52.0)		
Did not Have Enough	12 (63.2)	7 (36.8)	2.18 (1.16 – 4.08)	**0.02**
N (Total = 169)	**84**	**85**		
Financial Burden				0.26
Always Paid Bills on Time	64 (47.4)	71 (52.6)		
Not Always	22 (57.9)	16 (42.1)	1.53 (0.74 – 3.16)	0.26
N (Total = 173)	**86**	**87**		
Health Region				0.80
Vancouver Health Region	23 (47.9)	25 (51.1)		
Fraser Health Region	60 (50.4)	59 (49.6)	1.11 (0.57-2.16)	0.80
N (Total = 167)	**83**	**84**		
Access to Regular Medical Doctor				**<0.01**
Yes	78 (55.7)	62 (44.3)		
No	7 (24.1)	27 (75.9)	0.21 (0.08 – 0.51)	**<0.01**
N (Total = 174)	**85**	**89**		
Source of Care When Sick				**0.02**
Doctor's Office	35 (51.5)	33 (48.5)		
Multiple Sources of Care	38 (59.4)	26 (40.6)	1.38 (0.69 – 2.75)	0.36
Other Sources of Care Only	13 (31.7)	28 (68.3)	0.44 (0.19 – 0.99)	0.05
N (Total = 173)	**86**	**87**		
Health Status Now				**< 0.01**
Excellent	27 (35.5)	49 (64.5)		
Very Good/Good	31 (49.2)	32 (50.8)	1.76 (0.89 – 3.48)	0.11
Fair/Poor	28 (80.0)	7 (20.0)	7.26 (2.80 – 18.81)	< 0.01
N (Total = 174)	**86**	**88**		
Health Status One Year Ago				**< 0.01**
Excellent	24 (32.9)	49 (67.1)		
Very Good/Good	32 (50.8)	31 (49.2)	2.11 (1.05 – 4.22)	0.04
Fair/Poor	30 (76.9)	9 (23.1)	6.81 (2.79 – 16.58)	< 0.01
N (Total = 175)	**86**	**89**		

Table 4.6 Univariate logistic regression analysis of predisposing, enabling and need factors associated with family physician visits a year among GARs

Variable	Physician Visits per Year		Odds Ratio (95% CI)	*p*-value
	More than 3 N (%)	3 or Less N (%)		
Life Stress				**0.02**
Not at all Stressful/Not Very Stressful/A Bit Stressful	46 (41.8)	64(58.2)		
Quite a Bit Stressful/Extremely Stressful	35 (60.3)	23 (39.7)	2.12 (1.11 – 4.05)	**0.02**
N (Total = 168)	**81**	**87**		
Medical Condition More Than Three Months				**< 0.01**
Yes	52 (77.6)	15 (22.4)		
No	34 (31.5)	74 (68.5)	7.55 (3.73 – 15.25)	**< 0.01**
N (Total = 175)	**86**	**89**		
Diagnosed Chronic Condition				**< 0.01**
Yes	48 (77.4)	14 (22.6)		
No	34 (31.5)	74 (68.5)	7.46 (3.63 – 15.34)	**< 0.01**
N (Total = 170)	**82**	**88**		

N = 175 (Total number of participants who responded to the family physician visit question)
CI = Confidence Intervals
Note: Variables were considered significant at *p* < 0.20

Multivariate logistic regressions were used to analyze factors associated with having more than three family physician visits during the past year. Seventeen variables that were moderately associated ($p < 0.20$) with family physician visits were selected from the univariate analysis. They were entered directly into the logistic regression model. These variables included the Predisposing Factors of "age", "sex", "ethnicity" and "marital status"; the Enabling Factors of "education", "English proficiency", "employment status", "reported income", "main source of income", "food security", "access to a regular medical doctor", and "source of care when sick"; and the Need Factors, "health status one year ago prior to survey", "life stress", " a medical condition for more than three months" and "a chronic condition diagnosed by a healthcare professional".

When all variables were entered into the model the Wald statistics and *p*-values for "possession of a vehicle", "source of care when sick", "food security", "ethnicity" and "reported income" indicated they were not statistically significant associations with the outcome variable. When these variables were individually removed and the reduced models compared to the full model, the likelihood ratio tests provided evidence that they were not important factors in having more than three family physician visits annually.

The 'source of care when sick' allowed for multiple responses, which were re-categorized into a single response. In these instances, we do not know the 'true' main source of care. Re-categorizations that incorrectly identified the source of care would cause a loss of accuracy in examining the relationship between 'source of care' and family physician visits. An informed decision was made to exclude this variable because of data quality issues.

Ethnicity was also excluded from the model because of limitations in the ethnic categorization of the "Other" group, which could lead to losing finer differences between some of the ethnic groups. For the possession of a vehicle variable, there was no supporting information in the literature to keep it in the model, since it was not used in other research studying factors associated with family physician visits. Reported income was excluded from the final model because of the large non-response rate (23.6%). Finally, food security was excluded due to its low explanatory power compared to other socio-economic status variables that were statistically significantly associated with family physician visits. Inclusion of the food security variable was further problematic because it was collinear with other variables in the model. The Predisposing Variables age and sex were kept in the model regardless of their contribution, based on evidence in the literature concerning their significant association with family physician visits.

A series of diagnostic measures summarized under research Objective 1, were applied to observe for multicollinearity. Four variables, life stress, health status one year prior to the survey, having a medical condition for more than three months, and main source of income were removed from the model. Both life stress and health status one year prior to the survey were found to be highly correlated with the Enabling and Need Factors English proficiency, food security and a diagnosed chronic condition by a healthcare professional. Each variable was individually removed from the model and the reduced models compared to the full model. The likelihood ratio tests indicated that diagnosed chronic condition had a more significant

contribution to the model than life stress and health status one year prior to the survey. Furthermore, there was supporting evidence in the literature that it was a more commonly used variable in predicting health services utilization as opposed to life stress and health status one year prior to the survey.

Main source of income was strongly correlated with employment status. Each variable was individually removed from the model and the reduced models compared to the full one. The likelihood ratio tests provided evidence that employment status had a more significant contribution to the model than main source of income. An informed decision was made to keep employment status because it was a commonly used variable in the literature, as opposed to main source of income (Fenta et al., 2007). Furthermore, as described in objective 2, main source of income was a re-categorized variable, making it difficult to examine the relationship between the "true" main source of income and family physician visits. Health condition diagnosed by a medical professional was statistically significant at the 0.05 level, but was removed based on collinearity diagnostics indicating a very strong correlation with other independent variables in the model.

Access to a regular medical doctor was considered for removal from the model because of suspected multicollinearity. However, evidence from the literature indicates that access to a regular medical doctor is a variable used in previous research on health services utilization (Lambrew et al., 1996). The decision was made to retain this variable in the model.

The goodness-of-fit results indicated that a diagnosed health condition should be removed from the model. The VIF value above 10 indicated it was a concern for multicollinearity. It was removed and the goodness-of-fit tests were re-run. The residual and deviance tests did not identify any cases that influenced the model. A summary of the final model's goodness-of-fit tests are provided in Appendix C.

Table 4.7 presents the results of the final, multivariate model. Not being employed, not having English proficiency and no access to a regular medical doctor were statistically significant at the 0.05 level. Results indicate that not being employed (AOR = 3.11, 95% CI: 1.34 – 7.24, p = <0.01) was associated with having more than three family physician visits, while English proficiency (AOR = 0.34, 95% CI: 0.14 - 0.80, p = 0.01) and no access to a regular

medical doctor (AOR = 0.13, 95% CI: 0.04 - 0.43, p = <0.01) were negatively associated with or decreased the odds of having more than three family physician visits annually.

Variable	p-value	Adjusted OR	95% C.I	
			Lower	Upper
Age	0.11			
(44+)		1.00		
37-43	0.26	0.53	0.17	1.62
29-36	0.67	1.26	0.43	3.66
16-28	0.08	0.36	0.17	1.62
Sex				
(Female)		1.00		
Male	0.90	0.95	0.42	2.13
Marital Status				
(Married/Cohabiting)		1.00		
Not Married	0.46	0.71	0.29	1.74
Education				
(Secondary Diploma or Greater)		1.00		
Less than Secondary Diploma	0.38	1.49	0.61	3.64
English Proficiency				
(Yes)		1.00		
No	**0.01**	0.34	0.14	0.80
Employment Status				
(Employed)		1.00		
Not Employed	**<0.01**	3.11	1.34	7.24
Access to Regular MD				
(Yes)		1.00		
No	**<0.01**	0.13	0.04	0.43

Table 4.7 Multivariate logistic regression analysis of factors associated with more than 3 family physician visits per year among GARs

N = 146
OR = Odds Ratio
CI = Confidence Interval

4.5 Research Objective 4: Difficulty Obtaining Primary Healthcare among GARs

The final objective of this thesis was to investigate factors associated with difficulty obtaining healthcare. Table 4.8 presents the univariate analyses results of the Predisposing, Enabling, and Need Factors associated with reported difficulty in obtaining healthcare among GARs. Overall, 53 (32.3%) participants reported having difficulty obtaining healthcare, while 111 (67.7%) did not.

The likelihood of reporting difficulty obtaining healthcare varied with age. The percentages of the age groups having difficulty are 16 to 28 years (36.0%) 29 to 36 (49.0%) 37 to 43 (22.6%) and 44 and older (17.4%). When sex was considered, 28.2% (24/85) of females reported having difficulty obtaining healthcare compared to 36.7% (29/79) of males.

The Enabling Factors at the individual level indicated that 45.0% (18/40) who did not report their income "had greater difficulty in obtaining healthcare" than with a reported household income of ≥ $30,000 (25.0%, 8/32) and < $30,000 (29.3%, 27/92).

At the contextual level, participants were more likely to report difficulty obtaining healthcare if they resided in the Vancouver Coastal Health region (53.2%, 25/47), compared to those living in the Fraser Health Authority region (25.7%, 28/109). The likelihood of reporting difficulty obtaining healthcare was greater among participants with no access to a regular medical doctor (50.0%, 15/30), than respondents with access (28.6%, 38/133).

