

Understanding Chronic Disease Management in Older Adults During the COVID-19 Pandemic

by

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BSc., University of British Columbia, 2018

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF

MASTER OF SCIENCE

in

THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES

(Rehabilitation Sciences)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

October 2021

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Understanding Chronic Disease Management in Older Adults During the COVID-19
Pandemic

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ABSTRACT

Background

Chronic diseases are prevalent in Canada's aging population, creating importance for older adults (age ≥ 65 years) to practice positive health behaviours (e.g., physical activity, healthy diet) for chronic disease management. However, novel coronavirus (COVID-19) prevention strategies of quarantining, social isolation, and physical distancing may compromise one's ability to manage health and thus, increase risk of adverse health events.

Purpose

To develop an understanding of chronic disease management in community-living older adults (age ≥ 65 years) during the COVID-19 pandemic. This included quantitatively evaluating a student-led Community Outreach telehealth program for Covid education and Health promotion (COACH) (Chapter 2), and qualitatively exploring the management strategies of older adults during COVID-19 and COACH participation (Chapter 3).

Methods

Chapter 2: In a single-group, pre-post study ($n = 75$), multiple paired sample t-tests were used to examine COACH's effects on: (1) health directed behaviour (primary outcome); (2) perceived depression, anxiety, and stress; (3) social support; (4) health-related quality of life; (5) health promotion self-efficacy; and (6) self-management indicators.

Chapter 3: A subset of COACH participants ($n = 24$) participated in semi-structured interviews. Interpretive description was the guiding methodological framework, and thematic analysis was performed to categorize the data.

Results

Chapter 2: Participants' mean age was 72.4 years (59% female), with 80% reporting two or more chronic conditions. There were significant improvements in health directed behaviour ($p < .001$, $d = 0.45$). After applying Bonferroni correction on secondary outcomes, results showed significant improvement in self-efficacy ($p < .001$, $d = 0.44$) and significant decrease in mental health-related quality of life ($p < .001$, $d = -1.69$).

Chapter 3: Participants' mean age was 73.4 years (58% female) with 75% reporting two or more chronic conditions. Participants described purposes for optimizing their health, maintaining a sense of control, and using social support to optimize their management efforts. COACH further supported participants during COVID-19 through coach interactions and knowledge and skill development.

Conclusion

Chronic disease management in older adults can be described with identifying purposes to optimize health, followed by using internal and external motivators (like COACH) to support their self-management efforts during COVID-19.

LAY SUMMARY

The number of older adults and prevalence of chronic diseases are increasing in Canada's population, which also increases the importance of chronic disease prevention and management. However, practices of quarantine, social distancing and social isolation that emerged from the novel coronavirus (COVID-19) pandemic may cause disruptions in attempting to prevent and manage chronic diseases. The purpose of this thesis was to develop an understanding of chronic disease management in older adults during the COVID-19 pandemic through the evaluation of the "COACH" intervention. Findings demonstrate that COACH supported participants' own personal management practices during COVID-19. Specifically, it helped to improve areas of self-management and self-efficacy in older adults, despite decreases in mental health during times of quarantining, social isolation, and physical distancing. Overall, findings contribute to greater understanding of chronic disease management experiences of older adults during COVID-19.

PREFACE

This thesis is original work by the author, Michelle Christie Yang, under the supervision of Dr. Brodie M. Sakakibara with guidance from Dr. Jill G. Zwicker and Dr. Julia Schmidt.

The study procedures were performed with approval from the Behavioural Research Ethics Board at the University of British Columbia (H20-01368).

Versions of Chapters 2 and 3 will be submitted for publication. Ms. Yang and Dr. Sakakibara conceptualized each of the studies and developed the research design and intervention protocol. Mr. Cam Clayton (UBC medical undergraduate student) helped Ms. Yang and Dr. Sakakibara with intervention protocol delivery. Ms. Yang collected data in British Columbia alongside another research assistant. She also analyzed the data and drafted chapters/manuscripts. Dr. Zwicker and Dr. Schmidt were involved in early stages of study and concept formation and provided feedback and edited manuscripts. Other research team members included Dr. Devin Harris and Dr. Chelsea Pelletier, who helped with early stages of the study, provided further support for the intervention, and provided feedback and edited manuscripts.

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LIST OF ABBREVIATIONS

CCM: Chronic Care Model

COACH: Community Outreach teleheAlth program for Covid education and Health promotion

COVID-19: Coronavirus Disease of 2019

DASS-21: Depression Anxiety Stress Scales - 21-items

heiQ: Health Education Impact Questionnaire

HRQoL: Health-related Quality of Life

ICC: Intraclass Correlation Coefficient

MOS: Medical Outcomes Study

SF-36: Short Form-36

SRAHP: Self-rated Abilities for Health Practices Scale

ACKNOWLEDGEMENTS

I would like to first thank all participants in this project for their input and desire to help.

A special thanks to Dr. Brodie Sakakibara, my thesis supervisor, for his ongoing and unequivocal support, guidance, and encouragement. Thank you for always believing in my abilities. I would also like to thank Dr. Jill Zwicker and Dr. Julia Schmidt, my thesis committee members, for their guidance and support.

I would also like to extend my thanks and appreciation to everyone who worked on this research. I would first like to thank Cam Clayton for his help on the research and intervention development, as well as training the coaches to deliver the intervention. I would also like to thank him for providing me support and guidance throughout my master's study. I would also like to thank research assistant (and fellow lab mate at the Sakakibara lab) Lydia Wood for dedicating her time and effort to assist me with data collection and analysis. Thank you also to Dr. Devin Harris and Dr. Chelsea Pelletier for their contributions to the research.

Special thanks to the following students from University of British Columbia's Doctor of Medicine (MD) program for dedicating their time and efforts to delivering the intervention: Annie Walters-Shumka, Alicia Liang, Caroline Guinard, Chris Lanz, Hanna Ellis, Imelda Suen, Jaspirt Nijjar, Jenny Zhang, Keegan Marchand, Lauren Hughes, Mariam Manna, Martin Cheung, Megan Chan, Mirna Hennawy, Robert McDermit, Stellar Lim, Tomas Rapaport, Vanessa Wildeman, and Valeriya Zaborska.

I would also like to acknowledge my current and previous fellow lab mates in the Sakakibara lab for all their support throughout my master's study: Christopher Brinton, Isabelle Rash, Sarah Park, Gurkaran Singh, Nicole Ketter, Lydia Wood, Quinn Krahn, Jordy Worsfold, and Keyara Brody. I am grateful to have had the opportunity to work with numerous talented individuals in my supervisor's lab.

Finally, I would like to acknowledge the Interior University Research Coalition (IURC) for funding this research (IURC Ministry of Health Research Grant).

DEDICATION

This thesis is dedicated to my parents – Lawrence and Mary Jane Yang – and my grandparents – Francisco and Elizabeth Yang, and Leonard (posthumous) and Milagros Ong.

CHAPTER 1: INTRODUCTION

1.1 – Aging Population and Chronic Diseases

The number of older adults (≥ 65 years of age) in Canada is increasing. In 2014, adults aged 65 years and older represented 15.6% of Canada's population.¹ In 2020, Statistics Canada reported that 18% of Canadians were over the age of 65.² There are several reasons for the increasing prevalence of older adults in Canada. First, after World War 2, there was a drastic increase in the number of births between 1946 and 1964 (i.e., the baby boomer generation). The last of the individuals in this generation will turn 65 years of age in 2029. This will further increase the number of older adults in Canada, with estimates that the proportion of older adults will increase to more than 23% (9.5 million) by 2030.¹⁻⁵ Second, older adults now have access to improved medicine and rehabilitation, which have improved survival rates from once deadly disease and disability, overall health, and subsequently longer life expectancies.^{3,6-9} In fact, it is estimated that such improved health and rehabilitation services will increase life expectancies by 2.4 years in 2030.¹⁰ Finally, immigration has also affected the increasing prevalence of older adults in Canada, as a large portion of the older adult population consists of immigrants.¹¹ For example, 30% of Canadian older adults are currently reported as foreign-born.¹² Overall, the baby boomer generation, improved medicine and rehabilitation, and immigration have all contributed to Canada's increasing older adult population.

Along with an aging population come certain health challenges that can influence the aging process and later life experiences of older populations.^{3,6,13} In particular, people who live longer tend to have greater potential to develop chronic diseases and conditions.^{14,15} Chronic disease is defined as a condition that lasts for one or more years, requires ongoing medication, and can limit daily living activities.¹⁶ Common chronic diseases include diabetes, cardiovascular

diseases, and cancer.¹⁷ Recent reports indicate that nearly 70% of adults over 60 years of age live with one or more chronic diseases in Canada, and over 150,000 Canadians die from a chronic disease each year.^{18,19} In addition, direct costs of chronic diseases accounts for nearly 60% (at least \$190 billion annually) of the annual health care spending in Canada.^{20,21} With chronic disease-related health issues becoming a primary issue requiring health services, there is a need to focus on both chronic disease prevention and management among older adults.

1.2 – Chronic Disease Prevention and Management

1.2.1 – Acute Care vs. Chronic Care

With the increase in the older population and anticipated numbers of people with chronic diseases, a greater focus on chronic disease prevention and management is warranted. While the existing health system is successful and effective at addressing acute health problems (i.e., injuries, surgical needs, and fevers, etc.), it has less focus on chronic disease prevention and management.^{22,23} Acute care encompasses health needs that are time-sensitive and require immediate intervention, such as emergency medicine, trauma care, pre-hospital emergency care, acute care surgery, critical care, urgent care, and short-term inpatient stabilization, while chronic care includes issues that have multiple causes, are slower to develop, and are longer in duration.²²⁻²⁴ Thus, people with chronic diseases need ongoing intervention to best support their overall health and well-being.

Currently, the health needs of the population are changing. There is increased demand for chronic disease prevention and management as the population is aging and living longer. However, the health care system has been slow to respond to both the needs of people living with chronic disease and the prevention of chronic diseases.²⁵ Thus, research is warranted to develop

and investigate programs that improve chronic disease management and prevention efforts, especially for the older adult population.

1.2.2 – The Chronic Care Model (CCM)

In attempt to improve chronic disease management and prevention in the health care system, the Chronic Care Model (CCM) was developed by Wagner and colleagues as a framework for health practices to provide organized and multi-faceted support to improve functional and clinical outcomes of patients with chronic diseases and illnesses.²⁶⁻²⁹ The model hypothesizes six inter-related systemic changes (i.e., Health System, Self-Management Support, Decision Support, Delivery System Design, Clinical Information Systems, Community Resources and Policies) to help develop patient-centered, evidence-based care for individuals with chronic disease and their health care providers.²⁷ According to the CCM, optimal chronic care occurs when there is effective interaction between: (i) informed and activated patients; and (ii) prepared and proactive team of health professionals.²⁷⁻²⁹

1.2.2.1 – Informed and Activated Patients

In 2003, Victoria J. Barr and colleagues updated the CCM into the expanded Chronic Care Model (expanded CCM).²⁹ The expanded CCM helps facilitate a productive interaction between the patient and health care system, where the patient is influenced by elements of the CCM to support their own care.²⁹ According to the expanded CCM, the development of chronic disease prevention and management strategies are important when delivering chronic care to the informed and activated patient.³⁰ In relation to health, self-management is what a person does to control their health and any health complications, and is a key element used in the CCM to develop informed and activated patients.^{29,31} It includes skills such as decision-making, goal setting, and action planning.³² They can be used with other skills, including problem-solving,

resource utilization, forming patient/health care provider partnerships, and taking action.³² In context of the CCM, there is emphasis on the central role that patients have in the prevention and management of their health, and thus emphasizing the active role that patients have in their own care.²⁹

Evidence has demonstrated self-management interventions being commonly used to assist individuals in managing their health.³³ The Stanford Chronic Disease Self-Management Program is a seminal example of a beneficial self-management intervention by demonstrating efficacy in improving patients' overall health.³⁴ Research has shown that program participants significantly improve their frequency of exercise and self-reported health, health-related quality of life, healthy behaviours, and self-efficacy.³⁴ Thus, self-management interventions promote healthy lifestyle behaviours and provide effective strategies to support chronic disease prevention and management, which help foster informed and activated patients.

1.2.2.2 – Prepared and Proactive Team of Health Professionals

In the expanded CCM, the following three components of the health system help to ensure that health professional teams are prepared and proactive: decision support, delivery system design, and clinical information systems.^{28,29} The prepared and proactive team, plus community resources and policies, help to further support the informed, activated patient.^{28,29} Thus, the productive interaction and relationship between the health team and patient result in improvements in functional and clinical outcomes for the patient.

1.2.2.3 – Evidence Supporting the Chronic Care Model (CCM)

Initial evidence of chronic disease interventions based on the CCM helped confirm the use of multi-component practice changes for greater improvements in health outcomes.²⁷ The CCM has previously been used as a guiding framework for various health interventions. A total

of 32 studies were previously reported in the literature to be successful in using CCM-based interventions for improving outcomes in people with chronic diseases, such as diabetes.^{35,36} One of these studies included a 6-year Danish randomized-controlled trial involving 970 patients, which displayed efficacious results for diabetes management.³⁵ The study results included significantly lower HbA1c (hemoglobin A1c), blood pressure, and cholesterol levels.³⁵ Past evidence also confirms that organized and multi-faceted support as advocated in the CCM can display these positive effects and even decrease rates of behaviour-related risk factors such as smoking.²⁹ The CCM is now a widely adopted approach to chronic care improvement, and an expanded version has been developed by Barr et. al (2003) to better include important aspects of prevention and health promotion for approaching chronic care solutions (see Figure 1.1).²⁷⁻²⁹

Figure 1.1. The Expanded Chronic Care Model (CCM).