Table 4.8 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported difficulty obtaining healthcare among GARs				
	Had Difficulty			
Variable	**Yes** **N (%)**	**No** **N (%)**	**Odds Ratio** **(95% CI)**	**p-value**
Age				**<0.01**
44+	8 (17.4)	38 (82.6)		
37-43	7 (22.6)	24 (77.4)	1.39 (0.45 – 4.31)	0.57
29-36	25 (49.0)	26 (51.0)	2.69 (0.97 – 7.46)	<0.01
16-28	13 (36.1)	23 (63.9)	4.57 (1.79 – 11.69)	0.06
N (Total = 164)	53	111		
Sex				0.25
Female	24 (28.2)	61 (71.8)		
Male	29 (36.7)	50 (63.3)	1.47 (0.76 – 2.85)	0.25
N (Total = 164)	53	111		

Table 4.8 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported difficulty obtaining healthcare among GARs				
	Had Difficulty			
Variable	**Yes** **N (%)**	**No** **N (%)**	**Odds Ratio** **(95% CI)**	***p*-value**
Ethnicity				0.18
Other	15 (34.9)	28 (65.1)		
West Asian	18 (38.3)	29 (61.7)	0.62 (0.27 – 1.42)	0.26
East & Southeast Asian	20 (27.0)	54 (73.0)	1.29 (0.55 – 3.00)	0.56
N (Total = 164)	53	111		
Marital Status				0.15
Married/Cohabiting	38 (36.5)	66 (63.5)		
Not Married	15 (25.4)	44 (74.6)	0.59 (0.29-1.20)	0.15
N (Total = 163)	53	110		
Education				0.43
Secondary Diploma or Greater	31 (30.1)	72 (69.9)		
Less than Secondary Diploma	21 (36.2)	37 (63.8)	1.32 (0.68-2.61)	0.43
N (Total = 161)	52	109		
English Proficiency				0.62
Yes	19 (28.4)	48 (71.6)		
No	26 (32.1)	55 (67.9)	0.84 (0.41 – 1.70)	0.62
N (Total = 148)	45	103		
Possession of Vehicle				0.24
Yes	31 (36.5)	54 (63.5)		
No	22 (27.8)	57 (72.2)	1.49 (0.77 – 2.88)	0.24
N (Total = 164)	53	111		
Employment Status				0.26
Employed	35 (35.7)	63 (64.3)		
Not Employed	18 (27.3)	48 (72.7)	0.68 (0.34 – 1.33)	0.26
N (Total = 164)	53	111		
Reported Income				**0.14**
Income ≥ $30,000	8 (25.0)	24 (75.0)		
Income < $30,000	27 (29.0)	65 (71.0)	1.25 (0.50 – 3.12)	0.64
Income Not Reported	18 (45.0)	22 (55.0)	2.46 (0.89 – 6.77)	0.08
N (Total = 164)	53	111		
Main Source of Income				0.75
Wages & Salaries	25 (34.7)	47 (55.3)		
Welfare	12 (27.9)	31 (72.1)	0.73 (0.32 – 1.66)	0.45
Employment & Unemployment Cycle	15 (33.3)	30 (66.7)	0.94 (0.43 – 2.07)	0.88
N (Total = 160)	52	108		

Table 4.8 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported difficulty obtaining healthcare among GARs

Variable	Had Difficulty		Odds Ratio (95% CI)	*p*-value
	Yes N (%)	No N (%)		
Food Security				0.13
Always Had Enough	39 (28.5)	98 (71.5)		
Did not Have Enough	12 (57.1)	9 (42.9)	1.74 (0.85 – 3.56)	**0.13**
N (Total = 158)	51	107		
Financial Burden			1.56 (0.73 – 3.33)	0.25
Always Paid Bills on Time	38 (30.4)	87 (69.6)		
Not Always	15 (40.5)	22 (59.5)		
N (Total = 162)	53	109		
Health Region				**<0.01**
Vancouver Health Region	25 (53.2)	22 (46.8)		
Fraser Health Region	28 (28.7)	81 (74.3)	0.30 (0.15-0.62)	**<0.01**
N (Total = 156)	53	103		
Access to Regular Medical Doctor				**0.03**
Yes	38 (28.6)	95 (71.4)	2.50 (1.11 – 5.61)	**0.03**
No	15 (50.0)	15 (50.0)		
N (Total = 163)	53	110		
Source of Care When Sick				0.70
Doctor's Office	19 (30.2)	44 (69.8)		
Multiple Sources of Care	19 (30.6)	43 (69.4)	1.02 (0.48 – 2.19)	0.95
Other Sources of Care Only	14 (37.8)	23 (62.2)	1.41 (0.60 – 3.31)	0.43
N (Total = 162)	52	110		
Health Status Now				0.55
Excellent	21 (32.3)	44 (67.7)		
Very Good/Good	23 (36.5)	40 (63.5)	1.21 (0.58 – 2.50)	0.62
Fair/Poor	9 (25.7)	26 (74.3)	0.73 (0.29 – 1.82)	0.50
N (Total = 163)	53	110		
Health Status One Year Ago				0.57
Excellent	20 (31.7)	43 (68.3)		
Very Good/Good	23 (36.5)	40 (63.5)	1.24 (0.59 – 2.59)	0.57
Fair/Poor	10 (26.3)	28 (73.7)	0.77 (0.31 – 1.88)	0.56
N (Total = 164)	53	111		
Life Stress				**0.17**
Not at all Stressful/Not Very Stressful/A Bit Stressful	28 (28.3)	71 (71.7)		
Quite a Bit Stressful/Extremely Stressful	23 (39.0)	36 (61.0)	1.62 (0.82 – 3.20)	**0.17**
N (Total = 158)	51	107		

Table 4.8 Univariate logistic regression analysis of predisposing, enabling and need factors associated with reported difficulty obtaining healthcare among GARs				
	Had Difficulty			
Variable	**Yes** **N (%)**	**No** **N (%)**	**Odds Ratio** **(95% CI)**	**_p_-value**
Medical Condition More Than **Three Months**				0.37
Yes	19 (28.4)	48 (71.6)		
No	34 (35.1)	63 (64.9)	0.73 (0.37 – 1.44)	0.37
N (Total = 164)	53	111		
Diagnosed Chronic Condition				0.25
Yes	17 (27.0)	46 (73.0)		
No	35 (35.7)	63 (64.3)	0.67 (0.33 – 1.33)	0.25
N (Total = 161)	52	109		
N = 164 (due to excluded cases which reported excellent health status, no difficulty getting healthcare, and no family physician visits in the past 12 months) **CI = Confidence Intervals** **Note: Variables were considered significant at _p_ < 0.20**				

Multivariate logistic regressions were used to analyze factors associated with difficulty obtaining healthcare. Nine variables were moderately associated ($p < 0.20$) with reported difficulty in obtaining healthcare and were selected for the logistic regression analysis. They were entered as a group into multivariate model.

These variables were the Predisposing Factors "age", "sex", "ethnicity" and "marital status"; the Enabling Factors "reported income", "food security", "health region", "access to a regular medical doctor"; and the Need Factors "life stress".

For the full model, the Wald statistics and p-values for reported income and food security were not statistically significant at the 0.05 level. They were individually removed and the reduced model was compared to the full model. The results of the likelihood ratio tests further indicated that they were not important factors in reported difficulty obtaining healthcare. An informed decision was made to exclude reported income from the final model because of the large non-response rate (23.6%). Furthermore, there was no supporting evidence in the literature that food security was an important, contributing factor to reporting difficulties obtaining primary healthcare. The Predisposing Variables age and sex were kept regardless of their contribution to the model, based on evidence in the literature concerning their statistically significant association with access to healthcare services.

A series of diagnostic measures summarized under research objective 1, were applied to observe for multicollinearity. Access to a regular medical doctor was initially considered for removal because of suspected multicollinearity. Once removed and the reduced model was compared to the full model the standard errors, Wald statistics and p values of the other variables indicated no additional concerns. Evidence from the literature further indicates that access to a regular medical doctor is a common variable used in access to healthcare research (Lambrew et al., 1996). This decision was made to retain it in the model.

Initially, age was grouped in four categories, which indicated that GARs aged 29 to 36 years were more likely to report having difficulty obtaining healthcare than those in other age groups, and these results were significant at the 0.05 level. To increase statistical power, age was dichotomized at the median, which results in marital status becoming statistically significant. An interaction term between marital status and age was investigated, and the results indicated that being young and married was statistically significant.

The goodness-of fit-test results indicated that the interaction term of age and marital status should be removed from the final model. The VIF value indicated a serious concern for multicollinearity, as it was two times the suggested cutoff of 10. Once it was removed, the goodness-of-fit tests were re-run. The residual and deviance tests did not indicate an important influence from any of the cases. The VIFs were also well below 10. A summary of the final model's goodness-of-fit tests are provided in Appendix C.

Table 4.9 presents the results of the final, multivariate model. Being young age, not married, having no access to a regular medical doctor, and health region were statistically significant at the 0.05 level. In order of increasing statistical significant, having no access to a regular medical doctor (AOR = 2.81 95% CI: 1.11-7.80, p = <0.05), and young age (AOR = 4.25, 95% CI: 1.77 – 10.23, p = <0.01) increased the likelihood of reporting difficulty obtaining primary healthcare. Not being married (AOR = 0.35, 95% CI: 0.14 – 0.85, p = 0.02), Residing in the Fraser Health Authority region (AOR = 0.29, 95% CI: 0.12 - 0.67, p = <0.01), was negatively associated with or decreased the odds of having difficulty obtaining healthcare.

Table 4.9 Multivariate logistic regression analysis of factors associated with reported difficulty obtaining primary healthcare			95% C.I	
Variable	p-value	Adjusted OR	Lower	Upper
Age				
(37+)		1.00		
16-36	**<0.01**	4.25	1.77	10.23
Sex				
(Female)		1.00		
Male	0.27	1.58	0.71	3.54
Marital Status				
(Married/Cohabiting)		1.00		
Not Married	**0.02**	0.35	0.14	0.85
Access to Regular MD				
(Yes)		1.00		
No	**<0.05**	2.81	1.11	7.80
Health Region				
(Vancouver Health Region)		1.00		
Fraser Health Region	**<0.01**	0.29	0.12	0.67
Life Stress				
(Not at all Stressful/Not Very Stressful/A Bit Stressful)		1.00		
Quite a Bit Stressful/Extremely Stressful	0.90	2.05	0.90	4.66
N = 143 **OR = Odds Ratio** **CI = Confidence Interval**				

5 DISCUSSION

5.1 Summary of Major Findings

Using data from the Vancouver –based study *"Refugee Health Care in BC: What facilitates access to general-practitioner care?"* this thesis examined health status, healthcare utilization and the reported difficulty obtaining healthcare of Government-Assisted Refugees (GARs) with socio-demographic and Need Factors identified in the Andersen Model of Healthcare Utilization. Table 5.1 provides a summary of all the factors significantly associated with each research objective.

Results from each research objective will be discussed followed by a review of the study strengths and limitations, directions for future research, policy implications and concluding remarks.

Table 5.1 Summary of factors significantly associated with each objective			
OBJECTIVE 1: EXCELLENT HEALTH	**OBJECTIVE 2: MENTAL HEALTH PROBLEMS**	**OBJECTIVE 3: FAMILY PHYSICIAN VISITS**	**OBJECTIVE 4: DIFFICULTIES OBTAINING PRIMARY HEALTHCARE**
Female Sex (inverse association)	Female Sex	----------	Young Age
Having Financial Burden	Having Financial Burden	Being Unemployed	Not being Married (inverse association)
No English Proficiency (inverse association)	West Asian Ethnicity	No English Proficiency (inverse association)	Residing in the Fraser Health Region (inverse association)
Having a Diagnosed Chronic Condition (inverse association)	Attending a Refugee Clinic (inverse association)	No Access to a Regular Medical Doctor (inverse association)	No Access to a Regular Medical Doctor

5.1.1 Research Objective 1: Factors Associated With Excellent Health among GARs

The literature has identified good physical health as a key outcome in successful immigrant and refugee settlement and integration (Simich, 2009). Less than half (43.8%) of GARs in the study sample reported having an excellent health status.

The current analysis identified variables that reduced the odds of having an excellent health which include being female, having a financial burden, having no English proficiency and a health condition diagnosed by a healthcare professional. In the literature the measure of self-reported health status in surveys is a validated tool in predicting morbidity, mortality and utilization of health services (Millunpalo et al., 1997; Chiswick et al., 2006; Pottie et al., 2008). In this analysis,having a diagnosed health condition was found to be inversely associated with self-reported excellent health, where GARs who reported having a chronic condition diagnosed were 89% less likely to report having an excellent health compared to GARs without (OR = 0.11, 95% CI: 0.04-0.31).

The results of the logistic regression analysis indicate that women are less likely than men to report having excellent health (OR = 0.43, 95% CI: 0.19-0.95). Evidence shows that immigrant women as a whole, particularly from non-Western countries, are vulnerable to marginalization and poorer health outcomes compared to men (Visandjee et al., 2004; Spitzer, 2005; Statistics Canada, 2007; Chiu, 2003). Findings from this study confirm previous reports on the statistically significant association between female sex and poor self-rated health status (Pottie et al., 2008). Sex differences in health status have also been well documented internationally, indicating that women experience poorer health than men (Fernandez et al., 1999; Ladwig et al., 2000; Denton et al., 2004; Lim et al., 2007; Chun et al., 2008; Gerritsen and Devillé, 2009). The Dutch National Survey of General Practice (2000-2002) examined gender differences in health and healthcare utilization in various ethnic groups in the Netherlands (Gerritsen and Devillé, 2009). After controlling for ethnicity, results showed that women reported poorer health than men, (Gerritsen and Devillé, 2009). Such differences have been attributed to biological, psychological, behavioral and social factors (Denton et al., 2004; Lahelma et al., 1999; Rieker and Bird, 2005).

GARs who reported a financial burden were 68% less likely to report having an excellent health than GARs without a burden (OR = 0.32, 95% CI: 0.18-0.89). These results are consistent

with an Alberta study on the health status of refugees examining which pre- and post- migration factors are associated with changes in refugees' health status (Maximova and Krahn, 2010). It used a similar variable to financial burden called 'perceived economic hardship'. It was defined as having enough income to cover living costs vs. sometimes or often having problems (Maximova and Krahn, 2010). Maximova and Krahn (2010) found that economic hardship in Canada was associated with decreases in self-rated physical health status, consistent with the findings of this study. As one of the few refugee health studies in Canada, the Maximova and Krahn (2010) study was helpful in making comparisons to the results of this analysis.

The literature has reported that income is associated with self-reported health status. In the present analysis, income was not included in the final logistic model. Large, population-based surveys have found that Canadians with the lowest incomes were more likely than those with higher incomes to report having fair or poor health (Health Canada, 1996; Pomerleau et al., 1997). Income was not a predictor in the model which can be partially explained by its strong correlation with financial burden. In this analysis financial burden may be mediating the relationship between income and health status.

In the present study, GARs with no English proficiency were 58% less likely to report having excellent health than those with English proficiency (OR = 0.42). These results are consistent with findings from the first two surveys of the LSIC for 2001 and 2003 (Pottie et al., 2008). The study examined the relationship between self-reported health status and language proficiency (Pottie et al., 2008). The risk of having a poor self-reported health increased with poor language proficiency. This relationship was statistically significant in both waves of the survey (Pottie et al., 2008).

Findings for this objective identify factors that could influence GARs' settlement and integration into Canada. Language barriers are among the most frequently cited challenges faced by new immigrants and refugees to Canada (Pottie et al., 2008; Bauder, 2003; Chu, 2003).

It has been suggested by Pottie et al. (2008) that conceptualizing language proficiency as a barrier is not sufficient to account for the lower health status of GARs. Findings from Karliner et al. (2007) examined whether professional interpreters improved clinical care for patients with limited English proficiency They found that the use of interpreters improved patients' understanding of their treatment plan, but it did not alter their health knowledge (Karliner et al.,

2007). Language proficiency may have greater meaning within a health literacy framework. This framework would incorporate patient education, empowerment, and not strictly access to health services (Pottie et al., 2008).

The literature has reported health literacy as a strong predictor of self-reported health. Health literacy is defined as *"the ability to seek information, learn, appraise, make decisions, communicate information, prevent disease and promote individual., family and community health"* (Simich, p. 1, 2009; Rootman and Frankish, 2007). Research has shown that controlling for age, sex, education, mother tongue, and immigration status, Canadians with the lowest health literacy scores were more than two times more likely to self-report a fair or poor health status (Simich, 2009; Canadian Council on Learning, 2008). They were also at greater risk of experiencing negative health outcomes and difficulty managing chronic conditions (Simich, 2009; DeWalt et al., 2004).

Recent immigrants and refugees are among those with the lowest levels of health literacy. According to the Canadian Public Health Association the 2003 IALSS results showed that 60% of immigrants fell below Level 3 in prose literacy (Simich, 2009; Rootman and Gordon-El-Bihbety, 2008; Canadian Public Health Association, 2006). The interaction between health literacy, language proficiency and health outcomes is complex because it is affected by education and culture (Simich, 2009; Nielsen-Bohlman et al., 2004). Immigrants and refugees come with predisposed health and healthcare knowledge. They must obtain new information about health issues and services, along with experiencing resettlement challenges (Simich, 2009).

Women are more likely to report having poor health literacy, being unemployed and having mental and physical health problems (Simich, 2009; Beiser and Hou, 2001). A multi-site, qualitative, Canadian study on the perceptions of new immigrants, refugees, and service providers found that women felt more disadvantaged than men because of the lack of the opportunity to learn English, go to school and enhance their skills. They described childcare, household responsibilities and emerging role conflicts with their spouses as factors impeding their access to those opportunities (Stewart, 2003). These perceptions led to linguistic barriers, greater financial disadvantage, and a sense of isolation (Stewart, 2003).

Findings for this objective reveal that several post-migration factors influence GARs self-reported excellent health, and further research is needed to focus more into the sex differences

and its interrelation with these post-migration factors. Although settlement processes and specialized refugee clinics facilitate the integration process, they do not offer a permanent solution towards improving one's health and access to health services. While little can be done to alter the pre-migration experiences of refugees, public policies and interventions can affect the post-migration factors such as improving English language proficiency, to mitigate negative health consequences experienced by GARs.

5.1.2 Research Objective 2: Factors that Determine Reported Mental Health Problems among GARs

This objective examined the Predisposing, Enabling and Need Factors associated with reported mental health problems among GARs. The odds of reporting a mental health problem increased among females, West Asians, and respondents with a financial burden. Attendance at specialized refugee clinics was negatively associated with having a reported mental health problem.

This analysis indicates that women are more likely to report having a mental health problem than men (OR = 5.72, 95% CI: 1.51-17.71). Evidence from the literature reveals that immigrant women suffer from serious mental health problems, including depression, anxiety, schizophrenia and post-migration stress disorders. Several studies conclude that depression and anxiety are the most commonly reported mental health problems (O'Mahony and Donnelly, 2007; Beiser, 1999; Canadian Task Force on Mental Health Issues Affecting Immigrants and Refugees, 1988; Fox et al., 2001; Legault et al., 1997; Li and Browne, 2000).