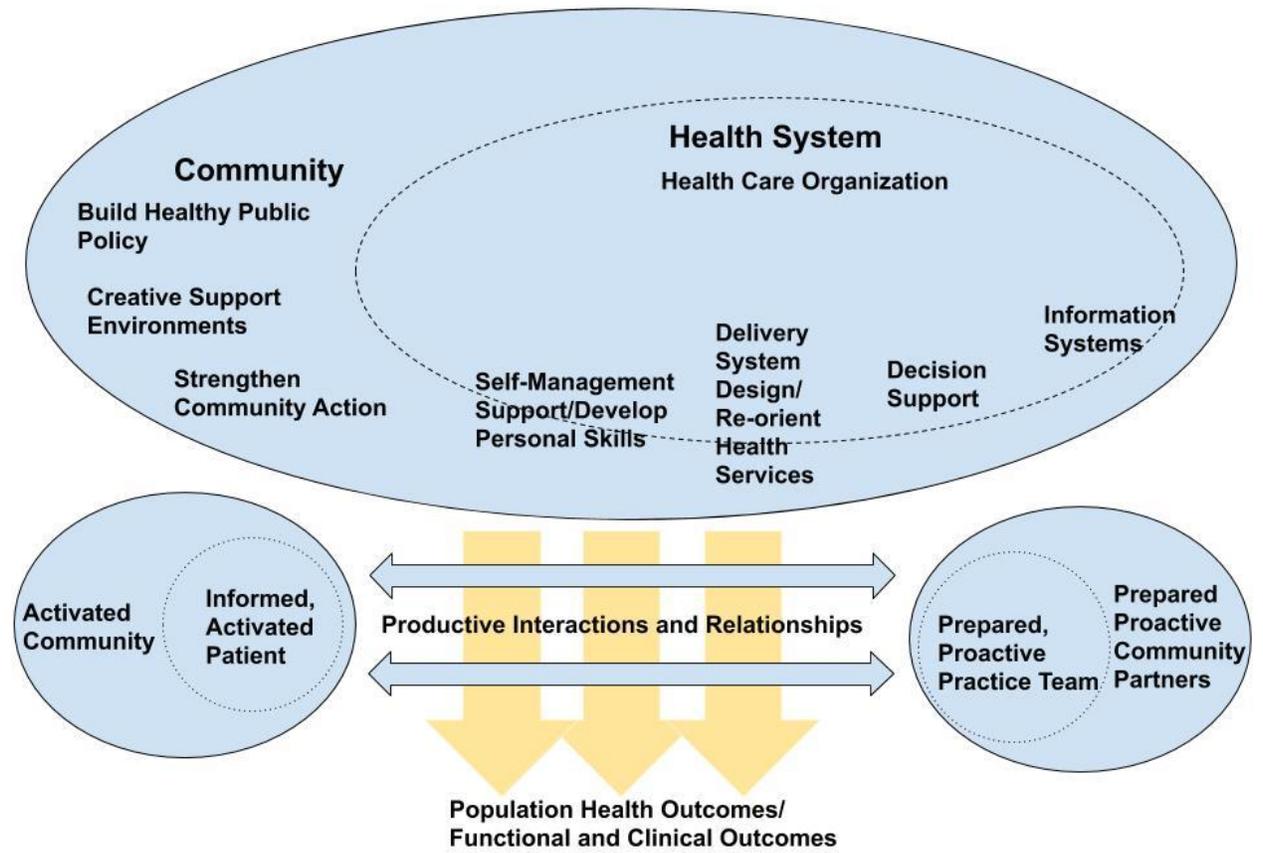


Diagram of the expanded CCM, which was developed by Victoria Barr et. al (2003).^{21,22}

1.2.3 – Health-related Behaviour Modifications

One area of importance that could be addressed using CCM-based chronic disease management interventions is health-related behaviour modifications.²⁷⁻²⁹ Health-related behaviours, such as physical activity, diet, stress management, smoking and alcohol use, are common chronic disease risks factors.³⁷⁻⁴⁴ Such behaviours have a direct effect on management of diseases, along with an indirect effect via cardiometabolic risk factors, such as high blood pressure, cholesterol, and glucose tolerance.³⁷⁻⁴⁴ Chronic diseases may emerge from long exposure of negative health-related behaviours, such as tobacco use, alcohol use, stress, lack of regular physical activity, and poor dietary behaviour.³⁸⁻⁴³ Previous studies reported higher mortality, greater risk of chronic diseases, and increases in other health complications among people that engage in unhealthy behaviours.^{40, 45-48} While unhealthy behaviours could increase the risk of developing chronic diseases, they are considered to be modifiable risk factors, and thus can still be adjusted in order to prevent further health complications and chronic disease developments.^{49,50} Clearly, there is value in focusing on health-related behaviours as a target of intervention to support individuals in managing their health.

It is especially important to consider the health-related behaviours of older adults. Previous literature has demonstrated associations between unhealthy behaviours in older adults and chronic diseases.⁵¹ Particularly, one population-based cohort study that included 3982 French community dwellers aged 65 years or older reported unhealthy behaviours being associated with greater hazard of incident disabilities, which they defined to include chronic diseases.⁵² These studies further illustrate the association between health-related behaviours and chronic disease development.

Previous literature highlighted the importance of promoting the improvement of health-related behaviours in the rapidly growing aging population.⁵³ However, older adults may need extra support to make health-related adjustments.⁵⁴ A 2016 survey on physical activity reported that while adults recognize the benefits of exercise, only 34% of adults who were ages 60 years or older met the public health recommendations for physical activity.⁵⁴ Lack of time and knowledge about beneficial health activities were barriers that people faced when attempting to engage in healthier behaviours.⁵⁴ Thus, it is important to promote and empower older adults to improve their health-related behaviours in order to prevent and manage chronic diseases.

1.3 – Impact of the Novel Coronavirus (COVID-19) on Chronic Care

In 2020, the emergence of the COVID-19 pandemic created more challenges for chronic disease management in older adults. Ongoing strategies (i.e., quarantine, social isolation, physical distancing, and closure of public facilities) aimed at preventing viral transmission of COVID-19 are also shown to have negative impacts on health.⁵⁵⁻⁵⁷ For example, social isolation and physical distancing are associated with poor mental health and increased stress, which are associated with increased risk of heart disease, stroke onset.^{58,59} Furthermore, closures of public areas indirectly act as barriers to exercise and dietary quality by limiting the options of where to obtain physical activity and limiting when people can leave the house.^{59,60} Quarantine-type strategies, while necessary for prevention of COVID-19, also increase the risk of adverse health events and have negative effects on health-related behaviours.

Complications from chronic diseases also bring additional health problems during the pandemic. Older patients and those with pre-existing medical conditions are at higher risk of contracting the virus and developing more severe outcomes.⁶¹ Patients who have died from COVID-19 have been significantly older than patients who have recovered from the disease; a

recent retrospective study reported a median age of 68 for deceased patients, and a median age of 51 for recovered patients.⁶² These high risk patients tended to have other comorbidities, such as hypertension, diabetes, and cardiovascular, cerebrovascular, endocrine, digestive, and respiratory diseases.⁶¹⁻⁶³ Thus, support is required for older adults for the management of chronic diseases, while at the same time minimizing exposure and risk of contracting COVID-19.

Recent studies have indicated that the physical and mental health of older adults have been affected from the COVID-19 prevention strategies.⁶⁴⁻⁶⁶ Specifically, older adults have experienced decreases in their physical activity and quality of life, and increases in anxiety, depression, and poor sleep quality.⁶⁴⁻⁶⁷ Without question, efforts are required to support older individuals to manage their health during the pandemic to prevent disease and disability, while adhering to provincial and national orders of physical and social distancing and quarantining.

1.4 – The “COACH” Intervention

In attempts to ensure the health and wellness of older adults during the COVID-19 pandemic, we developed the student-delivered Community Outreach telehealth program for Covid education and Health promotion (COACH). The program is a modified and generalized version of an existing health promotion and chronic disease self-management intervention.^{68,69} COACH includes six one-on-one health coaching sessions with a trained student coach from University of British Columbia’s medical doctor (MD) program. All sessions were delivered via telephone or videoconferencing (i.e., Zoom). The coaching sessions focused on discussions about health-related behaviours that the participant may wish to improve in their own lives. The coach provided motivation and support, and helped participants develop personalized strategies to help them reach their goals in the context of COVID-19 prevention strategies. At the end of each session, participants also received COVID-19 education. Overall, this program aimed to

promote healthy lifestyle behaviours during times of quarantine, social isolation, and physical distancing, while also providing COVID-19 education and information about provincial guidance and orders.

The expanded chronic care model (CCM) (see Figure 1.1) served as a guiding framework during the development of COACH. Using some of the CCM components, COACH was structured to: (1) empower participants to manage their own health (i.e., develop them into informed, activated patients); and (2) support the trained student coaches that delivered the coaching sessions (i.e., develop them into a prepared, proactive practice team). Details of all CCM components used for COACH is outlined in Table 1, and are summarized as follow:

1.4.1 – Development of Informed, Activated Patients

Informed, activated patients were represented by participants and were primarily developed using self-management components (see Table 1). In the context of COACH, the key component in developing informed and active patients was to help them better their self-management skills of goal setting, decision-making, problem-solving, and action planning. As part of COACH, participants received six one-on-one coaching sessions, a self-health review, a healthy living manual (i.e., the “Healthy Living” booklet), and COVID-19 education.

The “Self-Health Review” health evaluation sheet helped guide discussions during the coaching sessions. The review sheet came with a “Healthy Living” booklet, which also contained additional chronic disease management information participants can use for further reference (i.e., “Health and the Aging Process”, “Making Health Shifts”, “Living Your Best and Preventing Health Complications”, and “Working with Health Care Providers”). Participants primarily used the self-health review to identify health-related areas on which they wanted to focus (Appendix A). This review allowed participants to “self-rate” their own health habits and

behaviours to identify strengths and areas for improvement, evaluate themselves, and help identify health behavioural goals to address in the coaching sessions.

The six coaching sessions (30-45 minutes each) gave participants the opportunity to discuss their health-related behaviours, especially any behaviours they wish to improve. Once goals were identified, participants worked together with their coach to develop goals and action plans that could help participants achieve those goals. Altogether, COACH contributed to informing and providing the support to help participants to actively improve their ability to effectively self-manage for both chronic disease management.

1.4.2 – Development of a Prepared, Proactive Practice Team

A prepared, proactive COACH practice team was developed using the components of decision support, delivery system design/re-oriented health services, and information systems (see Table 1). The practice team was represented by the coaches who delivered the coaching sessions via telehealth (e.g., telephone, Zoom videoconferencing). Telehealth has been previously used to deliver health coaching programs, which include chronic disease self-management support.⁷⁰⁻⁷⁴ Thus, while different from in-person care, it serves as a safe and easy way to deliver health care during times of quarantining, social isolation, and physical distancing.

The coaches were second, third, and fourth-year medical students who were trained in how to facilitate behaviour change and support patient self-management. Involving medical students in clinical care practices early in their medical education enhances students' professional identity and attitude, team experience and skills, and their ability to perform various clinical tasks.^{75,76} The student coaches were trained on the study purpose, chronic disease management, behaviour risk factors, the 5A counselling model (described below), and brief action planning⁷⁷.

Coaches also attended practice coaching sessions and a workshop to learn brief action planning, which was used in COACH to develop collaborative action plans for behavioural modification. Brief action planning is a structured self-management support technique used to facilitate self-management skills of goal setting and action planning.⁷⁷ It has previously been used in various primary care, home health care, rehabilitation, mental health, and public health care settings.⁷⁷ The technique aims to change participants' behaviours by teaching participants to set realistic action plans that they feel confident in being able to achieve, and thus increasing their perception in their ability to act on their plan.⁷⁷ Overall, this technique helps build important skills to support chronic disease management.⁷⁷

During coaching sessions, the coaches empowered and supported participants through education and motivation to self-manage behavioural chronic disease risk factors, while adhering to provincial guidance (i.e., physical distancing) aimed at reducing the spread and burden of COVID-19. The sessions were structured using the 5A self-management counselling model to create goals and develop action plans to help participants realize those goals.⁷⁸ The 5A's include Assess, Advise, Agree, Assist, and Arrange.⁷⁸ In each session, coaches reviewed the participants' self-health review with them and assessed their knowledge about behavioural risks factors for chronic diseases and their current behaviours (Assess). The coaches then provided information about the health risks of poor health behaviours and benefits of change (Advise). Health behavioural goals were prioritized through a collaborative process (Agree). The coaches then assisted participants to develop readily achievable action plans participants followed between coaching sessions to realize their health goals (Assist). Adherence and modifications to the action plans were discussed at the follow-up coaching session (Arrange) to promote health accountability. Thus, the coaches' delivery of the COACH program aimed to help participants

gain self-management skills that can be applied to their own lives and improve their ability to effectively self-manage.

At the end of each coaching session, coaches shared up-to-date COVID-19 information with participants, which was obtained through the BC Centre for Disease Control (BCCDC), World Health Organization (WHO), the BC provincial government, and Pathways (the magazine of University of British Columbia's Faculty of Medicine). An information sheet was also created and approved by our medical lead Dr. Devin Harris, executive medical director at Interior Health Authority's Quality and Patient Safety. This information supported the coaching decision-making processes and helped participants adjust their plans according to current COVID-19 public health restrictions.

Outside of the coaching sessions, coaches were further supported by the research team and other coaches of the COACH team through regular monthly meetings, fidelity checks by study coordinator (MY) prior to the start of sessions, and monthly COVID-19 updates. These meetings and fidelity checks gave coaches the opportunity to seek advice or help from each other and the research team in how to better run their coaching sessions, ensure quality control, and confirm that the protocol is delivered as intended. These also allowed the research team to document adherence to the program and study protocol. The research team also provided the coaches with regular monthly COVID-19 updates. These updates helped coaches to continue delivering updated COVID-19 information to the participants so that their developed action plans follow the most up-to-date guidance and orders.

1.4.3 – Development of Productive Interactions and Relationships

Altogether, the components of the COACH program supported the development of productive interactions and relationships between the participant and their assigned coach. The

anticipated results of this relationship would be improved self-management skills, and ultimately management of chronic diseases (see Table 1.1).

1.5 – Purpose of Research

The primary purpose of the research in this thesis was to develop an understanding of chronic disease management during COVID-19. This was achieved through the evaluation of the COACH program. The COACH program was evaluated using elements of the mixed methods triangulation research design, which allowed us to analyze the program both quantitatively and qualitatively.^{80,81} This method allowed the details gathered from qualitative findings to expand upon the quantitative results.^{80,81} These were broken up into two studies, which make up the next two chapters in this thesis, respectively: (1) “Proof-of-concept quantitative evaluation of a student-delivered ‘COACH’ telehealth program on self-management”; and (2) “Qualitative Evaluation of Chronic Disease Management in Older Adults During COVID-19”. The following outlines each of the two chapters:

1.5.1 – Chapter 2: Proof-of-concept Evaluation of a Student-Delivered ‘COACH’

Telehealth Program on Self-management

Objectives: (1) To investigate the effects of COACH on self-management ability (i.e., health directed behaviour) among older adults using a single group pre-post study design; and (2) investigate the effects of COACH on: (a) perceived depression, anxiety, and stress; (b) social support; (c) health-related quality of life; and (d) health promotion self-efficacy.

Hypotheses: COACH will improve self-management in community-living adults ≥ 65 years of age as measured by the health directed subscale in the Health Education Impact Questionnaire (heiQ). Participation in COACH will also result in: (a) decreased

symptoms of depression, anxiety, and stress as measured by the Depression, Anxiety and Stress Scale (DASS); (b) increased social support as measured by the Medical Outcomes Study (MOS): Social Support Survey; (c) improved health-related quality of life as measured by the MOS Short Form-36 (SF-36); and (d) greater health promotion self-efficacy as measured by the Self-Rated Abilities for Health Practices Scale.

Contribution: This study presents COACH as a low-cost, easily mobilized, and proactive approach to ensure effective health self-management among community-living older adults during unprecedented times such as the current COVID-19 pandemic. The results may be used to inform future intervention studies, as well as other research on the chronic disease management of older adults during times of quarantining, social isolation, and physical distancing.

1.5.2 – Chapter 3: Qualitative Evaluation of Chronic Disease Management in Older Adults During COVID-19

Objectives: To qualitatively describe: (1) the chronic disease management strategies among older adults during the COVID-19 pandemic; and (2) participants' experience in the COACH program.

Contribution: This study helps to develop an understanding of chronic disease management during COVID-19, and participants' overall COACH experience. The results further support the quantitative findings in Chapter 2 and may also inform and ensure better delivery of similar future interventions.

Table 1.1. COACH and the expanded Chronic Care Model (CCM).

Expanded CCM Components	Definitions of the components	Representation in COACH
<p>Development of the activated, informed patient (the participant) through:</p> <p>(1) Self-Management</p>	<p>(1) Self-management Support: Coping with a disease and enhancing their skills and capacities for personal health and wellness.</p>	<p>Participants are delivered the following to support their active involvement to improve their own self-management:</p> <ul style="list-style-type: none"> - <i>Coaching Sessions:</i> Discussion of health behaviours, collaborating with coach to develop action plans to achieve health-related goals of their choice - <i>Self-Health Review and Healthy Living Booklet:</i> To help identify areas of focus to discuss in the coaching sessions, further references
<p>Development of a prepared, proactive practice team (the COACH team) through:</p> <p>(1) Decision Support</p> <p>(2) Delivery System Design/Re-orient Health Services</p> <p>(3) Information Systems</p>	<p>(1) Decision Support: Integrating strategies for facilitating the community’s abilities to stay healthy.</p> <p>(2) Delivery System Design/Re-orient Health Services: Expanding mandate to support both individuals and communities in more holistic ways.</p> <p>(3) Information Systems: Creating broad-based information systems that include community data beyond the health care system.</p>	<p>The COACH program is delivered to the participants through telehealth (i.e., telephone, Zoom videoconferencing) with trained medical school student coaches leading the coaching sessions. Coaches deliver the program sessions to participants with:</p> <ul style="list-style-type: none"> - <i>Brief action planning:</i> students trained to deliver prior to beginning coaching sessions; technique used for coaches to collaboratively develop action plans with participants for the goals that participants wish to achieve - <i>5A Self-management Counselling Model:</i> used as guiding framework for the coaching sessions - <i>Further information and support from research team and other coaches:</i> received via regular monthly meetings and fidelity checks; received COVID-19 information to pass onto participants at the end of each session

CHAPTER 2: PROOF-OF-CONCEPT EVALUATION OF A STUDENT-DELIVERED 'COACH' TELEHEALTH PROGRAM ON SELF-MANAGEMENT

2.1 – Introduction

2.1.1 – Background

Quarantining, social isolation, and physical distancing are ongoing primary prevention strategies to prevent viral transmission of the novel coronavirus (COVID-19).⁵⁵⁻⁵⁷ As a result, communities have closed public places, restricted travel, instituted voluntary home curfews, and cancelled events.⁸¹ While important for minimizing the spread of COVID-19, these strategies have negative impacts on health. For example, social isolation is associated with increased risk of heart disease, stroke onset, and poor mental health.^{58,59} In addition, closures of public areas and financial challenges act as barriers to exercise and dietary quality.⁶⁰ Thus, public health restrictions, while important during the COVID-19 pandemic, compromise the ability of individuals to self-manage their own health and may increase the risk of adverse health events.

Evidence suggests the negative effects of such quarantine-type strategies are especially affecting the physical and mental health of older adults (≥ 65 years of age), with reported decreases in physical activity and quality of life, increases in anxiety and depression, and poor sleep quality.⁶⁴⁻⁶⁶ While various health resources have emerged to support people during the COVID-19 pandemic (e.g., COVID-19 phone lines, general information from Centres for Disease Control, online mental health support), many of these resources require individuals to initiate contact in response to a concern. Few programs with a specific focus on health promotion or disease management have been available for older adults during the COVID-19 pandemic. Efforts are required to support older individuals to manage their health during the pandemic to prevent disease and disability.

Delivering health services using technology (i.e., telehealth) is an effective strategy to increase accessibility of services, especially when in-person services are not an option.⁶⁷ Telehealth is an ideal method for accessing health services during times when people must quarantine, socially isolate, or physical distance from others. In this study, we developed an accessible and active telehealth promotion program to empower adults to better manage their health and well-being during unprecedented times that require physical and social distancing. The **Community Outreach telehealth program for Covid education and Health promotion (COACH)** is a 2-month program in which students from health profession programs (e.g., medical undergraduate students) deliver a standardized health coaching program via telephone or videoconference to adults ≥ 65 years of age. Development of COACH was based on an existing health coaching program,^{68,69} guided by the expanded Chronic Care Model,¹⁹⁻²² and incorporates evidence-based behaviour change techniques.⁸²

2.1.2 – Objectives and Hypotheses

The primary objective of this study was to estimate the quantitative effects of COACH on health self-management, measured using the Health Directed Behaviour subscale in the Health Education Impact Questionnaire (heiQ),⁸³ among community-living older adults (≥ 65 years of age). We hypothesized that COACH would improve self-management of health directed behaviour among study participants.

Secondary objectives of this study included exploratory evaluation of the effects of COACH on: (1) perceived stress, depressive and anxiety symptoms; (2) social support; (3) health-related quality of life; (4) health promotion self-efficacy; and (5) other self-management domains in the heiQ. We also examined participants' satisfaction with COACH.

2.2 – Methods

2.2.1 – Study Design and Participants

In this single-group, pre-post virtual study design, participants were included in the study if they: (1) were 65 years or older; (2) had access to a telephone or videoconferencing program; and (3) had no previous COVID-19 diagnosis by health professionals. Participants were excluded if they were not medically stable and/or had severe hearing loss that could not be corrected with a hearing aid, which could interfere with their ability to participate and communicate in the virtual sessions. Participants were also excluded if they were already participating in other health promotion programs to limit confounders. The TREND (Transparent Reporting of Evaluations with Nonrandomized Designs) Statement checklist was used to ensure the completion of steps throughout the research and writing this chapter (Appendix B).

2.2.2 – Sample Size and Recruitment

Sample size was calculated based on the Health Directed Behaviour subscale of the heiQ. Using an effect size of 0.37 and standard deviation of 0.64 obtained from previous literature,⁸⁴ we estimated that 60 participants would have 80% power to detect change at an alpha of 0.05 (two-sided). We recruited 75 participants to account for a 20% dropout rate.^{85,86}

Volunteer participants were recruited using multiple recruitment strategies. Recruitment strategies included advertising through social media and email lists of local community organizations and patient advocacy groups. Community centres in the Vancouver regions were also engaged to promote the study among their membership. Posters, newspaper ads, brochures, and a webpage were also developed to support the recruitment process.

All 75 participants were screened for eligibility prior to consenting. To adhere with physical distancing during COVID-19, interested individuals were asked to provide consent

through an online eConsent form via Qualtrics (see Appendix B for consent form template).

Study procedures were approved by the Behavioural Research Ethics Board at the University of British Columbia (H20-01368) and all participants provided informed consent.

2.2.3 – Baseline Evaluation

Once consent was obtained, participants were scheduled to attend a ‘virtual’ baseline evaluation via Zoom videoconferencing or telephone call with a trained outcomes assessor.

Participants completed several surveys, including a demographic information form, the Functional Comorbidity Index⁸⁷ (to assess the number of comorbid conditions), and the following outcome measures for pre-post evaluation:

2.2.3.1 – Primary Outcome Measure

Self-management was measured using the Health Directed Behaviour subscale of the 40-item heiQ questionnaire.⁸³ The heiQ has high construct validity and provides valuable information to clinicians, researchers, policy makers, and other stakeholders about the value of patient education programs in chronic disease management.^{83,88} In this questionnaire, participants responded to each question by selecting a response on a 5-point scale, ranging from “*strongly disagree*” to “*strongly agree*”. The Health Directed Behaviour subscale contains four questions that relate to tangible changes in lifestyle.⁸³ Specifically, these include changes related to health behaviour such as diet, exercise, and relaxation routines (i.e., “*On most days of the week, I do at least one activity to improve my health*”).⁸³

2.2.3.2 – Secondary Outcome Measures

2.2.3.2.1 – DASS-21 (21-item Depression, Anxiety, Stress Scales)

Perceived depression, anxiety and stress was measured using the 21-item Depression, Anxiety and Stress Scale (DASS), which has high reliability, excellent internal consistency, and

excellent discriminative, concurrent, and convergent validities.^{89,90} Participants responded to each question in the survey by selecting a response on a 4-point scale, which ranged from zero (“*did not apply to me at all*”), to three (“*applied to me very much or most of the time*”). The survey consisted of three subscales that measured perceived depression, anxiety, and stress, respectively. Each scale was reported separately, with higher scores in each subscale corresponding to higher levels of depression, anxiety, or stress within the past week.

2.2.3.2.2 – Medical Outcomes Study (MOS): Social Support Survey Instrument

Social support was measured using the Medical Outcomes Study (MOS): Social Support Survey (total score), which has high reliability and good validity.^{91,92} This survey consists of 19 items that cover four social support domains of emotional, tangible, affectionate, and social integrated support. Participants respond to each question in the survey by selecting a response on a 5-point scale, ranging from “*none of the time*” to “*all of the time*”. The total score was reported, with higher scores indicating higher social support.

2.2.3.2.3 – Medical Outcomes Study (MOS): Short Form-36 (SF-36)

Health-related quality of life was measured using the MOS Short Form-36 (SF-36), which has been reported to have high reliability.^{93,94} The SF-36 evaluates health-related quality of life using eight subscales: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health.^{93,94} There are 11 questions in the survey with multiple choice scales that range between 2- and 6-point scales. The results from this survey were reported as the physical component summary (PCS) and the mental component summary (MCS), which represent the physical and mental health factors of health-related quality of life.^{93,94} Each of the subscales in the SF-36 contribute to different proportions of the PCS and MCS scores. Higher scores indicate higher overall physical or mental health.

2.2.3.2.4 – Self-Rated Abilities for Health Practices Scale (SRAHP)

Health promotion self-efficacy was measured using the 28-item Self-Rated Abilities for Health Practices Scale, which has good validity and high test-retest reliability.⁹⁵ The survey consists of 28 questions measuring self-perceived ability to implement health-promoting behaviours.⁹⁵ The SRAHP contains four subscales for exercise, nutrition, responsible health practices, and psychological well-being, with each subscale containing seven questions.⁹⁵ Each question was measured on a 5-point scale with items rating from zero (“*not at all*”) to four (“*completely*”). The total score of the survey was reported; higher scores indicate higher self-perceived health promotion self-efficacy.

2.2.3.2.5 – Health Educational Impact Questionnaire (heiQ)

The other subscales of the heiQ were reported as secondary outcomes for this study, including Positive and Active Engagement in Life, Emotional Distress, Self-Monitoring and Insight, Constructive Attitudes and Approaches, Skills and Technique Acquisition, Social Integration and Support, and Health Service Navigation.⁸³ Each subscale contained 5-7 questions on a 5-point scale were reported separately.⁸³

See Table 2.1 for summaries and psychometric details for each outcome measure, and Appendix D for the questionnaires administered to participants.

Table 2.1. Outcome measures.				
Outcome	Measure	No. of items	Focus and Scoring	Psychometric Properties
Primary Outcome				
Self-management	heiQ (Health Education Impact Questionnaire): Health Directed Behaviour subscale	4	Tangible changes in lifestyle (i.e., diet, exercise and relaxation routines). Response scale: 1 (“strongly disagree”) to 5 (“strongly agree”). Higher scores indicate high levels of health behaviours (i.e., prevention, diet, exercise).	<ul style="list-style-type: none"> • Construct validity: CFI (Comparative Fit Index) 0.99 • Reliability: Cronbach’s alpha 0.86, ICC (Intraclass correlation coefficient) 0.66
Secondary Outcomes				
Perceived depression, anxiety and stress	DASS-21 (21-item Depression, Anxiety, Stress Scales)	21	Measures emotional states of depression, anxiety and stress. Response scale: 0 (“did not apply to me at all”) to 3 (“applied to me very much or most of the time”). Higher scores indicate higher levels of depression, anxiety, and/or stress	<ul style="list-style-type: none"> • Convergent/divergent validity: Correlated with Beck Anxiety Inventory (BAI) ($r = 0.81$) and the Beck Depression Inventory (BDI) ($r = 0.74$) • Reliability: ICC (Intraclass correlation coefficient) 0.99
Social support	Medical Outcomes Study (MOS): Social Support Survey Instrument	19	Perceived social support, including the four social support domains of emotional, tangible, affectionate, and social integrated support. Response scale: 1 (“none of the time”) to 5 (“all of the time”). Higher total score indicates higher overall level of social support.	<ul style="list-style-type: none"> • Validity: Correlated with loneliness ($r = -0.67$), family/marital functioning ($r = 0.53$, $r = 0.56$) and mental health ($r = 0.45$). • Reliability: Cronbach’s alpha 0.97, ICC (Intraclass correlation coefficient) 0.98
Health-related	Medical Outcomes Study (MOS):	11	Evaluates health-related quality of life through the measurement of eight subscales: Physical Functioning, Role Physical, Bodily Pain, General	<ul style="list-style-type: none"> • Reliability: Cronbach’s alpha between 0.91 and

quality of life (HRQOL)	Short Form-36 (SF-36)		<p>Health, Vitality, Social Functioning, Role Emotional, and Mental Health. Response scale: varies between 1 to 3 and 1 to 6 (scale differs depending on question)</p> <p>1. Physical Component Summary (PCS): higher PCS score indicates higher levels of physical health.</p> <p>2. Mental Component Summary (MSC): higher MCS score indicates higher levels of mental health.</p>	0.94, ICC (Intraclass correlation coefficient) of 0.82 for PCS and 0.79 for MCS
Health promotion self-efficacy	Self-Rated Abilities for Health Practices Scale (SRAHP)	28	<p>Self-perceived ability to implement health-promoting behaviours. Response scale: 0 (“not at all”) to 5 (“completely”).</p> <p>Higher overall scores indicate higher overall self-perceived ability to implement health-promoting behaviours (i.e., exercise, nutrition, responsible health practices, and psychological well-being).</p>	<ul style="list-style-type: none"> • Validity: correlated with scores on the General Self-Efficacy Scale ($r = 0.43$). • Reliability: Cronbach’s alpha 0.94
Other self-management indicators	heiQ (Health Education Impact Questionnaire): Positive and Active Engagement in Life, Emotional Distress, Self-Monitoring and Insight, Constructive Attitudes and Approaches, Skills and Technique Acquisition, Social	36	<p>Response scale: 1 (“strongly disagree”) to 5 (“strongly agree”).</p> <p>1.Active Engagement in Life: High scores means someone who is actively engaged in life and is motivated to improve their life circumstances.</p> <p>2.Emotional Distress: High scores display individuals who have high levels of overall health-related negative affect, negative attitude to life, and high levels of anxiety, stress, anger and depression.</p> <p>3.Self-monitoring: High scores identify self-monitoring, self-management, setting reasonable</p>	<ul style="list-style-type: none"> • Construct validity: CFI (Comparative Fit Index) ranged between 0.99 to 1 • Reliability: Cronbach’s alphas ranged between 0.70 to 0.89, ICC’s (Intraclass correlation coefficient) between 0.67 to 0.86

	<p>Integration and Support, and Health Service Navigation subscales.</p>	<p>limits or targets, and insight into living with a health problem.</p> <p>4. Constructive Attitudes: High scores displayed for individuals who attempt to minimize the effects of illness and are determined not to allow the illness to control their life.</p> <p>5. Skill and Technique Acquisition: High scores show someone who has highly developed skills in symptom relief and techniques to manage own health.</p> <p>6. Social Integration: High scores highlight high levels of social interaction, high sense of support, seeking support from others, and low levels of feelings of social isolation due to illness.</p> <p>7. Health Service Navigation: High scores represent a person who is confident in their ability to communicate with health care professionals and has good understanding of ways to access health care in order to get their needs</p>	
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2.2.4 – The COACH Telehealth Intervention Program

After completing baseline evaluation, participants were enrolled in one-on-one COACH sessions. In this program, participants received a “Healthy Living Booklet” (developed by members of the research team), which contained information about management of disease and disability, with particular emphasis on improving health-related behaviours (e.g., physical activity, diet, stress management), a Self-Health Review (Appendix A), COVID-19 information booklet, and six 30-to-45-minute health coaching sessions with a trained student coach over 2 months.