Women are further marginalized because they have difficulty accessing services. Factors associated with these differences are cultural barriers such as different domestic roles and responsibilities, and structural barriers such as lack of mobility, language barriers, and fear of stigmatization (Kirmayer et al., 2011; Whitley et al., 2006; Fenta and Hyman, 2007; Wong et al., 2006; Nadeem et al., 2007; Chen and Kazanjian, 2009)

Moreover, certain mental health problems are unique to women, and can affect women's coping mechanism and means of dealing with the problem. For example, research has shown that immigrant women have 2 to 3 times the risk of developing post-partum depression compared to non-immigrant women, and barriers to seeking care have a greater effect among the immigrant women (Zelkowitz et al., 2004; Stewart et al., 2008; Davey et al., 2008).

Statistics Canada's LSIC study found that refugee class immigrants exhibited the highest levels of mental health problems. Furthermore, it found that females were more likely to experience mental health problems than males, since women experience anxiety, psychological distress, depression, domestic and sexual violence more than men (Robert and Gilkinson, 2010; WHO, 2010).

There is evidence of an interaction between employment, level of income and reported financial burden. The analysis of this objective found that individuals with financial burden were more likely to report having mental health problems compared to those without (OR = 6.85). Similar findings were revealed in a study on the health status of refugees living in Alberta, where perceived economic hardship was associated with having mental health problems (Maximova and Krahn, 2010).

An important finding in the research is that mental health not only affects economic productivity, but is also a result of economic factors. The literature describes unemployment as an important stressor in elevating their risk of developing mental health problems, such as depression. Consequently, individuals with a mental health problem have a greater risk of being laid off work then those without one (Beiser, 2005). For this objective employment status was not in the final logistic model. It is strongly correlated with financial burden, which is the better predictor. Therefore, financial burden could be mediating the relationship between employment status and reporting mental health problems.

Reported income was not a factor in the logistic regression analysis possibly to the high number of missing responses, and strong correlation with other variables. However, previous studies found that immigrants and refugees with lower income were more likely to report having a mental health problem. This was most significant among immigrants and refugees in the two lowest income quartiles, where 79% of the total refugee population was concentrated in (Robert and Gilkinson, 2010). Qualitative studies on mental health problems among immigrants and refugees have also identified unemployment and financial problems as dominant concerns (Legault et al., 1997; O'Mahony and Donnelly, 2007).

The analysis of this objective further revealed that participants who attended specialized refugee clinics, compared to those who did not, had lower odds of reporting a mental health problem (OR = 0.13, 95% CI: 0.04-0.52). In a recent Canadian review on the common mental

health problems among immigrants and refugees, researchers found that refugee patients treated in specialized clinics had higher pre-immigration rates of exposure to post-traumatic stress disorder and violence. These problems were addressed and mediated early during arrival to Canada and were managed with cultural sensitivity and clinical care (Kirmayer et al., 2011; Redwood-Campbell, 2008; Kinzie, 2007; Kirmayer, 2010).

It has been suggested that the culturally sensitive care provided at these clinics, coupled with early assessment of mental health problems, consideration of pre-migration exposures, improves patient care, prevents development of other or more severe conditions, and allows for effective monitoring of the patient's condition (University of Alberta, 2010). Evidence showed that professional interpretation has improved clinical assessment and treatment effectiveness, when linguistic and cultural differences were barriers in patient/provider communication and understanding (Kirmayer et al., 2011).

English proficiency was also not included in the final model. Univariate analyses revealed it to be inversely correlated with source of care at a refugee clinic, and the multivariate analysis showed that it is a collinear variable. It can be further suggested that the relationship between English proficiency and reported mental health problems is mediated through the source of care at a refugee clinic variable. Given that linguistic and cultural factors have been listed as major barriers in the literature, such barriers may be less important when GARs receive care from specialized refugee clinics.

Ethnicity was also associated with reported mental health problems. In the literature ethnicity is identified as an important determinant of mental health services utilization. Certain ethnic groups face linguistic and cultural barriers, leading to susceptibility in developing severe mental health problems (Kirmayer, et al., 2011).

The analysis of this objective revealed that West Asians are more likely to report having a mental health problem than East and Southeast Asians (OR = 13.44). This finding is consistent with a Dutch population health study of refugees from Somalia, Iran and Afghanistan on self-reported mental health status and service use (Gerritsen et al., 2006). They found that respondents from Afghanistan and Iran had a greater risk of developing PTSD, depression and anxiety than those from Somalia (Gerritsen et al., 2006).

However, one must cautiously interpret such findings and take into account cultural differences in expressing mental health complains. Measuring mental health problems across different ethnic groups can be problematic because of internal validity issues arising from the measurement instrument (Gerritsen et al., 2006). Other problems can result from language and cultural differences. In some languages there may not be specific terminologies to express mental illnesses, and matters related to mental health may be considered taboo in some (Simich, 2009; Littlewood, 1998; Gerritsen et al., 2006).

Age did not have a statistically significant association with reporting a mental health problem due to either no differences between age groups, or a lack of statistical power. However, age is conceptualized as an important factor in mental health outcomes and service utilization. The literature has confirmed that refugees of all ages are at risk of developing mental health problems based on pre-migration experiences (Hyman, 2010). That is, if refugees of any age experienced traumatic events from war, loss, forced migration, torture or famine have greater risk of developing mental health problems such as depression, PTSD and anxiety (Hyman, 2010).

5.1.3 Research Objective 3: Factors Associated With Family Physician Visits among GARs

This analysis identified key variables associated with having more than three family physician visits in the previous year. GARs that were unemployed were more likely to report having more than three family physician visits. GARs with no English proficiency and no access to a regular medical doctor had lower odds of having more than three family physician visits in the past year.

The results indicate that GARs with no English proficiency are less likely to report having more than three family physician visits in the past year (OR = 0.34). Language barriers pose a common challenge for immigrants and refugees in accessing healthcare services (McKeary and Newbold, 2010; Harper and McCourt, 2002). Patients with low English proficiency or those communicating through an interpreter require additional time for good communication. The Canadian fee for service payment system for physicians encourages fast-paced delivery of service, making healthcare for patients with language barriers costly, problematic in terms of

availability of interpreters and time consuming (McKeary and Newbold, 2010; Harper and McCourt, 2002).

Several factors have been identified in the literature recognizing the language barriers faced by new immigrants and refugees with regard to utilization of health services. At the health systems level, these barriers are due to a lack of translation services. This results from constant shifts in responsibility for managing newcomer health, and lack of funding for interpretation services from different levels of government (McKeary and Newbold, 2010).

At the patient/physician level, interpretation service, is available, either through a professional interpreter, family member or friend. The literature has revealed that both forms of interpretation improve access, but there is reluctance to utilize services due to the fear of compromising confidentiality, comfort level to disclose personal information, and lack of consistency between professional interpreters (McKeary and Newbold, 2010; Tang, 1999).

A systematic review examined the perceptions and experiences of racialized immigrants in accessing primary care in Canada (Carrasco et al., 2009). They found that limited English skills not only led to poor patient-provider experiences, but also reduced the number of physician visits. The under-use of health services was due to language barriers or lack of confidence in the health care received when an untrained interpreter was used (Carrasco et al., 2009).

This analysis reveals that unemployment is a statistically significant factor in the model. Beiser (2005) has shown that unemployment plays a role in affecting both economic productivity and jeopardizing one's health. He showed that it takes as long as ten years for new immigrants to achieve economic stability (Beiser, 2005). Unemployment has also been identified as an important stressor for elevating the risk of mental and physical health problems.

Therefore, if unemployment aggravates health outcomes, it could lead to greater need for healthcare services than individuals who are employed. However, employed individuals may have less time to seek out healthcare, compared to those who are not; affecting the number of family physician visits they make in a year.

Education has been hypothesized as an important determinant of healthcare utilization. This analysis did not find a statistically significant association between education and number of physician visits. One potential explanation is that unemployment may be acting as a proxy for low education. The association between education and family physician visits may not be

statistically significant when employment status is entered into the model. Prior research reported statistically significant associations between education and family physician visits, even after adjusting for employment status (Simich, 2009; Beiser, 2005), but this does not true for all studies (Setia et al., 2010).

Unlike previous studies, age, sex and marital status were not associated with number of annual family physician visits. The literature has described age as an important determinant of healthcare utilization. Several studies of immigrants, refugees and the general population have reported that older age is associated with greater use of healthcare services (Lai and Chau, 2007; Garrett et al., 1998; Setia et al., 2010; Wu et al., 2005; Gerritsen et al., 2006). For example, Gerritsen (2006), found that among a sample of refugees, participants who were 38 or older had greater number of physician visits compared to those younger. In this analysis, participants aged 16 to 28 were less likely to have more than three family physician visits, but this association lacked statistical significance. In this analysis, there may be no difference between age groups, or there is a lack of statistical power. However, in a study of Ethiopian immigrants and refugees in Toronto age was not a statistically significant factor in predicting health service utilization (Fenta et al., 2007).

Sex is an important determinant utilization of health services. Several studies on immigrant and refugees reported females utilizing health services more than males (Gerritsen, et al., 2009; Fenta et al., 2007; Gerritsen et al., 2006; Garrett et al., 1998; Lai et al.,, 2007). In the current analysis, there was not a statistically significant association between sex and number of family physician visits. In the sample studied, there may be no true sex differences. One must consider differences in time period of arrival to Canada, country of origin, and ethnic makeup as factors which could potentially influence why there may not have been a difference. However, there may have been a lack of statistical power to detect differences in sex.

Marital status has been recognized as an important factor in health services utilization, where being married is correlated with the number of physician visits. The literature shows that marriage provides a point of entry into the healthcare system through pregnancy and childbirth (Jenkins et al., 1996).Other studies have found that being single or divorced/widowed, is negatively associated with utilization of health services (Kliewer and Kazanjian, 2000). In this analysis, there are a small number of participants who were divorced, widowed or separated, and

a relatively small number who are single. This lack of statistical significance may be due to the small number in this group.