Student coaches were trained in chronic disease management, behaviour risk factors, the 5A counselling model, and brief action planning.⁷⁷ The coaching team consisted of second, third, and fourth-year MD (medical doctor) students from University of British Columbia. In total, 19 MD student coaches from urban (i.e., Vancouver/Fraser), rural (i.e., Interior and Northern), and island (i.e., Vancouver Island) regions of British Columbia were trained to run COACH sessions.

Coaching sessions were divided into two components: (i) health promotion; and (ii) education. The health promotion component focused on health-related behaviours that participants deem important to improve, based on their Self-Health Review. Together, the coach and the participant collaboratively developed strategies to help participants reach the health-related goals on which they wished to focus. The coaches empowered and supported participants through education and motivation to self-manage their behaviours, while adhering to public health orders (e.g., physical distancing) aimed at reducing the spread and burden of COVID-19. The education component focused on ensuring participants were aware of COVID-19 restrictions, prevention strategies, and phases of reopening. Each month, the study coordinator would curate COVID-19 information from reliable sources (e.g., World Health Organization,

Centres for Disease Control, government websites) and send to coaches for dissemination to study participants. Coaching sessions followed a standardized schedule:

- Session 1 – Introduction: The coach begins partnership and building rapport with participant. Together, they begin to identify health-behaviour goals and create action plans to achieve them.
- Sessions 2-5 – Check in, reinforce, and update: During these sessions, the coach monitors the participant’s progress on their action plans while continuing to build rapport and relationship with the participant. Together, the coach and participant make any updates or revisions to the action plans if needed.
- Session 6 – Look back, reflect, send-off: The coach reviews previous sessions, discusses any learning and behaviour changes that occurred, and reinforces strategies that were developed in the program as skills that can be employed on an ongoing basis. A long-term plan is developed to maintain the behaviour changes.

Each coaching session used the 5A self-management counselling model (Assess, Advise, Agree, Assist, Arrange)⁷⁸ to assist in the development of behavioural modification action plans (see Appendix A for action planning sheets) for participants to follow between coaching sessions. At the end of each session, coaches discuss COVID-19 education with the participants.

2.2.5 – Post-intervention Evaluation

After the end of the COACH program, participants completed a post-intervention evaluation consisting of all primary and secondary outcome measures that were collected at baseline. Each participant was evaluated one-on-one by the same assessor that conducted the baseline evaluation. Participants were also asked if they were diagnosed with COVID-19 at any point during their participation in the study. Additionally, participants completed a satisfaction

survey to share feedback about their experiences in COACH. The satisfaction survey consisted of 17 multiple choice questions that were each measured on a 5-point scale (i.e., strongly disagree to strongly agree), along with an open textbox where participants could describe their likes, dislikes, and improvement ideas for COACH.

2.2.6 – Analysis

Data collected in the participant information form and the Functional Comorbidity Index were used to describe the sample. Descriptive statistics were used to characterize the sample using means and standard deviations for continuous variables and proportions and frequencies for categorical variables.

Analysis of the data was completed using SPSS Statistics 27 software. Paired sample t-tests were used to test for statistically significant differences ($p < .05$) for each outcome measure. These comparisons allowed us to determine the difference between measures obtained at baseline and post-intervention. The following statistical assumptions tested for each outcome measurement in order to apply the parametric paired sample t-test to the sample: (1) normality, which was tested using Shapiro's test, skewness and kurtosis, Q-Q plots, and histogram graphs; and (2) independent observations within each subject, which were met by each participant submitting their own responses to each survey before and after the COACH program.⁹⁶ The primary outcome was tested for statistically significant differences at $p < .05$. For secondary outcomes, the p-value was adjusted using a Bonferroni correction in which case statistical significance was set at $p < .004$ (i.e., $0.05/12$).⁹⁷ Effect sizes were also estimated for each outcome measure using Cohen's *d*, defining a small effect size as 0.2, moderate effect size as 0.5 and large effect size as 0.8.⁹⁸ Descriptive statistics are used to report the satisfaction survey responses, including the open-ended questions.

2.3 – Results

2.3.1 – Participant Demographics

Participants (n = 75) were recruited between August 2020 and March 2021, with the last post-intervention evaluation session completed in April 2021. Of the 75 participants, 71 completed both baseline and post-intervention evaluations. Four individuals withdrew from the study for the following reasons: became too busy (n = 1), experienced health issues (i.e., cancer and stroke diagnosis) outside of study participation (n = 2), and lost interest (n = 1). The mean age of participants was 72.4 years (SD 5.8), with 65 being the youngest and 89 being the oldest. Fifty-seven percent of the sample came from urban regions of British Columbia (i.e., Vancouver/Fraser). Table 2.2 displays further details on the sample characteristics.

Fifteen percent of the sample reported having one chronic condition, and 80% of the sample reported having two or more conditions. Table 2.3 displays further details on health conditions that were reported. Arthritis (44%) and visual impairment (43%) were the most common health conditions reported, followed by upper gastrointestinal diseases (29%), asthma (27%), degenerative disc diseases (24%), and osteoporosis (23%). None of the participants were diagnosed with COVID-19 during their participation in the study.

Table 2.2. Participant demographic characteristics at baseline (n = 75).		
Demographic Categories	n (%) or Mean±SD	
Sex	Male	31 (41)
	Female	44 (59)
Age		72.4±5.79
	65-74	50 (67)
	75-84	21 (28)
	85+	4 (5)
Geographical location	Vancouver/Fraser	43 (57)
	Interior	21 (28)
	Island	11 (15)
Race/Ethnicity	Asian or Asian Indian or South Asian	11 (15)
	White or Caucasian	57 (76)
	Hispanic, Latino, or Spanish	1 (1)
	Indigenous	1 (1)
	Identified with more than one race/ethnicity	5 (7)
Marital Status	Married/common law	47 (23)
	Other	28 (77)
Family Size		1.8±0.81
	1 (Living Alone)	29 (39)
	2+	42 (62)
Employment Status	Employed, working full-time/part-time	7 (9)
	Retired	57 (76)
	Other	11 (15)
Years of Formal Education		15.9±3.52
	10-14	27 (36)
	15+	48 (64)
Highest Education Level/Degree	Less than a high school diploma	1 (1)
	High school degree or equivalent (i.e., GED)	7 (9)
	Bachelor's degree (i.e., BA, BSc)	20 (27)
	Postgraduate degree (i.e., Master's, Doctorate)	15 (20)
	Other	32 (43)
Approximate Household Income Before Taxes		
	Less than \$50,000	29 (39)
	\$50,000 - \$79,999	17 (23)
	\$80,000 or more	18 (24)
	Prefer not to answer	11 (15)

Table 2.3. Participant health conditions reported at baseline, measured by the Functional Comorbidity Index (n = 75).

Health Condition^a	n (%)^b
Arthritis (Rheumatoid and OA)	33 (44)
Visual Impairment (such as Cataracts, Glaucoma, Macular Degeneration)	32 (43)
Upper Gastrointestinal Disease (Ulcer, Hernia, Reflux)	22 (29)
Asthma	20 (27)
Degenerative Disc Disease (Back Disease, Spinal Stenosis or Severe Chronic Back Pain)	18 (24)
Osteoporosis	17 (23)
Congestive Heart Failure (or Heart Disease)	13 (17)
Depression	13 (17)
Diabetes (Type I and Type II)	11 (15)
Anxiety or Panic Disorders	11 (15)
Angina	9 (12)
Obesity and/or Body Mass Index >30 (weight in kg/height in meters ²)	9 (12)
Heart Attack (Myocardial Infarct)	7 (9)
Hearing Impairment (very hard of hearing, even with hearing aids)	7 (9)
Chronic Obstructive Pulmonary Disease (COPD), Acquired Respiratory Distress Syndrome (ARDS), or Emphysema	6 (8)
Stroke or TIA	6 (8)
Neurological Disease (such as Multiple Sclerosis or Parkinson's)	3 (4)
^a Participant may have had health condition prior to or at the time of baseline evaluation.	
^b Not mutually exclusive percentages.	

2.3.2 – Paired t-test and Effect Size Results

2.3.2.1 – Primary Outcome

The Health Directed Behaviour subscale in the heiQ showed statistically significant improvement (mean difference 0.33, SD 0.75) from baseline to post-intervention [$t(70) = 3.78$, $p < .001$]. This corresponded to a Cohen's d of 0.45 (moderate effect size). Table 2.4 provides additional details on our statistical results for our primary and secondary outcomes.

2.3.2.2 – Secondary Outcomes

After Bonferroni correction, there were statistically significant improvements in health promotion self-efficacy as measured by the SRAHP [$t(70) = 3.74$, $p < .001$], and statistically significant decreases in the mental component (MCS) of the SF-36, [$t(70) = 3.74$, $p < .001$]. Effect sizes for the SRAHP and MCS were 0.44 and -1.69, respectively. No other secondary outcomes had statistically significant differences between baseline and post-intervention. Effect sizes ranged between 0.08 for the depression subscale of the DASS-21 and 0.33 for the anxiety subscale of the DASS-21.

2.3.3 – Participant Perspectives

Mean responses on the exit satisfactory survey ranged from 4.3 and 4.9 out of 5. Table 2.5 provides a summary of the mean responses. Ninety-seven percent agreed or strongly agreed to recommending the program to others, 95% agreed or strongly agreed that the program helped them improve their skills in self-management, and 99% agreed or strongly agreed to having overall satisfaction with the coaching program.

Highlights of the program for participants included the coaches' enthusiasm in leading each session, as well as their ability to motivate and provide accountability to the participants. One participant stated, "*Having someone to work with on a regular basis about my health and*

fitness made me more aware of what I was doing and encouraged me to become regularly active. I felt committed to doing what I promised to do because someone was going to check in with me at a later date.” Another participant mentioned, *“I was inspired to be more mindful about my health and the things that could assist me to continue to enjoy my health and well-being, and it was something that I looked forward to each week.”* Some participants stated the usefulness of the Health Living booklet as a guide during and outside of the coaching sessions. One participant stated, *“One of the benefits about that is that I now have it for a reference and an ongoing [sustainability] of the program.”*

Other participants discussed the structure of the program, mentioning they would have liked to have had more sessions. A few participants suggested to have at least one follow-up session in the future to see if participants are keeping up with the self-management skills and knowledge that they learned from the COACH program.

Outcome Measure	Baseline Mean±SD	Post-intervention Mean±SD	Mean Difference ±SD	t	df	Sig. (2-tailed)	Cohen's d
Health Education Impact Questionnaire (heiQ)							
Health Directed Behaviour	4.07±.088	4.41±0.68	0.33±0.75	3.78	70	<.001 ¹	0.45
Positive and Active Engagement in Life	4.12±0.67	4.22±0.60	0.11±0.46	1.96	70	.054	0.23
Emotional Distress	2.77±0.88	2.89±0.75	0.12±0.68	1.53	70	.130	0.18
Self-monitoring and Insight	4.22±0.47	4.34±0.42	0.12±0.40	2.46	70	.016	0.29
Constructive Attitudes and Approaches	4.20±0.60	4.32±0.61	0.13±0.53	2.02	70	.047	0.24
Skill and Technique Acquisition	3.95±0.61	4.07±0.59	0.12±0.54	1.87	70	.066	0.22
Social Integration and Support	3.87±0.80	3.98±0.76	0.1±0.51	1.85	70	.069	0.22
Health Service Navigation	4.17±0.56	4.29±0.57	0.12±0.46	2.20	70	.031	0.26
Depression, Anxiety Stress Scale (DASS-21)							
Depression	6.00±7.22	5.61±6.38	-0.39±4.68	-0.71	70	.480	-0.08
Anxiety	5.46±6.16	4.02±4.94	-1.44±4.31	-2.81	70	.006	-0.33
Stress	10.08±8.77	8.54±5.97	-1.55±6.90	-1.89	70	.063	-0.23
Medical Outcomes Study (MOS): Social Support							
	3.68±0.92	3.76±0.92	0.08±0.52	1.25	70	.214	0.15
Short Form-36 (SF-36)							
Physical Component Summary (PCS)	49.56±11.33	47.22±7.78	-2.34±10.92	-1.80	70	.076	-0.21
Mental Component Summary (MCS)	32.28±6.64	14.50±9.72	-17.78±10.50	-14.27	70	<.001 ²	-1.69
Self-Rated Abilities for Health Practices							
	87.51±13.45	92.17±13.33	4.66±10.52	3.74	70	<.001 ²	0.44
¹ Health Directed Behaviour (primary outcome measure) had a statistically significant (p < .05) increase from baseline to post-test.							
² Secondary outcome measures that had statistically significant changes from baseline to post-test after Bonferroni correction (p < .004)							

Table 2.5. Results from the exit satisfaction survey (n = 71).	
Question	Mean ^a ±SD
Staff Communication and Facilitation	
My privacy was sufficiently protected.	4.8±0.50
I always had a say in what was happening.	4.8±0.44
I was treated with respect.	4.9±0.34
I never knew what was going on. ^b	1.4±0.54
There was adequate follow-up from one session to another.	4.6±0.64
Things were explained to me in an understandable way.	4.7±0.51
Staff listened carefully.	4.8±0.40
Usefulness of the Service	
I would recommend this program to others.	4.7±0.52
The program has helped me improve my skills in self-management.	4.5±0.71
I spent more time during my daily life thinking about how to better improve the way I manage my health.	4.2±0.71
Equipment	
I found it easy to communicate and attend the sessions via phone or video conferencing call.	4.7±0.58
I could easily hear the staff person while attending the session on the phone/video conferencing call.	4.7±0.60
The staff person could easily hear me through the telephone/video conferencing call.	4.7±0.56
I found the use of the telephone/video conferencing call programs a good alternative for delivering health support resources	4.5±0.58
Program Structure	
There was enough time to work through the coaching program sessions.	4.5±0.73
There were sufficient number of sessions in the coaching program.	4.3±0.86
Overall, I was satisfied with the coaching program.	4.8±0.47
^a Responses ranged from 1 (strongly disagree) to 5 (strongly agree).	
^b Reverse coded (1 is better than 5)	

2.4 – Discussion

The student-delivered Community Outreach telehealth program for Covid education and Health promotion (COACH) program was rapidly mobilized in response to the emergence of the COVID-19 pandemic and the implemented COVID-19 prevention strategies. In this single group, pre-post study we examined the proof-of-concept of COACH. The results indicate that participants in the program showed significant improvement in health-directed behaviour and health promotion self-efficacy, despite a significant decrease in the mental component of health-related quality of life. These outcomes also displayed moderate to large effect sizes. Participants also reported high satisfaction about the program. Additionally, relative to 128,836 COVID-19 cases emerged in the B.C. population (5.1 million)⁹⁹ through the duration of the COACH program (August 2020 to April 2021), no one in the study reported to have contracted COVID-19 during participation. While causality cannot be inferred in a pre-post study, COACH's use of goal setting, person-centered action planning, and student-led support may have contributed to improvements in both self-management and self-efficacy among program participants.