5.1.4 Research Objective 4: Factors Associated With Having Difficulty Obtaining Primary Healthcare among GARs

The final objective of this study investigated factors associated with GARs having difficulty obtaining healthcare. Young age, and having no access to a regular medical doctor increased the likelihood of reporting difficulty obtaining healthcare. Not being married and living in the Fraser Health Region reduced the odds of having difficulty.

GARs with no access to a regular medical doctor are more likely to have difficulty obtaining healthcare compared to those with access (OR = 3.36). This finding is consistent with the literature, where Lambrew et al. (1996) found that individuals with a regular doctor had easier access to primary care than those without. Similarly, Hayward et al. (1991) and Jenkins et al. (1996) found having a regular doctor as one of the strongest predictors of access to health services. More recently Canadians without access to a regular family doctor were twice as more likely than those with access to report difficulties obtaining primary healthcare (Sanmartin and Ross, 2006).

The analysis also shows that GARs residing in the Fraser Health Region were less likely to have difficulties obtaining healthcare compared to those in the Vancouver Health region (OR = 0.23, 95% CI: 0.12 – 0.67). There is some evidence in the literature suggesting that geographic factors play a role in a patients' access to healthcare services. In a study conducted in Ontario, researchers explored access to healthcare among new immigrants living in two neighborhoods in Mississauga and Toronto. Geography was identified as one of the accessibility concerns (Asanin and Wilson, 2004).

There may be other reasons to explain differences between health regions and reported difficulty obtaining healthcare. First, health region may be a proxy for ethnicity, due to a strong correlation between ethnicity and health region (p < 0.001). This relationship indicates that among West Asians 89.3% of reside in the Fraser Health Region, compared to 10.7% residing in the Vancouver Health region.

Second, data exploration indicated lack of language barriers for West Asians in accessing healthcare. The questionnaire asked participants in what language they usually speak to health workers. Among West Asians, 92.3% of GARs reported speaking Persian, Dari or Farsi to healthcare workers, compared to only 36.3% of East and Southeast Asians reporting speaking Chinese, Karen, Burmese, Vietnamese or Jirai to health workers. The evidence in the data suggests that the majority of West Asians reside in the Fraser Health Region, where they have greater access to health services in their primary language, regardless of their proficiency in English. This may be due to a greater number of Persian, Farsi, Dari speaking health workers in the Fraser Health Region, and the presence of two specialized refugee clinics in the region.

Language difficulties are one of the key systemic barriers in obtaining healthcare (Harper and McCourt. 2002). Sanmartin and Ross (2006) found that new immigrants living in Canada less than 5 years were ten times more likely than Canadian-born respondents to identify language barriers as a reason for having difficulty obtaining healthcare. Such barriers not only impede access to healthcare, but affect the patient/provider relationship. For instance, when a patient's first or second language is not the same as the provider, certain words or expressions may have different meanings, leading to misunderstandings (Wine and Morrison, 1995).

Articulation of certain words to express feelings, symptoms or problems could be difficult for the patient when they are trying to communicate in their non-native language (Wine and Morrison, 1995). Furthermore, the way in which a patient reports pain can be different for people from different cultures, leading to misdiagnosis, mistreatment and under-utilization of services (Lee et al., 2001; Brach and Fraser, 2000; Koehn, 2005; Smedley et al., 2003; Van Ryn and Burke, 2000; McKeary and Newbold, 2010).

GARs 36 years of age or less were more likely to report difficulty obtaining healthcare compared to those 37 years or older (OR = 4.25). This finding is consistent with Sanmartin and Ross (2006), where participants younger than 35 years, and 35 to 64 had significantly higher odds of reporting difficulty accessing health services than those aged 65 and older (OR younger than 35 = 1.95, OR 35 to 64 = 1.90).

Research has suggested that differences in reporting difficulties are potentially the result of differential expectations across age groups (Sanmartin and Ross, 2006). Furthermore, research has shown that a patient's evaluation of their encounters and experiences with the healthcare

system is based on their personal expectations on when, how and quality of the services to be provided (Sanmartin and Ross, 2006; Newsome and Wright, 1999; Linder-Pelz, 1982).

Therefore, as individual expectations are shaped by culture, socio-demographic factors and economic status, such expectations are likely to play an integral role in an individual's conceptualization and understanding of whether or not they experienced difficulties obtaining healthcare (Sanmartin and Ross, 2006; Thompson and Sunol, 1995). Differences in age may be partially explained by higher healthcare service expectations among younger GARs. Sitzia and Wood (1997) found that older patients had more modest expectations of healthcare services received and were less likely to report difficulty obtaining care.

GARs who were not married were less likely to report difficulty obtaining healthcare compared to those who were married (OR = 0.35, 95% CI: 0.14 – 0.85). Marital status was not a statistically significant factor in two studies conducted among refugees in Toronto (Setia et al., 2010; Fenta et al., 2007).

One reason to explain findings in this current study can be a result of less household responsibilities for non-married participants. It has previously been reported that new immigrant families are larger than non-immigrants, and have greater responsibility in taking care of children and elder family members (Leduc and Proulx, 2004). Consequently, such differences in family dynamics could result in greater contact with the healthcare system compared to individuals who are not married (Sanmartin and Ross, 2006; Advisory Committee on Women's Health Surveillance, 1999; Mustard et al., 1998; Leduc and Proulx, 2004). Differences in expectations may also be present among married and non-married GARs. Research has shown that married immigrant and refugee parents have greater concerns and expectations for the healthcare of their children than for themselves (Leduc and Proulx, 2004; Wahoush, 2009).

The association between sex and difficulties obtaining healthcare was not statistically significant. Sex, however, has been hypothesized as an important factor in accessing healthcare services. Sanmartin and Ross (2006) found that women were more likely to report difficulty accessing healthcare than men (OR = 1.33). The differences in sex may be the result of differences in contact with the healthcare system (Kazanjian et al., 2004; Sanmartin and Ross, 2006). Women have greater contact because they are more likely than men to seek care for their children and elder family members (Sanmartin and Ross, 2006; Advisory Committee on

Women's Health Surveillance, 1999; Mustard et al., 1998). Consequently, women have more opportunities than men to experience difficulties.

These findings are also consistent with a multi-site, qualitative study on new immigrants and refugees in Canada (Stewart, 2003). Refugee women who were pregnant or had very young children had greater difficulties accessing healthcare and other support services. These difficulties coupled with cultural and religious preferences for wanting female physicians make access more difficult to obtain (Stewart, 2003). In this study, the lack of a statistically significant association may be due to a lack of statistical power to detect differences between males and females.

The analysis did not find a statistically significant association between life stress and reported difficulty in obtaining healthcare. However, life stress may potentially be an important variable, where it may act as a proxy for mental health status. Some studies have used self-reported life stress as an indicator for mental health outcomes (Robert and Gilkinson, 2010). The literature has confirmed that immigrants and refugees with mental health problems have certain barriers in accessing mental health services. Two key barriers have been identified as service availability and service accessibility which includes linguistic and culture barriers (Sadavoy et al., 2004). Life stress may be a potentially important variable, and the lack of statistical significance may be the result of a lack of statistical power to detect differences of this magnitude.

Finally, the literature has highlighted the importance of the experiences new immigrants and refugees face in obtaining health services, once they are able to access it. For instance, there is evidence in the literature that the quality and satisfaction of healthcare received, negative experiences faced by new immigrants and refugees, perceived discrimination, as well as uncomfortable patient/provider relationships, can influence ones feelings, perceptions and experience regarding the level of difficulty in receiving that healthcare (Sanmartin and Ross, 2006; McKeary and Newbold, 2010; Carrasco et al., 2009; Hyman, 2010; Surrmond et al., 2011; Johnson et al., 2004; Pollock et al., 2010).

5.2   Study Strengths and Limitations

This study has several strengths. First, the dataset provided a unique opportunity to examine the socio-demographic, health related, and utilization characteristics of GARs. Second, the study focused specifically on GARs, thereby avoiding the confounding effects of other immigration classes or refugee groups such as asylum seekers. The literature has emphasized that the health needs and characteristics of GARs differ from other immigrants, and this is particularly important after the IRPA amendment in 2002. This research provided an opportunity to study GARs who settled in British Columbia after this policy change. A third study strength was the availability of trained interpreters, minimizing language barriers that some GARs could have faced in participating in this study. Finally, the survey questionnaire was externally validated by experts in the field working with refugee clients at the Bridge Clinic.

There are several limitations in this study that need to be acknowledged. First, there may be a selection bias, since the inclusion criteria stated that GARs who came to Canada between 2005 and 2007, who attended the Bridge Clinic were eligible for the study. Therefore, all other GARs were excluded, which accounts for approximately 16% of GARs who arrived in Canada, and landed in BC during that time period. This limits generalizing findings to all GARs in BC, because there may be differences in the socio-demographic and characteristics of health service utilization among GARs who did not attend the Bridge Clinic, as opposed to those who did. Second, given the relatively small sample size, there may also be limitations in generalizing the findings to all GARs living in BC and Canada. The study had a low response rate, either due to refusal to participate, incorrect address and telephone numbers, or absence from home during the day and/or evening when contacted by interpreters. This limitation is not unique to this study, where previous refugee health research had also reported low contact rates (Fenta et al., 2007; Gerritsen et al., 2005). Unwillingness to participate may have biased the findings. For example, people with certain health problems, financial backgrounds or from different ethnic groups could have volunteered to participate. They may also have been unwilling to participate due to fear of being interviewed. This is a common problem cited in previous refugee health studies (Gerritsen et al., 2005; van den Heuvel, 1998; Roodenrijs et al., 1998; Maximova and Krahn, 2010).