The principal findings from this study support existing research examining self-management programs delivered to older adults (≥ 65 years of age) with chronic conditions via telehealth strategies. A narrative review published by Guo and Albright (2018) presented 31 studies regarding the effectiveness of telehealth technology on self-management on older adults, finding improvement in both self-management (i.e., daily health supporting behaviours, such as diet and exercise) and health self-efficacy.¹⁰⁰ Specifically, long-distance technologies (i.e., phone, videoconferencing) were effective in areas such as improving patients' quality of life, improving health-problem skills and self-care efficacy, adherence to self-care behaviours, and health-care knowledge.¹⁰⁰ These findings are promising, as self-management and self-efficacy

for chronic disease management are both important in an individual's ability to exercise control over their health conditions.

Self-efficacy is especially important when it comes to determining what type of self-care actions an individual uses, how much effort they exert, and how long they sustain their effort in performing those self-care actions.¹⁰¹ Previous studies have highlighted how goal setting and action planning are frequently used to support individuals that are undergoing behaviour change.¹⁰² They are commonly applied in self-management support programs, and have been found to improve not only self-management skills, but also individuals' self-efficacy.¹⁰² Therefore, our findings corroborate existing evidence that goal setting and action planning are two important self-management skills, and provide further evidence on the effectiveness of self-management programs to support the health of community-living older adults. Our results, however, are unique in that they are specific to chronic disease management during uncertain times such as the COVID-19 pandemic.

COACH also supports previous findings demonstrating benefits of student-led interventions. Student-led interventions have achieved comparable results to professional-led interventions, including health promotion behaviours (e.g., weight loss).¹⁰³⁻¹⁰⁵ Additionally, results from previous patient satisfaction questionnaires suggested overall patient satisfaction with student services.¹⁰⁵ Similarly, the COACH program demonstrated potential feasibility of students delivering a novel health coaching program. Participants of the COACH program expressed overall positive opinions about their assigned student coach, which likely contributed to participants' overall positive appraisals of the program. Lastly, it is worth noting that student-led interventions not only benefit participants but are also beneficial to students' learning by helping them develop and improve their communication, knowledge, confidence, and

professional identity.¹⁰⁵ In COACH, student coaches developed experiential knowledge in areas such as behavioural medicine, health promotion, and the delivery of health services using technology, which have limited focus in entry-to-practice health profession programs.

In terms of delivery modality, COACH's use of telephone or videoconferencing software was successful during the COVID-19 pandemic. The Community Preventative Services Task Force has previously published four systematic reviews that examined several telehealth interventions aimed at reducing chronic disease risk factors and managing chronic disease conditions.¹⁰⁶⁻¹⁰⁹ These reviews highlight that telehealth has the ability to reduce in-person visits in order to provide further care, and thus give individuals more opportunities to receive the health support they need.¹⁰⁶⁻¹⁰⁹ This is of paramount importance now during the COVID-19 pandemic, where individuals are required to follow the preventative strategies of social distancing and isolation. Therefore, improved self-management and health promotion self-efficacy observed in this study further support the potential effectiveness of using technology to deliver health promotion and chronic disease management programs. Overall, COACH provides evidence that student-run interventions can also be effectively delivered entirely remotely through telehealth modalities.

While study findings demonstrated improvements in self-management and self-efficacy, results also indicated a significant decrease in the mental component summary of the SF-36 (mental component of HRQOL). This was not surprising, as it may be the result of ongoing mental health challenges presented by the COVID-19 pandemic, including social distancing and the addition of new variants. Particularly, recent study findings reported by Maggi et al. (2021) indicate that greater fear of getting infected was related to diminishing mental health in older adults, possibly due to the perceived vulnerability of older adults to the COVID-19 virus.¹¹⁰

Additionally, a longitudinal study from Mishra et al. (2021) observed that decreased mobility (decreased walking, standing time, step counts, etc.) due to physical distancing requirements implemented during the pandemic was associated with mental health symptoms such as depression.¹¹¹ Thus, our results are unique in that they demonstrate the efficacy of COACH at improving self-management behaviour and self-efficacy, despite participant compromises in mental health likely due to the pandemic. While this paradox requires further investigation, our findings indicate possible usefulness of interventions like COACH during times of stress and uncertainty.

Additionally, our findings indicate the feasibility of delivering a self-management program with short duration (two months) and sessions (six 30-45-minute sessions). Authors of a previous systematic review examined the effects of self-management programs on the daily living of older adults outlined 12 studies that varied in time length and meeting frequency; the shortest program that displayed efficacy was reported to be once a week for 5 weeks, while the longest were reported to last up to 2 years.¹¹²⁻¹¹⁶ COACH demonstrated potential for self-management programs to result in improvements in self-management and other areas like self-efficacy in as little as 6 weeks, and thus allowing participants to receive quick and positive results.

2.4.1 – Limitations

Due to the single group, pre-post study design, we cannot determine the causal effects COACH might have had on the study outcomes. Our results, however, demonstrate high satisfaction with COACH along with moderate sized effects on the outcomes with statistical significance. There may be low internal validity due to possible confounding variables for which we could not control (i.e., life events outside of study protocol the participant was experiencing

during participation). Future directions should involve evaluating the COACH program using a randomized-controlled trial to control for those confounding variables and conclude possible causal effects of COACH.

Additionally, group means at baseline for each outcome measure suggested that participants started the study with good health-related behaviours, and this may have limited the potential for improvements in the evaluated outcome measures. Participants were primarily white and highly educated with access to technology, which limits generalizability of the results. Regarding technology accessibility, there is also a chance that participants were mainly people with higher technology readiness (e.g., stable internet and/or phone service). Furthermore, the outcomes may have been influenced by social desirability bias. Further study is necessary to determine if positive health behaviours are maintained once no longer externally monitored.

2.4.2 – Conclusion

In this study, we established proof-of-concept for the novel student-led COACH program. COACH is a feasible health promotion and education program that may improve chronic disease management, and health promotion self-efficacy during times that require physical and social distancing, such as the COVID-19 pandemic. Our findings also highlight the benefits of using of students in entry-to-practice health profession programs at delivering virtual health promotion programs. Future evaluation of COACH using a randomized-controlled trial study design may will further determine its effectiveness on clinical outcomes.

CHAPTER 3: QUALITATIVE EVALUATION OF CHRONIC DISEASE MANAGEMENT IN OLDER ADULTS DURING COVID-19

3.1 – Introduction

3.1.1 – Background

The aging population is at increased risk of developing chronic diseases, with nearly 70% of Canadians over 60 years of age living with one or more chronic diseases.^{18,19} Chronic disease management among the older adult population is becoming increasingly important, especially since the number of older adults (≥ 65 years of age) is increasing.^{18,19} Management of chronic disease has become especially apparent during the COVID-19 pandemic, as public health restrictions to reduce viral spread (i.e., quarantine, social and physical distancing, and closure of public facilities) have increased barriers to managing health and wellness.^{59,60} While important for preventing the spread of COVID-19, prevention strategies also have indirect effects on the health behaviours (e.g., physical activity, diet, sleep habits) of older adults. Recent studies have reported that older adults have experienced decreases in their physical activity, increases in anxiety and depression, and poor sleep quality.⁸⁻¹⁰ While chronic disease management among older adults is well-studied,¹¹⁷ to our knowledge, no study has qualitatively examined chronic disease management experiences during COVID-19. Understanding the experiences of older adults participating in a health promotion and education program during COVID-19 will contribute to our understanding of patient-centred chronic disease management strategies when physical and social distancing are required.

In Chapter 2, we quantitatively evaluated the effects of a student-delivered **Community Outreach telehealth** program for **Covid education and Health promotion (COACH)**. Results indicated improvements in health-directed behaviour and self-efficacy in the context of declining

mental health-related quality of life. In this chapter, we report on our qualitative investigation of COACH, as well as our more general learnings about chronic disease management during COVID-19 among older adults.

3.1.2 – Objectives

The objectives of this study were to describe: (1) the chronic disease management strategies of older adults (≥ 65 years of age) during the COVID-19 pandemic; and (2) participants' experience in the COACH program.

3.2 – Methods

3.2.1 – Study Design

In this qualitative study, we used qualitative description to develop an understanding of chronic disease management among adults ≥ 65 years during COVID-19.¹¹⁸⁻¹²⁰ This approach helps to focus on learning about the who, what, and where of events or experiences.¹¹⁸⁻¹²⁰ Qualitative description allowed us provide straight descriptions for both chronic disease management during COVID-19 and experiences in the COACH program.¹¹⁸⁻¹²⁰ This would not only provide more understanding about chronic disease management, but it would also help to refine future interventions similar to COACH.¹¹⁸⁻¹²⁰ The COREQ (COnsolidated criteria for REporting Qualitative research) checklist was used to ensure the completion of steps throughout the research and writing this chapter (Appendix E).¹²¹

3.2.2 – Participants and Recruitment

Participants were identified from the quantitative COACH study (Chapter 2). Inclusion criteria included older adults living in the community who: (1) were 65 years or older; (2) had access to a telephone or videoconferencing program; and (3) had no previous COVID-19 diagnosis by health professionals. Exclusion criteria included individuals who: (1) were not

medically stable; (2) were participating in other health promotion programs; and/or (3) had severe hearing loss that could not be corrected with a hearing aid. Participating in the previous quantitative study evaluating the COACH program served as additional inclusion criterion for this study. Individuals were invited to participate in this study after completing post-intervention data collection in the quantitative study. If interested, they were asked to submit their consent to participate (see Appendix C for consent form). Interviewees were identified by stratified purposeful sampling to obtain variability in experiences and to select information-rich resources.^{122,123} The sample was stratified with representation from both sexes and different geographical locations in British Columbia (i.e., urban – Vancouver/Fraser, rural – Interior and Northern, and island – Vancouver Island). These factors were selected to stratify the sample based on previous literature that have reported on how sex differences and geographical location (i.e., urban versus rural areas) could affect how individuals manage their own health.^{124,125} Participants were recruited until the research team determined that data sufficiency had been reached.^{126,127} In total, 24 participants were included in this study, with no dropouts or refusals (Table 3.1).

Table 3.1. Sample Characteristics by Sex (n = 24)		
	Male (n = 10)	Female (n = 14)
Sample Characteristics	n (%) or Mean±SD	
Age (years)	73.1±7.4	74.1±5.6
Geographical location		
Vancouver/Fraser	6 (25)	5 (21)
Interior	2 (8)	3 (13)
Island	2 (8)	6 (25)
Chronic Diseases		
0-1	3 (13)	3 (13)
More than 1	7 (29)	11 (46)
Race/Ethnicity		
White or Caucasian	9 (38)	11 (46)
Other	1 (4)	3 (13)
Marital Status		
Married/common law	7 (29)	6 (25)
Other	3 (13)	8 (33)
Family Size		
1 (Living Alone)	3 (13)	8 (33)
2+	7 (29)	6 (25)
Employment Status		
Employed (working full-time/part-time)	2 (8)	1 (4)
Retired	8 (33)	12 (50)
Other	0	1 (4)
Highest Education Level/Degree		
High school degree or equivalent (i.e., GED)	1 (4)	1 (4)
Bachelor's degree (i.e., BA, BSc)	3 (13)	4 (17)
Other (i.e., Graduate, technical degrees, etc.)	6 (25)	9 (38)
Approximate Gross Household Income		
Less than \$50,000	6 (25)	7 (29)
\$50,000 - \$79,999	0	2 (8)
\$80,000 or more	3 (13)	3 (13)
Prefer not to answer	1 (4)	2 (8)

3.2.3 – Data collection

Participants were interviewed one-on-one using an open-ended semi-structured interview guide developed by the primary author (MY) with input from the research team. The virtual interviews took approximately 30-45 minutes and were audio-recorded using Zoom videoconferencing.

Participants were interviewed by the primary author (MY), who had no personal relationships with any of the participants. The interviewer was a 24-year-old female rehabilitation sciences master's student with an interest in chronic disease management, health promotion, and telehealth. While she had general knowledge on her research topics of interest, she did not have any personal experiences being an older adult and practicing chronic disease management. This allowed the interviewer to identify, recognize, and note prior assumptions that might develop during the interview process that could affect her understanding of participant responses and thus, the outcome of the study's findings. Additionally, as a young adult who was still learning and developing her skills as a researcher, the interviewer also served as someone who could contribute to giving an outsider's perspective on chronic disease management in older adults during COVID-19. Prior to data collection, the interviewer was also trained to deliver the questions and lead open-ended interview sessions. The training was done with the interviewer initially practicing the delivery of interview questions with the principal investigator (BS) and a research coordinator from the lab.

The interview guide (Appendix F) consisted of questions related to topics that included: (1) experiences in managing health prior to COVID-19 (i.e., "Please tell me about your experiences in trying to keep a healthy lifestyle during your daily life"); (2) transitioning experiences of health management during COVID-19 (i.e., "How did the restrictions

implemented to combat COVID-19 affect your health and overall lifestyle?"); and (3) the role of COACH to ensure 'informed and activated patients' (i.e., "How would you describe your overall experience in the COACH program?"). Supplementary field notes were written throughout the interview process.

3.2.4 – Analysis

We conducted thematic analysis adapting elements from the iterative process outlined by Braun and Clarke (2019) with a structured coding approach (i.e., "codebook thematic analysis").^{128,129} This approach allowed the research team to stay close to the data to create straightforward finding interpretations.¹²⁰ The iterative approach is comprised of three stages: (1) *Stage 1 – Transcription and initial reading*: Analysis began with the first author (MY) and a research assistant (LW) transcribing the data verbatim and reading the interview transcripts. Documentation of theoretical and reflective thoughts was done for data immersion.¹³⁰ Transcripts were read multiple times in detail to increase validity.¹³¹ (2) *Stage 2 - Initial coding*: The same two research team members identified, categorized, and sorted important sections of text into codes using Nvivo-12.¹³⁰ Coding allowed researchers to break up, recognize key elements and identify salient pieces of the data; codes were modified or deleted throughout the analytic process.^{130,131} Coding began with each team member coding the same first five transcripts independently and then discussing findings together to establish any similar thoughts and findings that emerged. The remaining data were then divided and coded separately by each team member. During the coding process, a coding guide was developed to organize and manage each code (Appendix G). Codes in the coding guide were not drawn from pre-existing ideas that were developed prior to the analysis process, and the guide was modified throughout the coding process. The two team members would conduct regular meetings to

continue discussion of findings throughout the analysis process. Inductive approaches derived was conducted throughout, and data were not matched with any pre-existing coding frame or preconceptions from the researchers.^{131,132}

(3) *Stage 3 - Identifying themes*: Once all the data had been collected and initially coded, we reviewed the coded data and developed potential themes. Themes were developed through a collaborative process with the first author (MY), the principal investigator (BS), and a research assistant (LW). A theme was identified if it brought “meaning and identity to a recurrent experience and its variant manifestations” and captured something important about the overall research question.^{133,134} By the end of analysis, themes were created, named, and defined that were relevant to the research objectives.