Another limitation was the possibility for recall bias, due to the self-reporting nature of the interviews. Third, the study design was cross-sectional, and causation could not be established. Temporality issues that arise in cross-sectional studies make the interpretation of multivariate

analyses difficult. Finally, the fourth limitation was instrumentation, which could pose a possible threat to the internal validity of the study. The questions of this study were drawn from the CCHS and WBLSM. The way this survey was conducted may have been different than the way Statistics Canada runs the CCHS. Factors that could influence such differences are time, question phrasing, back-translation, language, and differing level of expertise in interpretation. Despite efforts to accurately translate the questions, there may have been differences in the cultural interpretation of the question. The current study consisted of a heterogeneous group, and the way in which participants responded to the survey may have been different. This highlights previous concerns raised by Gerritsen et al. (2005) as to whether differences among ethnic groups, or between men and women exist; or whether there is another explanation for results. For example, unique pre-migration experiences, cultural or gender role differences may influence the way in which a participant expresses their physician and mental health or reported difficulties in obtaining healthcare.

5.3   Policy Implications and Directions for Future Research

5.3.1   Policy Implications

Many aspects of health care delivery in Canada are under the jurisdiction of provinces and territories, however, the federal government plays specific roles in fulfilling important policy commitments related to the health care system (Health Canada, 2004). These roles include setting and administering national principles for the health care system, and assisting in the financing of provincial and territorial health care services, which include cash and tax transfers to help levy health care service fees (Health Canada, 2004). This study's findings highlight how collaboration across all levels of government can affect GARs health. Special consideration is given to policies that: 1) influence future research, 2) impact access to health services, and 3) affect the resettlement of GARs.

<u>Policies Influencing Future Research</u>

An important policy issue that requires attention includes the paucity of data on immigrant and refugee health. At the federal level, the dissemination and sharing of information between federal and provincial governments, healthcare practitioners, NGOs, interest groups and the public should be prioritized. The improvement of data sharing across departments and agencies can better assist to develop, implement and evaluate effective and meaningful policies on the health care of new immigrants and refugees in Canada (Gagnon, 2002).

<u>Policies Impacting Access to Health Services</u>

Predisposing, enabling and needs-based variables have an impact on access and utilization of health services. For example, this study identified language as an important barrier to service utilization. All government tiers must collaborate to develop policies and programs to address this barrier. This can include federal funding through cash transfers to provinces and territories to help carry forward programs and services aimed to improve access and utilization of health services by GARs. For example, the Health Care Policy Contribution Program (HCPCP) is designed by Health Canada to promote policy research, analysis, evidence-based pilot projects and to evaluate current and emerging health care system priorities (Health Canada, 2011). Contribution programs of this nature have been recognized as key policy levers for the federal government in supporting innovations in health care. Through the HCPCP, contributions can fund provincial and territorial governments to develop, implement and disseminate best practices and strategies for effective health care delivery to GARs (Health Canada, 2011).

In British Columbia, the Provincial Health Services Authority (PHSA) offers a Provincial Language Service (PLS) program designed to support organizations to provide services to linguistic and culturally diverse populations (PHSA, 2010). Funding from the HCPCP can include the training, development and implementation of local and provincial interpretation services that are *standardized* and *regulated* in the professional training of interpreters. Further, the province should be given financial assistance in hiring ethnic focused staff in health services who can navigate new immigrants and refugees through the health care system (Gagnon, 2002; PHSA, 2010). As the PLS program is under the auspices of the PHSA, its services are province-wide, and connected to local communities who work with regional health authorities (e.g. Fraser and Vancouver Coastal Health) to provide professionally standardized interpretation services

(PHSA, 2010). An increase in the number of trained, professional interpreters can alleviate some of the language barriers GARs face.

<u>Policies Affecting GARs Resettlement</u>

The literature described good health as a positive and important predictor for settlement in Canada. Under the IRPA, the resettlement assistance program provides immediate and essential needs for resettled refugees, which include services such as language learning & skill development, employment-related services and community connections (Citizenship and Immigration Canada, 2010). This work is carried out through CIC funding to provinces who work with settlement agencies. However, challenges in addressing the health and settlement needs of GARs, such as language barriers, still exist (Citizenship and Immigration Canada, 2010).

As funding for the resettlement program is federally provided and managed through provinces, interventions at the community level ought to be piloted, with their impact on settlement, integration and utilization of health services monitored. For example, the use of participatory educational methods early in settlement is a program that could be piloted in various health regions where large numbers of GARs settle. This strategy could include the use of public outreach sites such as English as a Second Language (ESL) classes, places of worship, and ethnic/community health centres.

Some interventions have been used to address issues pertaining to English proficiency, physical and mental health literacy. For example, the BC Health Literacy Research Team has a project focusing on Farsi speakers in developing health literacy skills through ESL classes. The study found that the specialized ESL training led to greater English proficiency and health literacy for both men and women. It also positively affected health status, management of mental health problems and finding employment. A longitudinal study among Southeast immigrants and refugees in Canada offered similar results (Poureslami et al., 2007; Simich, 2009; Beiser and Hou, 2001).

There is also a need to provide programs that improve the physical and mental health outcomes specific to women. In Ontario, a pilot project with Somali refugee women set up languages classes, and provided childcare services so women could participate in educational opportunities (Stewart, 2003). Other initiatives under this pilot intervention included developing

programs aimed at improving the physical health of women through physical activity classes, and creating support groups for newly arrived female refugees (Stewart, 2003). This type of intervention was found to help support, integrate and improve language skills for women, while boosting success in finding employment, and leading to overall positive health outcomes. Federal funding to support such initiatives should be closely tied with provincial and community settlement agencies to ensure resources are efficiently managed, and to ensure best practice in the delivery and provision of services. The inclusion of women from different ethnic groups in the development of culturally acceptable interventions can aid in the success of their settlement.

5.3.2 Directions for Future Research

The information obtained in this study highlighted some of the challenges GARs face in their settlement through the lens of the healthcare system. However, the information is based on self-reported data. Future research should look into examining how accurately self-reports of GARs estimate health status and utilization rates. This could be accomplished through validation studies exploring the sensitivity and specificity of self-reporting among GARs in BC and across Canada. For example, comparing responses to medical records, and linking data with federal and provincial databases are approaches that could be taken. However, with the paucity of research in this area, there exists little information on the health and well-being of GARs (Gagnon, 2002). Existing federal and provincial databases are limited in assessing the extent to which immigration classes; migration history and post-migration settlement affect health status and utilization of health services (Gagnon, 2002). This creates difficulty in developing, implementing and evaluating policies. Future research should expand data linkage to include information on immigration. This can be achieved through collaboration with immigration departments such as CIC and other health agencies.

Since cross-sectional studies provide only a snapshot, future studies should consider longitudinally studying GARs early from arrival to Canada. This could include examining pre-migration stress, and post-settlement factors, and longitudinally examine changes in their health, access and utilization of health services. Findings from longitudinal analyses can inform programs, policies and best practice guidelines.

There are challenges in conducting research among new immigrants and refugees. Ogilvie et al. (2008) suggest several approaches to consider such as 1) insider-outsider status of the

researchers; 2) sample selection and recruitment strategies, and 3) attention to issues pertaining to language and cultural differences (Ogilvie et al., 2008).

The insider-outsider issue is controversial among researchers in immigrant and refugee health. Ogilvie et al. (2008) define an insider and outsider as:

> *"...someone who shares similar knowledge and background, whereas an outsider is someone who does not. In the context of newcomer research, an insider is generally a researcher who shares the same country of origin or ethnocultural identity as the study population…"* (Ogilvie et al., 2008, p. 66)

The issue centers on whether insiders can be objective and detached in the prejudices within the group they are studying. Insiders argue that outsiders cannot truly understand or empathize with the cultural values and experiences of the group being studied (Ogilvie et al., 2008; Gans, 1999; Jacobson et al., 2005; Kusow, 2003; O'Connor, 2004).

Ogilvie et al. (2008) recommend community collaboration, such as working with newcomer settlement agencies, the development of insider-outsider research teams, using community advisory boards and partnering with key stakeholders in participatory action research. This can mitigate the effects of language and cultural barriers, assist in the development of culturally sensitive research instruments, and facilitate interpretation and dissemination of findings with help from ethnocultural and newcomer insiders (Ogilvie et al., 2008; Andrews et al., 2004; Crist and Escandon Dominguez, 2003; Flaskerud and Anderson, 1999; Flaskerud and Nyamathi, 2000; Kao et al., 2004; Kirkham and Anderson, 2002; Lindenberg et al., 2001; Wilgerodt, 2003). For example, in the present study, several systemic barriers were identified in reporting good health and accessing health services such as English proficiency. Future research should develop pilot studies on interventions to address such barriers, using participatory action research and effective community collaboration.

Sample selection and recruitment are important challenges in immigrant and refugee health research. There is reported reluctance by potential participants to take part in surveys (Ogilvie et al., 2008). Ogilvie et al. (2008) describes this reluctance as cultural safety concerns stemming from a lack of trust, fear and uncertainty as to how the collected information will be used.

Community collaboration, presentations at places of worships, community meetings, cultural events, and snowball sampling have been reported to work and increase response rates among new immigrants and refugees (Ogilvie et al., 2008; Penrod et al., 2003).

Another approach to consider is the quality and process of translating written content. This includes study questionnaires, consent forms, information sheets, and the verbal communication (Ogilvie et al., 2008). Good quality interpretation is a crucial and critical aspect in conducting interviews, analysis and interpretation of the findings (Ogilvie et al., 2008). The literature describes conflicts which could arise from inaccurate translation of concepts. These problems typically arise from a lack of familiarity with biomedical terminology or the research process, and the potential for the interpreter to unconsciously modify responses in the translation process (Elderkin-Thompson et al., 2001; Farooq and Fear, 2003; Gerrish, 2001; Kaufert and Koolage, 1984; Kaufert and Putsch, 1997; Ogilvie et al., 2008).

Future research should consider creating questionnaires, information sheets and recruitment materials that are culturally meaningful and comparable when translated across different groups (Ogilvie et al., 2008; Bloch, 2004; Hendrickson, 2003; Kao and Travis, 2005). Concepts vary between different cultures, and may not have the same meaning. Researchers could form an expert committee to develop standardized research instruments that are culturally safe and comparable across languages (Ogilvie et al., 2008; Beck et al., 2003; dela Cruz et al., 2000; Gagnon et al., 2004; Solan-Flores et al., 2002).

5.4   Concluding Remarks

This study provided an overview on the demographics of GARs, the major health issues they experience, and factors that determine their access and utilization of health services. This study examined factors that impact health status, reported mental health problems, family physician visits, and difficulties obtaining healthcare. Results from the analyses identified a number of socio-demographic factors and systemic barriers affecting both physical & mental health status, as well as healthcare access and utilization characteristics. This study highlights the how the GAR population is not a homogeneous group, and that their health status, healthcare needs and healthcare experiences result from various factors. These include country of origin, culture, language, pre-migration experiences, and post-migration settlement. Researchers, policy makers, healthcare practitioners and community workers must acknowledge such differences, and take

into consideration both the pre-arrival history and post-arrival settlement in Canada when assessing health status. Moreover, collaboration and integrated action across all levels of government is needed to develop meaningful policies and programs that are culturally acceptable and help improve health outcomes while mitigating the barriers that impede access to health services.

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Appendix A: Telephone Survey Questionnaire

1. PARIS # _____

2. Name: Last_____ First_____

3. What is your age? [age of respondent]

    |_|_| Age in years   *Min=0 & Max=130*

                                             (DK, R are not allowed)

                                             CCHS2008_ANDB_Q01

Respondent must be older than 16 years. If not, end the interview.

4. Enter gender of respondent:

    Interviewer: If you have this information on the participant list, you can record it from that list. If you don't have the information from a list, apologize for the fact that this question may seem obvious but explain that it is necessary to ask this specific question in the survey.
    1. Male

    2. Female

    3. Other

5. In general, would you say your health is:

 Interviewer: Read categories to respondent and ask them to choose

    1. Excellent?

    2. Very good?

    3. Good?

    4. Fair?

    5. Poor?

    999. DK or R   *CCHS2008_GEN_Q01*

6. Compared to one year ago, how would you say your health is now? Is it:

Interviewer: Read categories to respondent and ask them to choose

     1. Excellent?

     2. Very good?

     3. Good?

     4. Fair?

     5. Poor?

     999. DK, R   *CCHS2008_GEN_Q02*

Skip to question 8 if the answer to both 5 & 6 is Excellent

7. What is the main reason why you consider that your health is not excellent? *(Circle all that apply)*

     1. Chronic physical condition or disease that worsened (more than 3 months)

     2. New physical condition or disease

     3. Problem related to your stress level or worry

     4. Inability to get healthcare

     5. Inability to pay for medicine or other treatment

     6. Other: Explain_____

     999. DK, R

8. Thinking about the amount of stress in your life, would you say that most days are:

Interviewer: Read categories to respondent and ask them to choose

     1. Not at all stressful

     2. Not very stressful

3. A bit stressful

4. Quite a bit stressful

5. Extremely stressful

999. DK, R   *CCHS2008_GEN_Q07*

9. Have you had a medical condition for more than 3 months?

1. Yes

2. No **[If No, Skip to #12]**

999. DK, R   *WB modified*

10. Has this medical condition been diagnosed by a health professional?

1. Yes

2. No

999. DK, R   *WB modified*

11. What type of medical condition or disability affects you? (Circle all that apply)

1. Asthma

2. High blood pressure

3. Chronic bronchitis or emphysema

4. Diabetes

5. Heart disease

6. Cancer

7. Stomach or intestinal problem

8. Stroke or paralysis

9. Joint pain (in the limbs, back, neck or thorax)

10. Anxiety, worry, too much anger or sadness

11. Other, explain:_____

999. DK, R

WB modified +CCC31/72/91a/101/

121/131/141/151/280

12. Do you have a regular medical doctor?

    1. Yes *[If yes, Skip to #14]*

    2. No

    999. DK, R   *CCHS2008_HCU_1AA*

13. Why do you not have a regular medical doctor? *[Do not read the answers – allow the respondent to answer and then decide in which category the answer fits. If it does not fit into a category then circle "other" and specify the answer in the blank space. Circle all that apply]*

    1. No medical doctors available in the area

    2. Medical doctors in the area are not taking new patients

    3. Have not tried to contact one

    4. Had a medical doctor who left or retired

    5. Visited a medical doctor but was refused entry into practice

    6. No medical doctor speaks my language

    7. Other, specify:_____

    999. DK, R   Modified *CCHS2008_HCU_Q01AB*

14. Where do you usually go when you are sick? *[Circle the most common places that the respondent visits. We do not wish to know ALL places just the most common ones]*

　　1. Doctor's office

　　2. Community health center

　　3. Walk-in clinic

　　4. Appointment clinic

　　5. Telephone health line

　　6. Hospital emergency room

　　7. Hospital outpatient clinic

　　8. Religious leader

　　9. Family member

　　10. Traditional healer

　　11. Other, specify:_____

　　999. DK, R   Modified *CCHS2008_HCU_Q01A2*

15. Where do you usually go when you need advice about your health? *[Circle the most common places that the respondent uses to obtain information on health on disease prevention, or for vaccinations. We do not wish to know ALL places just the most common ones. Circle all that apply.]*

　　1. Doctor's office

　　2. Community health center

　　3. Walk-in clinic

　　4. Appointment clinic

　　5. Telephone health line

6. Hospital emergency room

7. Hospital outpatient clinic

8. Religious leader

9. Family member or friend

10. Traditional healer

11. Other, specify:_____

999. DK, R   *Modified CCHS2008_HCU_Q01A2*

16. What language(s) do you usually speak to these health workers? *[Circle all that apply]*

    1. English

    2. French

    3. Arabic

    4. Chinese

    5. Karen or Burmese

    6. Vietnamese

    7. Jirai

    8. Persian, Farsi, Dari

    9. Sudanese

    10. Ethiopian

    11. Urdu

    12. Hungarian

    13. Romanian

14. Russian

15. Hindi or Punjabi

16. Other, specify:_____

999. DK, R

Modified CCHS2008_HCU_Q01AC

17. Have you seen or talked to a family doctor in the past 12 months about your health?

1. Yes

2. No   *[If No, Skip to Q19]*

999. DK, R

18. How many times in the past 12 months? [If the answer is 2-3 then chose the higher number. If the answer is 5-9, chose the average = 7]

|_|_|_| times (min=1; max=366)

CCHS2008_HCU_Q02A1

19. In the past 12 months did you ever experience any difficulties getting the care that you or your family needed?

1. Yes

2. No   *[If No, Skip to Q21]*

999. DK, R   *Modified CCHS2008_ACC_Q51*

20. What type of difficulties did you experience in getting care that you needed? *(Circle all that apply) [Do not read the answers. The patient should identify the greatest difficulties for them without being prompted by the interviewer.]*

1. Difficulty contacting a physician

2. Difficulty getting an appointment

3. Do not have a regular physician or care provider

4. The wait for an appointment was too long

5. The wait at a clinic or emergency room was too long

6. The service was not available

7. Could not get transportation

8. Language problem

9. Cost was too high

10. Did not know where to go

11. Unable to leave the house because of health problem

12. Unable to leave the house because of responsibilities

13. Other, specify:_____

999. DK, R   *Modified CCHS2008_ACC_Q53*

Now I will ask you some questions related to your training, your job, your home and your finances. We ask these questions because research has shown that these answers help explain how people get healthcare. Your answers to these questions will help us understand better some of the difficulties faced by you and other refugees and the strengths that you and refugees possess.

21. In what languages can you carry on a conversation?

1. English

2. French

3. Arabic

4. Chinese

5. Karen or Burmese

6. Vietnamese

7. Jirai

8. Persian, Farsi, Dari

9. Sudanese

10. Ethiopian

11. Urdu

12. Hungarian

13. Romanian

14. Russian

15. Hindi or Punjabi

16. Other, specify:_____

999. DK, R   *Modified CCHS2008 SDC_Q5*

22. Can you read the newspaper in your own language?

1. Yes, easily

2. Yes, with difficulty

3. No

999. DK, R   *WB modified*

23. Have you ever attended school in any country including Canada? *[excluding ESL]*

1. Yes

2. No

999. DK, R   *WB modified*

24. What is the highest grade you have completed in school? Or which level? *[Grade or level depends on country]*

    0. None

    1. Elementary School (level 1-6)

    2. Secondary School (level 1-6)

    3. Vocational School (level 1-5)

    4. University (level 1-6)

    5. Post-Graduate Degree (level 1-6)

    999. DK, R   *WB modified*

25. What is your marital status? Are you:

    1. married?

    2. widowed?

    3. divorced or separated?

    4. single, never married?

    999. DK, R   *(Variation CCHS2008/MSNC_Q01)*

26. Have you worked at a job or business at any time in the past 12 months?

    1. Yes

    2. No   **[If No, skip to#28]**

    999. DK, R   *CCHS2008 GEN_Q08*

27. About how many hours each week do you usually work at your job or business? *[the job or business from #26]*

    |_|_|_| hours

(min=1; max=168)

999. DK, R   *CCHS2008_LF2_Q5*

28. How many bedrooms are there in the place you live*? [Record only the number of bedrooms in the dwelling; record '0' if there are no enclosed bedrooms]*

|_|_| Number of rooms [min=0; max=20]

999. DK, R   *CCHS2008*

29. How many people usually live in your house?

|_|_| people of all ages

30. Is this home owned by a member of this household? *[i.e. someone living in the house]*

1. Yes

2. No

999. DK, R   *CCHS2008*

31. Which of the following do you own? *(Circle all that apply)*

1. Telephone

2. Cell phone

3. Radio

4. Computer

5. Television

6. Bicycle

7. Motorcycle

8. Car or truck

9. Sewing machine

10. Home in Canada

11. Home in other country

999. DK, R

32. Thinking about the Total income for all household members, from which of the following sources did your household receive any income in the past 12 months? *[Circle all that apply. Do not read the answers. Allow the respondent to answer and then decide in which category the answer fits. Note that household members may include immediate/extended family members, friends, roommates or other.]*

    1. Wages and salaries

    2. Income from self-employment

    3. Savings

    4. Employment insurance

    5. Worker's compensation

    6. Pension plan

    7. Welfare

    8. Child support

    9. Alimony

    10. Family living outside of Canada

    11. Other, specify:_____

    12. None

    999. DK, R   *Modified CCHS2008_INC_Q1*

33. What was the **main** source of income for the entire household over the last 12 months? *[Do not read the answers. Allow the respondent to answer and then decide in which category the*

*answer fits. If possible circle **only one** answer. If the respondent has clearly stated that 2 or 3 sources of income are represented equally, then circle more than one and clearly note this beside the answer.]*

1. Wages and salaries

2. Income from self-employment

3. Savings

4. Employment insurance

5. Worker's compensation

6. Pension plan

7. Welfare

8. Child support

9. Alimony

10. Family living outside of Canada

11. Other, specify:_____

12. None

999. DK, R   *Modified CCHS2008_INC_Q2*

34. What is your best estimate of the Total income before taxes and deductions, of all household members from all sources in the past 12 months?