Sample sufficiency was monitored continuously as data were collected and analyzed. In this case, sufficiency would occur when collected data began to feel redundant (i.e., similar comments being said).¹²⁷ Sufficiency was established after the 20th interview. However, four additional participants were recruited to ensure and confirm that no new themes emerged.

More than one research team member was involved in reading, coding, and theme development to gain richness for the data. Participants were also emailed a one-page summary of the findings to give them opportunities to comment or clarify any thoughts (i.e., member checking). Additionally, to track dependability of the analysis process, an audit trail was created for the entire research team to follow the similarities and differences in interpretations of each research member’s decisions and choices.¹³⁵ Reflexivity (i.e., examining one’s own beliefs, judgments and practices during the research process) was also used to monitor any effects on the interviewer’s positioning and to note any clinical values or beliefs that used to help interpret the data, and any other values, beliefs, biases or thoughts that could affect the interpretation of the

interview or analysis.¹³⁶ These steps supported the interviewer's awareness of their own position in the research process, and thus helped to document how the interviewer's positioning shaped data interpretations. All records of raw data, field notes, and transcripts were kept for researchers to clearly systemize, relate, and cross-reference data.¹³⁷

3.3 – Findings

Findings were divided to describe each of the study objectives: (1) chronic disease management during COVID-19; and (2) COACH program experiences. In total, five overarching themes were identified and are explained below.

3.3.1 – Chronic Disease Management During COVID-19

Our analyses identified three overarching themes that reflect experiences of chronic disease management in older adults during COVID-19: (1) having a purpose to optimize health (i.e., ensuring abilities to manage health challenges and to maintain independence); (2) maintaining a sense of control (i.e., ensuring self-accountability and resilience); and (3) engaging in social support to optimize management (i.e., informational, motivational, and emotional support).

3.3.1.1 – Having a Purpose to Optimize Health

Participants described the importance of having a purpose to optimize their health. Two subthemes were identified to explain participants' purposes: (1) ensuring abilities to manage health challenges; and (2) ensuring abilities to maintain independence.

3.3.1.1.1 – Managing Health Challenges

Participants expressed wanting to manage current health challenges, prevent further health challenges, or prevent any health challenges from occurring. Some participants dealt with

underlying health challenges prior to participating in the study (e.g., high blood pressure, diabetes, arthritis). For instance, a 77-year-old male from the Vancouver region expressed,

...it's been important to me for quite a while to try and do that [manage their health], and particularly since I was diagnosed with coronary artery disease about 3 or 4 years ago. So then I began to take it a bit more seriously.

Thus, this participant wanted to manage his health and prevent his current health challenges from worsening.

Other participants did not have any underlying health issues coming into the study, and thus their reasons for being healthy involved primary prevention (i.e., preventing health conditions before they occur). For example, a 75-year-old male from the Vancouver region who reported having no health conditions expressed about how he previously observed other older adults with chronic conditions and explained,

...I've seen people before, in fact I was quite moved a few years ago by seeing a few old guys who were probably 60...Who'd been told they had to run or do something, exercise, because they had a heart problem. And I thought, I don't want to be like that.

When COVID-19 emerged, participants recognized the importance of chronic disease management to also reduce their vulnerability to the COVID-19 virus. An 83-year-old male from Vancouver who previously experienced a heart attack stated, “...even if one didn't contract COVID, knowing that if by chance someone did, you want to be in the best health situation you could be in, just in case....”

3.3.1.1.2 – Maintaining Independence

Overall, participants were aware of the importance of practicing positive health-related behaviours for chronic disease management. Many wanted to practice these behaviours because

they wanted to ensure that they could continue their physical and mental abilities to maintain their independence at older ages and continue their activities of interest. For example, some of the participants lived on their own and wanted to continue taking care of themselves without extra help. Others lived with a spouse, and together they wanted to ensure optimal health to take care of themselves and each other.

Participants recognized how health behaviours such as physical activity, diet, nutrition, and stress management are associated with disease and disability. Participants expressed the importance of having healthy behaviours and wanting to continue those behaviours into their older ages. For example, a 74-year-old female from the Vancouver region with arthritis and osteoporosis stated: *“I just had a birthday, I’m 74 now and you know I want to keep living well and the only way to do that is to take care of yourself.”* In a similar way, an 81-year-old female from the Interior region who reported to have had multiple health conditions (i.e., arthritis, asthma, stroke, etc.) mentioned: *“My husband passed away almost two years now, and I wanted to stay living by myself. So, I tried to do as much as I can myself...”*

In addition, participants made sure that they were not only supporting their physical health, but also their mental health. One 76-year-old female from Vancouver with asthma, anxiety and osteoporosis reflected about the mental aspects of her life, stating: *“And, you know obviously there’s some areas in my life that aren’t always rosey, because that’s just the way life is. I think I’m balanced. I’ve been able to manage the more tragic areas and grievous areas.”* Participants hoped to continue being independent and continue living well both physically and mentally as they grow older. To do so, they understood the importance of continuing positive health behaviour practices to support management for their future wellness.

Additionally, participants also explained having healthy activities that were part of their interests (e.g., running, yoga), and thus practicing positive health behaviours allowed them to continue doing the activities in which they were interested. A 75-year-old male in Vancouver who reported having no health conditions mentioned, *“I was sort of motivated really because I really liked the sports, you know. So, I was motivated to stay healthy, you know, because of what it involved.”*

Similarly, a 74-year-old female from the Island region with visual impairment mentioned,

I’ve always been an active person. So, activities have always been part of my life from an early age. Competitive swimming, scuba diving, running... Depending on where I’ve been in my life, I’ve adapted my physical output to what’s going on.

Additionally, during COVID-19, some participants incorporated new-found interests into their health activities to support their motivation. For example, one 67-year-old male from Vancouver with diabetes began bird watching during his walks. He mentioned, *“It [bird watching] just gives me purpose, and it just makes walking all different for me... So, I’ll walk, I’m happy to walk for hours and take pictures of birds.”*

If participants were not particularly interested in engaging in health behaviours, or they lacked interests that could be incorporated into healthy activities, staying motivated was difficult. For instance, one 73-year-old female from the Vancouver region with arthritis and osteoporosis expressed about being physically active, but did not have interest in the activities in which she participated. Some participants experienced a loss of interest in some of their activities, especially when COVID-19 public health restrictions placed limitations on their activities. One 74-year-old female from the Island with visual impairment explained her interest in sailing was not the same as before, stating, *“...there was nowhere to really go because nobody wanted you to*

get off the boat...” Thus, having an activity of interest in their health behaviour practices could help participants continue positive health behaviours for chronic disease management.

3.3.1.2 – Internal Self-Control Strategies

Internal self-control strategies included participants’ own strategies that they used to manage their own health behaviours and the amount of control they had on them. Two subthemes were identified within this theme to describe participants’ experiences of maintaining control: (1) ensuring self-accountability; and (2) promoting resilience.

3.3.1.2.1 – Self-Accountability

Some of the strategies mentioned from participants fell into a category that included actions like self-accountability. In this context, self-accountability was used as a strategy by some participants to control and manage their own health behaviours. Sometimes, participants would have unhealthy behaviours (e.g., poor diet, lack of physical activity), but they made sure to resume their healthy behaviours. For example, a 77-year-old female from the Island who reported having no health conditions explained, *“When I would go off that diet like around holidays or something I would, um, I just would feel a bit guilty and get back on it. You know if I eat too many sweets...”* Similarly, a 66-year-old female from the Island who experienced upper gastrointestinal issues (i.e., reflux) mentioned,

I think overall [my husband and I] both really try to, you know, remember that you can maybe have a day where you eat junk food or something like that but it's really important to try to keep eating fruit and vegetables.

Another 65-year-old male from the Island who reported having no health conditions also explained,

You have to keep on it you just can't go for two or three months doing, you know, doing your exercises and eating healthy all the time. Then slowly fade away from doing that and then all of a sudden oh geez, we haven't done this for a while, let's go back to it.

Thus, participants recognized when they were not practicing positive health behaviours and would attempt to re-incorporate these health behaviours on a future day.

Some participants expressed difficulties resuming health behaviours after adapting unhealthy behaviours. Some observed an increase in unhealthy behaviours during the pandemic, such as increased sedentary behaviour, alcohol intake, eating more snacks in between meals. A 67-year-old male from the Island with arthritis and upper gastrointestinal issues (i.e., reflux) mentioned developing unhealthy eating habits during COVID-19:

I think it was like almost like we weren't eating because we're hungry, we were just eating for, I think, something to do, pass the time while we're watching videos or movies...It was like a bad habit that we had... And we were really stationary sitting for long hours. I would say during COVID... we were sitting for maybe three hours, or three and a half hours in the evening just not even moving much at all.

Other participants expressed difficulties re-incorporating positive health behaviours because COVID-19 limited the type of health activities they could do. Specifically, participants who relied on activities offered at community centres, such as yoga and weightlifting, were limited in activities during COVID-19, especially participants who were unfamiliar with doing at-home physical activities. For instance, a 77-year-old female from the Island who reported having no health conditions said, “...*I have never done much yoga at home. I mean, I could do this on my own, I know what to do. But I've never done it very much at home...*” This resulted in some participants experiencing a decline in both physical and mental health. A 76-year-old

female from Vancouver explained the result of her physical health after quarantining and not going to the gym for her physical activity: *“I felt like my physical fitness just plummeted...you know, I’ve been lifting 15-26lbs bicep curls but I couldn’t even lift up a frying pan.”*

Additionally, an 87-year-old male from the Interior who had previously experienced multiple heart problems (i.e., heart disease, angina) and hearing impairment explained how COVID-19 restrictions affected his social groups and thus, his mental health too: *“We’ve lost our, you know, our contacts from a recreational standpoint, a gaming standpoint, our church has been closed for a long time... So you know, it’s hard to keep your spirits up during this period of isolation.”* Thus, while some participants wanted to continue practicing positive health behaviours, they felt limited in what they could do during COVID-19.

3.3.1.2.2 – Resilience

In addition to self-accountability, participants also explained about how they dealt with different challenges that interfered with daily life practices, which could link to the idea of resilience. Participants sometimes had other ongoing activities or challenges (e.g., health challenges, occupational duties) that would interfere with their ability to practice positive health behaviours during the day. For example, a 69-year-old female from the Island had ongoing mental health challenges (i.e., depression and anxiety) interfering with their other health-related activities: *“Well, if it’s my mental health, I isolate myself... so I really had no strategy, other than kind of hoping that the next day would be better if I had a bad day, you know.”* Another participant, a 68-year-old female from the Island with depression, anxiety, and obesity, had difficulties finding time to incorporate healthy activities because of their full-time job: *“[I could] go on days without really thinking about my health and what my needs might be or things that I could change. Running on the treadmill of life...”* However, participants understood the value of

practicing healthy behaviours, and thus they would remind themselves of that value and attempt to incorporate healthy behaviours when they are given the opportunity to do so.

Participants that had regular activities sometimes were presented with events that forced them to become more flexible with their health behaviours. For instance, when participants had to deal with new health challenges (e.g., injury, sickness), their health behaviours were adjusted to focus on the current issue, as exemplified by a 70-year-old female from the Island with vertigo: *“Because I was so focused on getting well, I was so sick, that I didn’t notice... When you are sick, that’s all you want to do. I was in survival mode.”* Once they recovered, they would slowly attempt to go back to their usual health activities. Similarly, following the ongoing prevention strategies and restriction changes resulted in some participants also needing to adapt a more flexible way of managing their health. Many needed to adjust to doing physical activities either outdoors or at home when community centres closed, such as an 83-year-old male from Vancouver who previously experienced a heart attack: *“...the things I tried, or the things I do, like climbing the steps and walking once in a while. It’s okay, but it’s nowhere near the same as what I was doing before.”*

Additionally, ongoing changes in social restrictions made participants regularly adjust any routine activities outside of home. An 85-year-old female from the Interior with multiple health conditions (i.e., heart disease, chronic obstructive pulmonary disease, upper gastrointestinal issues) reflected on the first few times she went outside of the house: *“The first few times that I went, went out to a stall and I think, you know, almost like anxiety attacks. It took me a while to kind of get used to, you know, being with people.”* Thus, despite some participants having the motivation to practice positive health behaviours, other events may force them to take a more flexible approach with their health behaviours.

3.3.1.3 – External Support Strategies

Participants recognized the importance of having social support to further support the health behaviours they practice for chronic disease management. Specifically, participants highlighted the importance of the following types of support, which were divided into the following subthemes: (1) informational, (2) motivational, and (3) emotional support.

3.3.1.3.1 – Informational Support

Informational support that participants sought out included information on their current health challenges and additional resources to maintain their health behaviours. These materials were obtained from external sources, such as medical doctors (i.e., general practitioner) or other community members. Some participants interacted regularly with their doctors to obtain information about their current health conditions. A 66-year-old female from the Island region with upper gastrointestinal issues (i.e., reflux) mentioned visiting their doctor regularly: *“So, health wise I think we're actually really healthy that way... like regular doctor's appointments and stuff like that...”* Participants who regularly visited their doctor sometimes used knowledge they obtained from their doctor to find health activities and behaviours that would work best for their current situation. For instance, one 77-year-old male from Vancouver with coronary artery disease mentioned, *“...there were things that I would see my doctor about and what would she recommend around any particular area that I'm interested in.”*

Participants also sought informational support from their doctors when they had health-related problems they could not solve themselves. One 72-year-old male from the Interior region with arthritis and asthma commented, *“... every once in a while, I'll do something silly and I don't know what I've did, but you know, I need an adjustment or I need something to relieve some pain, discomfort.”* Other participants obtained informational support from other members of

their community. Particularly, one 73-year-old female from Vancouver with asthma, anxiety and osteoporosis would attend physical activity classes in her community centre and obtain more resources from community members she befriends: “...a friend I met at the classes suggested that I take another class, and then somebody else suggested I take another class...” Overall, obtaining informational support from external sources allowed participants to learn about new information and resources to support their health behaviours for chronic disease management.

3.3.1.3.2 – Motivational Support

Sometimes, participants sought motivational support from family and friends when they needed additional assistance to initiate and sustain their inspiration to perform healthy behaviours. Some participants highlighted on how they have friends or family that act as example figures to help them become motivated to continue with healthy behaviours. For example, a 68-year-old female from the Island region with depression, anxiety, and obesity mentioned having a healthy, active daughter: “... my daughter’s very fit and leads a very healthy lifestyle, so I think she was definitely a big motivator for me to remind me to pay more attention to a healthier lifestyle.” Similarly, a few participants mentioned having friends that would do activities with them. During COVID-19, a 76-year-old female from Vancouver with asthma, anxiety and osteoporosis mentioned meeting with two people from her running group: “...we decided let’s go get back running again but it’ll just be the three of us and we can be at a distance....” The smaller group size allowed them to continue their running activities while following COVID-19 restrictions. Overall, family and friends served as additional support for participants that needed more encouragement to practice their health activities and behaviours.