1. Less than $9,999 (CDN)

2. $10,000 – $19,999

3. $20,000 – $29,999

4. $30,000 – $39,999

5. $40,000 – $49,999

6. $50,000 – $59,999

7. $60,000 – $69,999

8. $70,000 – $79,999

9. $80,000 or more

999. DK, R

Modified *CCHS2008_INC_Q3*

35. Which of the following statements best describes the food eaten in your household in the past 12 months?

1. You and others in the household had enough of the kinds of food you wanted to eat

2. You and others in the household had enough to eat but not always the kinds of food you wanted to eat

3. Sometimes you and others did not have enough to eat

4. Often you and others did not have enough to eat

999. DK, R   *CCHS2008_FSC_Q010*

36. How many times in the last 12 months have you been able to completely pay off all of your monthly bills? [e.g. 12 means you have paid off all bills each month for 12 months]

1. 12

2. 10-12

3. 5-9

4. 1-4

5. 0

999. DK, R

37. Would you be willing to participate in a small group discussion in your own language where you would discuss with other refugees how to improve healthcare for refugees coming to Canada after they finish with Bridge Clinic? The discussion will last two hours and be led by a trained counsellor. The discussion group will include 5-7 other refugees who have completed this survey. Together you and they will discuss, in detail, challenges and successes in accessing health-care services in your communities, how you have all coped with the challenges and your ideas about how these challenges may be solved.

1. Yes *[If Yes, fill out the verbal consent form for FGDs]*

2. No

999. DK, R

38. For interviewer: record the language of this interview:

1. English

2. French

3. Arabic

4. Chinese

5. Karen or Burmese

6. Vietnamese

7. Jirai

8. Persian, Farsi, Dari

9. Sudanese

10. Ethiopian

11. Urdu

12. Hungarian

13. Romanian

14. Russian

15. Hindi or Punjabi

16. Other, specify:_____

CCHS2008_ADM_N12

Appendix B: Results of Univariate Analysis among all Independent Variables

Variable Name	*p*-value
Age + Marital Status	0.000
Age + Education	0.020
Age + Reported Income	0.018
Age + English Proficiency	0.001
Age + Health Status Now	0.002
Age + Health Status 1 Year Ago	0.003
Age + Health Condition > 3 Months	0.004
Age + Diagnosed Health Condition	0.003
Sex + Ethnicity	0.012
Sex + Marital Status	0.017
Sex + Employment Status	0.004
Sex + Reported Income	0.016
Sex + Access to a Regular Doctor	0.007
Ethnicity + Education	0.007
Ethnicity + Employment Status	0.004
Ethnicity + Main Source of Income	0.004
Ethnicity + Access to a Regular Doctor	0.000
Ethnicity + Health Region	0.000
Ethnicity + Financial Burden	0.001
Ethnicity + vehicle	0.043
Ethnicity + Source of Care When Sick	0.000
Marital Status + Education	0.016
Marital Status + Main Source of Income	0.006
Marital Status + English Proficiency	0.004
Marital Status + Food Security	0.01
Marital Status + vehicle	0.000
Marital Status + Health Status Now	0.042
Marital Status + Health Status 1 Year Ago	0.042
Education+ Employment Status	0.027
Education + Main Source of Income	0.001
Education + English Proficiency	0.000
Education + Health Region	0.022
Education + Health Status 1 Year Ago	0.020

Variable Name	*p*-value
Employment Status + Main Source of Income	0.000
Employment Status + Reported Income	0.001
Employment Status + Access to a Regular Doctor	0.032
Employment Status + Source of Care When Sick	0.038
Reported Income + Reported Income	0.020
Reported Income + English Proficiency	0.000
Reported Income + Food Security	0.042
Reported Income + Vehicle	0.027
Reported Income + Source of Care When Sick	0.005
Reported Income + Health Status Now	0.042
Reported Income + Health Status 1 Year Ago	0.007
Reported Income + Health Condition > 3 Months	0.014
Reported Income + Diagnosed Health Condition	
Reported Income + Health Region	0.000
Reported Income + Financial Burden	0.003
Reported Income + Food Security	0.017
Reported Income + Vehicle	0.000
English Proficiency + Health Status Now	0.002
English Proficiency + Life Stress	0.032
Access to a Regular Doctor + Source of Care When Sick	0.000
Access to a Regular Doctor + Health Condition > 3 Months	0.02
Access to a Regular Doctor + Diagnosed Health Condition	0.008
Health Region + Financial Burden	0.032
Health Region + Food Security	0.001
Health Region + vehicle	0.001
Health Region + Source of Care When Sick	0.008
Health Region + Health Condition > 3 Months	0.030
Financial Burden + Food Security	0.002
Financial Burden + Health Status Now	0.010
Financial Burden + Health Status 1 Year Ago	0.011
Financial Burden + Life Stress	0.019
Financial Burden + Diagnosed Health Condition	0.040
Food Security + Life Stress	0.002
Vehicle + Source of Care When Sick	0.039
Health Status Now + Health Status 1 Year Ago	0.000
Health Status Now + Life Stress	0.000

Variable Name	*p*-value
Health Status Now + Health Condition > 3 Months	0.000
Health Status Now + Diagnosed Health Condition	0.000
Life Stress + Health Condition > 3 Months	0.025
Life Stress + Diagnosed Health Condition	0.046
Health Condition > 3 Months + Diagnosed Health Condition	0.000

Appendix C: Assessing Model Fit

Table C.1 Multivariate logistic regression model with excellent health assessment of fit

Measure	Results	Conclusions/Notes
Studentized Residuals	2.1% (3/143) of studentized residuals have an absolute value above 1.96 and no cases above the absolute values of 2.58 and 3.29	< 5.0% of cases in the model have a studentized value above 1.96 suggesting there is good evidence model is a good representation of the data (Field, 2009).
Cook's Distance	All < 1.0	Indicates no individual cases with significant influence on the model
Leverage Values	Only 1 case outside the expected range of ± 3 x 0.0420	Suggests the individual cases do not exert an undue influence over the model (Field,2009)
DFBetas	All < 1.0	Indicates no individual cases with significant influence on the model
Variance Inflation Factors	All < 10	Suggests assumption of non-multicollinearity is satisfied

Table C.2 Multivariate logistic regression model with reported mental health problems assessment of fit

Measure	Results	Conclusions/Notes
Studentized Residuals	4.2% (6/142) of studentized residuals have an absolute value above 1.96 and no cases above the absolute values of 2.58 and 3.29	< 5.0% of cases in the model have a studentized value above 1.96 suggesting there is good evidence model is a good representation of the data (Field, 2009).
Cook's Distance	Only 1 case > 1.0 (1.04321)	Indicates 1 case may have influence on the model
Leverage Values	6 cases outside expected range of ± 3 x 0.0352	Suggests there are a some individual cases which have an effect on the outcome of fitting the model Cases with large leverage values not expected to have large influence on regression coefficients (Field, 2009)
DFBetas	Only 2 cases > 1.0 (1.02 and 1.06)	Two cases close to the cutoff value with potential influence on the model
Variance Inflation Factors	All < 10	Suggests assumption of non-multicollinearity is satisfied

Table C.3 Multivariate logistic regression model with family physician visits assessment of fit

Measure	Results	Conclusions/Notes
Studentized Residuals	2.1% (3/146) of studentized residuals have an absolute value above 1.96 and no cases above the absolute values of 2.58 and 3.29	< 5.0% of cases in the model have a studentized value above 1.96 suggesting there is good evidence model is a good representation of the data (Field, 2009).
Cook's Distance	All < 1.0	Indicates no individual cases with significant influence on the model
Leverage Values	Only 1 case outside the expected range of ± 3 x 0.0479	Suggests the individual cases do not exert an undue influence over the model (Field,2009)
DFBetas	All < 1.0	Indicates no individual cases with significant influence on the model
Variance Inflation Factors	All < 10	Suggests assumption of non-multicollinearity is satisfied

Table C.4 Multivariate logistic regression model with reported difficulty obtaining healthcare assessment of fit

Measure	Results	Conclusions/Notes
Studentized Residuals	3.5% of studentized residuals have an absolute value above 1.96 and no cases above the absolute values of 2.58 and 3.29	< 5.0% of cases in the model have a studentized value above 1.96 suggesting there is good evidence model is a good representation of the data (Field, 2009).
Cook's Distance	All < 1.0	Indicates no individual cases with significant influence on the model
Leverage Values	Only 1 case outside the expected range ± 3 x 0.0350	Suggests the individual cases do not exert an undue influence over the model (Field,2009)
DFBetas	All < 1.0	Indicates no individual cases with significant influence on the model
Variance Inflation Factors	All < 10	Suggests assumption of non-multicollinearity is satisfied