3.3.1.3.3 – Emotional Support

Family and friends also offered emotional support to participants when dealing with stresses and other issues. For instance, when a 70-year-old female from the Island region with vertigo would deal with personal problems that were causing her stress, she would sometimes manage the stress by spending time with friends: “...*just to go to and lighten up and just go have fun. Go out for dinners...like just a sidetrack, right? Don’t even talk about it just go do something completely different and relax.*”

At the beginning of COVID-19, some participants noted the value of having close friends or family members living nearby to help manage their mental health. A 65-year-old female with upper gastrointestinal issues (i.e., reflux) and a 66-year-old male who reported having no health conditions from the Island both mentioned the value of having family members that lived with them: “...*we were living in the same house with my daughter and her husband, so we have a little bubble...*” Thus, emotional support from family and friends helped participants manage their health, especially their mental health.

3.3.2 – COACH Program Experiences

Overall, participants expressed positive views on their participation in the COACH program and how it supported their health behaviours for chronic disease management. Two overarching themes were identified in COACH program experiences: (1) Coach: provider of information and motivation; and (2) Knowledge: gaining new and furthering old.

3.3.2.1 – Coach: Provider of Information and Motivation

Participants were paired with a trained student coach with whom they collaborated throughout the COACH program. The student coach provided both informational and

motivational support to help participants reach the health goals that they desired to achieve during their COACH participation.

Some participants highlighted how their coach was a good resource when learning about new techniques or resources to help with managing their health. Some new techniques or resources participants obtained from their coaches included online exercise videos (e.g., for physical activity), local online social groups (e.g., for mental health and social support), and learning to change their environment to gear towards their goals (e.g., having a full, large-sized water bottle next to them as a reminder to drink water). For example, an 87-year-old male from the Interior who had previously experienced multiple heart problems (i.e., heart disease, angina) and hearing impairment mentioned, “[My coach] provided me with videos, exercise videos...he provided me with special videos on these stretching bands...”

When asked about having a medical student (as opposed to a health professional) as their coach, some participants saw the value in getting informational support from a student. Some participants were aware that their coaches were limited in what information they could share because they were students. A 68-year-old female from Vancouver with arthritis and osteoporosis stated, “Well, I have no complaints as far as her ability to communicate with me... it’s just that the scope of her role is very limited, so we cannot do much.” However, participants were still open to obtaining any information or resource that their coaches offered: “...my coach was open to looking up alternative choices. Like, what could I do to build up my immune system...What can I do to get me strong,” said a 70-year-old female from the Island with vertigo.

Gaining motivational support from their assigned coach was one of the elements of the program that participants appreciated. Some participants mentioned that the coaches provided motivation by holding them accountable for doing what they said they were going to do. For

instance, an 87-year-old male from the Interior who had previously experienced multiple heart problems (i.e., heart disease, angina) and hearing impairment mentioned, “...it was a great motivation for me, you know, I knew that I was going to have to report back about what I’ve done. Whether I met my goals or not.”

Participants felt that because coaches discussed the collaboratively developed action plans and progress at subsequent coaching sessions, they needed to work on their action plans to report on their progress. A 67-year-old male from Vancouver with diabetes said, “So, having the coach as a catalyst and as a relationship, you know, to which I felt obligated, you know I gotta do my bona fides with her.” A 77-year-old female from the Island who reported having no health conditions even mentioned thinking of their coach outside of sessions to help her achieve her walking goals:

...it was knowing that [my coach] was going to ask me this that when I started my walk, she was kind of like sitting on my shoulder and I think ‘yeah, okay so [my coach] is going to ask me if I’ve done the walk five minutes quicker....

Overall, participants reported positive interactions and partnership with their assigned coaches. Many appreciated the attentiveness of their coaches. Additionally, participants commented about how having a student as their coach was a benefit to their overall partnership. Some considered their relationship with their coach to be mutual. While they were getting support from the coach, and the 69-year-old female participant from the Island with depression and anxiety also felt they were helping the coach practice communicating with patients for their future health profession:

I can't even say how valuable I think that is because part of it... the fact that she's a student and she's learning and that I'm part of her learning, I found very rewarding.

Thus, while this positive relationship enhanced the participants' motivation to accomplish goals, participants also felt their relationship with their coaches was also beneficial to the coaches' own learning in return.

Although the sessions were delivered through telephone or videoconferencing, participants commented that it did not affect the quality of their relationship with their coach. Some participants preferred videoconferencing so that they can see their coach, as indicated by a 68-year-old female from the Island with depression, anxiety, and obesity: "*I prefer Zoom to phone because I like to see the person...so technology was great...*" Others participated in the sessions through phone calls and did not feel the need to see their coach to build a good relationship, as a 77-year-old female Island resident who reported having no health conditions reported:

...I think the phone worked well, and just about everybody has a phone. I do think the phone worked well...I didn't feel that I needed to see her, so, and the kind of things we were talking about she didn't need to show me anything.

Regardless, despite not having in-person sessions, participants felt that they were able to develop good relationships with their coaches.

3.3.2.2 – Knowledge and Skill Development: Gaining New and Furthering Old

Participants discussed the development of knowledge and skills during their participation in coaching program sessions. Specifically, there was value in both gaining new knowledge and skills and developing a deeper understanding of areas that they previously knew and understood. In terms of obtaining new knowledge and skills, participants discussed learning about behaviour change strategies, such as goal setting and having new perspectives for accomplishing goals. For instance, a 68-year-old female from the Island with depression, anxiety, and obesity mentioned,

“...what I really appreciated was that I didn’t have to change everything all at once and that it was incremental and it was small steps...” Additionally, other participants learned that if they did not accomplish their goals one day, it is not a failure; rather, the next day is considered a new starting point to work from for their goal. A 76-year-old female from Vancouver with osteoporosis and asthma reflected on the following: *“...if I felt like I’m slipping, you have the ability to return back to that point and say, no no no. This is a new starting point, rather than this is a failure.”*

Some participants also gained new perspectives about the use of technology to deliver health-related services like COACH. Some participants learned how to use Zoom through the program, such as one 81-year-old female from the Interior who reported to have had multiple health conditions (i.e., arthritis, asthma, stroke, etc.): *“And I like Zoom. I never used Zoom before, but now I use it quite often and I use it now with my disability group...”* Thus, the COACH program also gave some participants the opportunity to learn how to use technology to receive health-related programs and services.

Some participants started the program with prior health knowledge. In this case, COACH helped to validate participants’ previous knowledge. Participants commented about how the information in the “Healthy Living” and COVID-19 booklets were not new to them; however, that they still appreciated having the resources to remind them of the information and to refer to when needed. For example, a 72-year-old male from the Interior with arthritis and asthma said, *“...we’re looking for ideas...And you know anything you can read or anything that you can do ... The bottom line is we’re never too old to learn.”* Furthermore, some participants knew what goals they wanted to achieve, but just needed additional help from COACH to put them into practice, as illustrated by a 77-year-old male from Vancouver with coronary artery disease:

“What I really learned from it was that with the right kind of trigger, I can implement these ideas I have that I would like to do for self-improvement. That they don’t have to just be in my head.”

Overall, despite some participants coming in with prior health knowledge, COACH was still beneficial by giving participants the opportunity to confirm and further their knowledge.

3.4 – Discussion

Overall, this study leads to a greater understanding of older adults and their experiences in chronic disease management during COVID-19 and participating in the COACH program. Our findings highlight the knowledge and behaviours older adults developed when managing their health, and what elements of the COACH program helped to improve their chronic disease management strategies. This study provided insight for further improvement and developments in both the COACH program and similar future chronic disease management services.

Our findings suggest a sequential process for both chronic disease management for participants who had health conditions and chronic disease prevention strategies for participants who did not report any health conditions. At the foundation of chronic disease management, our findings display that people need a purpose (i.e., “Having a Purpose to Optimize Health”). Once a purpose has been identified, participants rely on internal senses of control (i.e., “Internal Self-Control Strategies”), followed by engaging in external support resources (“External Support Strategies”). Once these are met, people may seek further resources. Participants’ experiences in COACH serve as additional external resources to further optimize management efforts. Specifically, participants highlighted the contribution of their coach’s support (“Coach: Provider of Information and Motivation”) and knowledge and skills they developed during the program (“Knowledge and Skill Development: Gaining New and Furthering Old”). Our findings align with previous findings from Schulman-Green et al. (2012), where they extracted three types self-

management processes from 101 studies published between January 2000 and April 2011.¹³⁸ Two processes, “focusing on illness needs” (i.e., learning about the chronic conditions, taking ownership of health needs, and performing health promotion activities) and “living with a chronic illness” (i.e., coping with a chronic condition and integrating illness needs into the context of the individual’s life), overlap with our findings of an individual needing a purpose to manage and prevent chronic diseases and engaging in internal resources to manage their own health.¹³⁸ Recognizing the importance of social support and the participants’ COACH experiences also fit with the third process, “activating resources” (i.e., using individuals and community resources/services that help individuals achieve their most optimal self-management ability).¹³⁸ Thus, our study findings further support ideas of underlying self-management processes in individuals practicing chronic disease management and chronic disease prevention strategies, even during unpredictable times like COVID-19.

Social support was a recurring topic that emerged for both study objectives. There is a discrepancy with our quantitative findings (Chapter 2), where social support was not a statistically significant finding. In the quantitative study, social support was reported to be high at baseline, which may indicate participants’ high perception of the importance of social support prior to beginning COACH. Similarly, the current study’s findings demonstrate participants seeing value in social support and discussing the social support they had before and during COVID-19. This value continues to be observed when participants discuss the importance of support they received from their program coaches, further confirming their high perception about the value of social support for their own health management.

In the literature, social support is also a recurring topic when considering chronic disease management.¹³⁹⁻¹⁴³ Social support has previously been reported to be an important component in

health, and multiple models have been developed in attempts to conceptualize it.¹⁴⁴ Previous research outlines associations between strong social support networks and increased health and wellness, as well as associations between lower levels of social activity and lower perceived health among older adults with chronic disease.¹⁴¹ Furthermore, social support has been speculated to provide individuals opportunities to receive further information and motivation to engage in positive health-related behaviours.^{140,141} Our findings align with dimensions of informational and socio-emotional (emotional, affective, and positive social interaction) social support previously proposed by Bennet et. al (2001) and Westaway et. Al (2005).^{145,146} In our study, these were observed when participants spoke in detail about informational, motivational, and emotional support they receive from their family, friends, general practitioners, and their assigned student coach in the COACH program. More specifically, the informational and motivational support participants received from the coaches (e.g., new techniques and resources, motivation via accountability) also aligned with supports that were identified in previous web-based peer support interventions for adults with chronic conditions.¹⁴⁷ Although these interventions discussed peer support, there is some overlap between elements of receiving emotional (e.g., communicating a sense of belonging and inclusivity) and informational (e.g., asking for guidance and providing detailed explanations) support from peers, and participants in COACH receiving support from their student coaches.¹⁴⁷ While not the focus, social support is highlighted as an important element in participants' own health journeys, and thus our findings helped to further support its importance in health literature.

Additionally, our findings further support the use of student-led interventions, as many of the participants reported positive thoughts and opinions about having a student coach. Interview responses we received reflecting on the mutual relationship between the participant and their

coach also overlap with previous literature that states how student-led interventions can be beneficial for both the participant and the student.¹⁰⁵ Students can use this experience to learn and improve their communication, knowledge, confidence, and professional identity.¹⁰⁵ Future research gathering the perspectives of the students who led the COACH program would be beneficial to further understand the dynamics of the student coach-participant relationship.

3.4.1 – Limitations

There are several limitations to this study. First, while the interviewer kept interview questions open-ended and started each interview stating to participants to express their full and honest thoughts and experiences, social desirability bias may still exist, where participants may not have shared all the thoughts and experiences they had. For example, socially undesirable attitudes or thoughts regarding participants' COACH program experiences could have been underreported during interviews. Another limitation involves the transferability of our findings. While the perspectives that we gathered for this study are reflective of the participant sample that participated in COACH, we cannot guarantee that the chronic disease management experiences outlined reflects what the entire older adult population in British Columbia experienced before and during COVID-19. We also cannot conclude transferability of experiences to populations outside of British Columbia. Further studies are needed to better determine the transferability of chronic disease management experiences to other older adults in and outside of British Columbia.

3.4.2 – Conclusion

The findings in this study suggests a sequential nature for chronic disease management strategies of older adults, with participants engaging in both internal and external support motivators. COACH acted as external support for participants' own chronic disease management

during COVID-19. Future directions for this research involve further understanding this sequential nature and its transferability to greater populations. Other future investigations include obtaining the perspectives of the student coaches that ran the COACH program for informing similar future interventions.

CHAPTER 4: DISCUSSION AND FUTURE DIRECTIONS

Chronic diseases and other health conditions have become prominent in older adult populations (≥ 65 years of age), and thus an increased focus on improving strategies for management of chronic diseases is essential.^{13,14} Some of the most common type of chronic disease risk factors include long exposure to negative health-related behaviours, such as tobacco use, alcohol use, stress, lack of regular physical activity, and poor dietary behaviour.²⁹⁻⁴¹ Modifications of health-related behaviours (e.g., physical activity, diet) can help lower these chronic disease risk factors, which can improve the management of chronic diseases in older adults.³⁷⁻⁵⁰ Maintaining positive health-related behaviours was challenged during the COVID-19 pandemic, when quarantining, social isolation, physical distancing, and closure of public facilities created limitations, barriers, and reduced options for older adults to practice healthy behaviours.⁵⁵⁻⁶⁰ Thus, the overarching purpose of this thesis was to increase our understanding of chronic disease management of older adults during times of quarantining, social isolation, and physical distancing, with a particular focus on the role of health behaviours as a means for chronic disease management.

In response to the COVID-19 pandemic and concerns about the limitations of COVID-19 prevention strategies on health-related behaviours (to address chronic disease management), we developed the student-delivered **Community Outreach teleheAlth** program for **Covid** education and **Health** promotion (COACH). The primary purpose of COACH was to provide support to older adults in managing their health behaviours while practicing necessary COVID-19 prevention strategies, as well as provide up-to-date and reliable information about the status of COVID-19 in terms of preventive strategies, provincial and national restrictions, case counts,

and stages of reopening. Furthermore, the COACH program provided the foundation for the research in this thesis.

Effect estimates of COACH were first quantitatively evaluated with a single-group, pre-post study and reported in Chapter 2. In this research, self-management was defined and evaluated as health directed behaviour (i.e., areas of self-management that include tangible changes in health behaviours, such as diet, exercise, and relaxation routines). Results indicated statistically significant improvements in areas of health directed behaviour and health self-efficacy, along with statistically significant declines in mental aspects of health-related quality of life during COVID-19.

After quantitative evaluation of COACH, we qualitatively examined participant experiences of both their chronic disease management during COVID-19 and participation in COACH, as reported in Chapter 3. Findings in this research suggests that participants' management strategies included having a purpose to practice self-management (i.e., "Having a Purpose for Managing Their Health"), which can then be supported with internal (i.e., "Maintaining a Sense of Control on Their Own Self-Management Abilities") and external (i.e., "Recognizing the Importance of Social Support for Self-Management" and COACH qualitative experiences) sources of motivation. Additionally, findings from both the quantitative and qualitative studies indicate benefits of using telehealth-delivered and student-led interventions to support chronic disease management. Overall, findings from each study contribute to greater understanding of chronic disease management in older adults during unprecedented times, such as the COVID-19 pandemic.

4.1 – Improving Health Directed Behaviour and Self-efficacy in Chronic Disease Management Interventions During Mentally Challenging Times

Both self-management and self-efficacy have previously been reported to be important for chronic disease management, which is consistent with our findings. Self-management support strategies are commonly used in behavioural interventions for the management of chronic diseases.³³ Decision-making and goal setting, resource utilization, formation of a patient/provider partnership, and action planning are common evidence-based self-management support strategies used in chronic disease management interventions³²; these skills were also used in the COACH program sessions. Generally, people with chronic diseases practice decision making to respond to ongoing changes in their chronic conditions.³² To support the decision-making process, people may seek out external resources to develop further knowledge on how to respond to these ongoing changes.³² In COACH, the program sessions, program materials (i.e., the Healthy Living booklet, Self-Health Review, and COVID-19 information), and communication with a paired student coach helped to support and guide participants in making their own decisions to manage their health. Once a decision has been made, the next step is taking action, which COACH supported through the development of action plans that were both behaviour-specific and achievable for the participant.³² Coaches were trained on brief action planning techniques in preparation for leading the coaching sessions and helping participants develop effective action plans. By the end of the program, the participants would have the skills to develop their own plans using the brief action planning techniques that coaches used in COACH. Overall, COACH utilized evidence-based self-management support strategies to support participants in learning how to manage their health.

Our findings also indicate that COACH has the potential to improve health promotion self-efficacy (i.e., the belief individuals have in their ability to engage in behaviours to promote their own health). This finding is important because research indicates that self-efficacy is an important predictor of various health behaviours, such as physical activity, diet, smoking cessation, and alcohol abstinence.¹⁴⁸ In the context of health promotion, self-efficacy is how an individual perceives themselves to act out a target health-related behaviour effectively.¹⁴⁹ Self-efficacy has previously been reported to be modified with strategies such as performance accomplishment, vicarious learning, verbal persuasion, and reinterpretation of physiological effects.¹⁵⁰ Much of these were emulated throughout the coaching sessions, as coaches would continuously check in with participants and reflect on any goals that they accomplished throughout the program. The coaches also acted as motivators and resources for many of the participants by verbally encouraging and providing extra knowledge or advice when participants needed it to help accomplish their health behaviour goals. The sixth and final session was especially reserved for the coach and participant to discuss and reflect on the knowledge, skills, and accomplishments the participants experienced, and encourage them to continue practicing what they learned from the program. Overall, high levels of both self-management ability and self-efficacy can help individuals to effectively improve health behaviours, and thus contribute to management.

Interestingly, while improvements in self-managing health directed behaviours and health promotion self-efficacy were observed, we also observed a concomitant decrease in the mental health component of health-related quality of life. Declining mental health may be explained by previous reports of older adults experiencing ongoing mental health challenges from the COVID-19 pandemic (e.g., restrictions, fear of getting infected, addition of new variants).¹¹⁰

Specifically, recent study findings also displayed diminishing mental health and decreased mobility (i.e., decreased walking, standing time, step counts, etc.).^{110,111}

This paradox seems to occur not only in older adults, but also in other age groups. A recent study by Giuntella et al. (2021) aimed to document dramatic changes in physical activity, sleep, and mental health in college students.¹⁵¹ They recorded these disruptions using a wellness study intervention in which students participated between February 2019 (before COVID-19) and July 2020 (during the onset of COVID-19).¹⁵¹ The wellness study involved having students wear Fitbit devices and answering surveys about their well-being.¹⁵¹ Similar to other reports, their findings indicated that disruptions in daily life activities due to COVID-19 negatively impacted both physical activity and mental health.¹⁵¹ They also report associations between physical activity and mental health, stating decreased physical activity as a leading risk factor for depression during COVID-19.¹⁵¹ However, the study also displayed a similar paradox to our research findings. Halfway through the research, a randomized policy intervention was implemented as a response to counteract adverse impacts caused by the pandemic.¹⁵¹ While this intervention helped to increase physical activity (i.e., average number of daily steps), restoration of physical activity did not help improve mental health.¹⁵¹ Therefore, there seems to be an unexplained paradox being observed in multiple age groups. This finding requires further investigation to understand the paradox of how health-related areas like health directed behaviour and self-efficacy can improve alongside the decline of mental health.

Implication: COACH can be used to support individuals' improvement in self-management (i.e., health directed behaviour) and health promotion self-efficacy. These effects are even observed during mentally challenging times like the COVID-19 pandemic. Further investigation is required to understand the paradox of improving self-management and self-efficacy while mental health is compromised.

4.2 – Having Underlying Processes that Contribute to Chronic Disease Management

Experiences

In Chapter 3, we qualitatively interviewed a subset of participants (n = 24) from COACH to learn more about experiences: (1) of older adults' chronic disease management strategies during COVID-19; and (2) of participants in COACH. Our findings suggests that participant experiences in practicing either chronic disease management or chronic disease prevention strategies include having a purpose to practice self-management (i.e., "Having a Purpose for Managing Their Health"), which can then be supported with internal (i.e., "Internal Self-Control Strategies") and external (i.e., "External Support Strategies") sources of motivation. Participants' COACH experiences are then further outlined as an example of external resources of motivation that participants received during COVID-19.

Our findings corroborate previous research examining the processes and mechanisms of self-management in the context of chronic diseases. For example, Schulman-Green et. al (2012) attempted to define the process in which people enact self-management behaviours.¹³⁸ While there are pre-existing self-management frameworks to describe self-management itself (e.g., Lorig and Holman's proposed self-management skills and strategies³²), specific processes that help to explain the experiences of people living with chronic diseases have yet to be defined.¹³⁸

In their meta-synthesis review of 101 studies focusing on the processes of self-management in chronic diseases, they determined a causal self-management pathway in which individuals first ‘focus on illness needs’, which is characterized by learning about the chronic condition, taking ownership of health needs, and performing health promotion activities.¹³⁸ Subsequent to this, individuals then live with their illness by developing coping strategies and incorporating such strategies into their daily life (i.e., “living with a chronic illness”). Finally, individuals ‘activate resources’, which is characterized by using other individuals and community resources or services to help them achieve their most optimal self-management ability.¹³⁸

Without question, these processes defined in previous research are consistent with our findings in Chapter 3. That is, “Focusing on illness needs” and “living with a chronic illness” have ideas that intertwine with the concepts of having a purpose for managing health and maintaining a sense of control on self-management abilities. Generally, these ideas involve recognizing and learning about the chronic illness, beginning to develop skills and reasoning to manage their illness, and then implementing and maintaining those skills into daily life.

Our findings highlight having a purpose for optimizing health, which involve ensuring abilities to maintain health challenges and to maintain their independence. Similarly, Schulman-Green et al.’s (2012) categories of “focusing on illness needs” highlight the importance of performing health promotion activities and changing behaviours to minimize the impact of chronic diseases.¹³⁸ Subsequently, “living with a chronic illness” then deals with integrating the illness into daily life with the purpose to adapt to living with the chronic disease or seek normalcy.¹³⁸ Most importantly, “living with a chronic illness” also mentions “meaning making”, which is characterized by finding meaning of the illness in their lives, and describing tasks such as creating a sense of purpose and appreciating life.¹³⁸ Thus, our findings support ideas of

practicing self-management to not only minimize health challenges, but also adapt to health challenges to living their lives in the most optimal way for themselves.

Additionally, internal self-control strategies, or maintaining a sense of control on self-management abilities, overlaps with actions outlined in “focusing on illness needs” and “living with a chronic illness”. Some of these actions included sustaining their changed health behaviours and modifying their lifestyle to adapt to their current health conditions.¹³⁸ In our findings, participants focused on areas that indicated practices of self-accountability and resilience to help themselves create changes to their health behaviours and modify their daily activities for those health behaviours.

External resources assist any areas of self-management that needs further support. In this context, our finding of “external support strategies” fits into Schulman-Green et al.’s (2012) category of activating resources, where individuals seek further help from their social support networks as needed.¹³⁸ Furthermore, COACH program experiences serve as an example of an external resource that participants used during COVID-19, as COACH provided participants with additional informational support, motivational support, knowledge, and skills to aid their navigation towards their most optimal health behaviours and self-management abilities. While further research is still needed to confirm true definitions for the mechanisms behind self-management, our current study findings contribute to supporting the idea of underlying self-management processes in individuals practicing chronic disease management.

Implication: Chronic disease management of older adults during COVID-19 is founded upon three underlying sequential processes [(1) identifying purposes to optimize their health; (2) using internal motivators; and (3) using external motivators] that older adults navigate in their ability to effectively manage chronic diseases. Further research is needed to confirm the proper mechanisms involved.

These possible underlying processes are comparable with Chapter 2's findings. Findings from both Chapter 2 and 3 can help to highlight an importance of self-management and self-efficacy for older adults' experiences (or processes) in chronic disease management. Having high levels of self-efficacy can help individuals in identifying purposes to optimize their health for chronic disease management, then further perceive themselves to be able to find and use both internal and external motivators to effectively self-manage their health. In the qualitative study (Chapter 3), participants identified external motivators as important for chronic disease management, which further supports the use of COACH as a program. Thus, supporting the idea that COACH was a possible external motivator for the improvement of self-management and self-efficacy in participants. Thus, both self-management and self-efficacy were highlighted to be important aspects when participants were navigating through the COACH program and their own chronic disease management processes.

4.3 – Contributions of Telehealth-delivered and Student-led Interventions in Supporting Chronic Disease Management

4.3.1 – Telehealth-delivered Interventions

Social restrictions implemented during the COVID-19 pandemic posed barriers to in-person health care services. Telehealth strategies, like virtual visits and other digital health tools,

began to emerge to limit in-person visits and lower the risk of transmitting the virus.^{152,153} To follow provincial orders set out during the COVID-19 pandemic, COACH was delivered entirely through telehealth methods (e.g., telephone and Zoom videoconferencing).

Telehealth has been previously used to deliver chronic disease self-management support programs. Specifically, the use of telephone and videoconferencing technologies were shown to effectively deliver self-management support programs that improved patients' quality of life, health-problem skills and self-care efficacy, adherence to self-care behaviours, and health care knowledge.¹⁰⁶⁻¹⁰⁹ For this research, the use of technology allowed for a safe and convenient way to virtually train student coaches from all regions in the province to deliver health care during times when individuals needed to practice quarantining, social isolation, and physical distancing.

While telehealth does not change what the health care system delivers to patients, it helps to overcome any challenges that emerge from accessibility and cost, especially during a pandemic.^{154,155} Previous literature reports high satisfaction with telehealth including factors like ease of use, low cost, and decreased travel time.¹⁵⁶ Using telehealth for COACH gave the opportunity to deliver chronic disease management and health promotion by connecting students and participants from all regions of the province. Thus, both coaches and participants had the ability to communicate with each other and attend sessions without the limitation of geographical location. Overall, technology helped remove limitations placed by distance and geographical location, while also creating a safe and accessible program that fit within implemented COVID-19 restrictions.

While previous literature reports high satisfaction with telehealth, they also note barriers to telehealth that may be experienced by individuals. Some of these included not having internet access or feeling that using technology was too complicated.¹⁵⁴ Interestingly, while minor

technical issues occurred in some sessions, COACH participants were satisfied overall with the use of telehealth delivery, regardless of their skill level in technology use. Some participants were even given the opportunity to learn how to use new technology (i.e., Zoom videoconferencing) for the first time during their participation in COACH. Thus, the COACH program served as an opportunity for older adults to gain further experience and gain confidence in using telehealth-delivered programs.

4.3.2 – Student-led Interventions

A novel aspect to the COACH was the use of medical students to deliver the coaching protocol. While student-run health clinics are an established model for health service delivery, these clinics typically reflect the existing health care system: a system that is largely responsive to acute events, with little attention to health promotion and chronic care. Thus, COACH, with a primary focus on chronic disease management, represents a unique model that engages health profession students to fill a much-needed gap in the health care continuum.

Previous literature also highlights the benefits in involving medical students in clinical practices early in their education to enhance students' professional identity and attitude, team experience and skills, and their ability to perform various clinical tasks.^{75,76} For our research, student coaches were presented the opportunity to develop their knowledge and experience in areas not frequently taught in entry-to-practice health profession programs (e.g., chronic care, behavioural medicine, health promotion, and the delivery of health services using technology). Thus, our research also contributed to the professional development of the medical students involved by providing them these opportunities. Overall, COACH displays benefits for both participants and their student coaches.

Implication: The use of telehealth and student-led interventions can help develop low cost and accessible opportunities to deliver chronic disease management support for older adults.

Telehealth allows individuals to receive health support remotely, serving as a viable alternative in delivering interventions during times of quarantining, social isolation, and physical distancing. In addition, involving students allows for more opportunities to deliver more interventions that can serve as mutual support for both participant and student.

4.4 – Strengths and Limitations

This thesis provides unique findings about chronic disease management in older adults, as the study was held during times of quarantining, social isolation, and physical distancing. The results provide further knowledge about the experiences of chronic disease management in older adults during challenging times and presents an example of a rapidly mobilized, short-term (i.e., 2-months, 6 sessions) intervention to support older adults in improving their health behaviours. Furthermore, the evaluated intervention provides preliminary evidence that intervention involving telehealth and medical school students for its delivery can be effective. Thus, this study provided more information for the development of similar chronic disease management interventions in the future.

The recruitment of participants from differing geographical locations in British Columbia is both a strength and a limitation for this research. Recruiting from different geographical locations allowed us to get representation from urban, rural, and island areas of the province. Additionally, the use of volunteer sampling allowed for quick and convenient recruitment during the COVID-19 pandemic.¹⁵⁷ However, because of the nature of volunteer samples, we cannot assume that the sample in Chapter 2 is representative of the entire British Columbia population.

Particularly, some of the sample included participants who were of a higher level of education, as well as people who were willing and able to use technology to participate. Our findings may not be applicable to older adults in British Columbia who are not in similar circumstances. This also limited the qualitative study in Chapter 3 to selecting from the sample in Chapter 2. While the use of purposeful stratified sampling may have helped to create a representative sample of older adults who participated in the COACH program, we cannot assume a representative of the entire British Columbia population for this study as well. Furthermore, recruiting within British Columbia also limits our research findings to older adult groups within the province, and thus we cannot develop conclusions about chronic disease management in older adults in other locations across the globe.

Additionally, due to the nature of single group, pre-post study designs, we cannot conclude any causal effects from the findings in Chapter 2. This is because single group study designs tend to be exposed to multiple threats that could weaken both internal and external validity,^{158,159} weakening the possibility of creating any overall causal interpretations. However, the findings indicate moderate sized effects on the outcomes with statistical significance. The feedback in the participant satisfaction survey and the qualitative findings in Chapter 3 regarding COACH experiences also display high satisfaction with COACH from the participants. Thus, highlighting that COACH may be contributing to the positive outcomes and comments that were outlined in both chapters. Additionally, previous randomized-controlled trials that have examined the effects of health coaching programs have yielded positive results (e.g., improvements in health behaviours, self-efficacy, perception of mental health).¹⁶⁰⁻¹⁶² Thus, despite limitations to our study design, it is plausible that COACH appeared to be effective in improving areas of self-management and self-efficacy. However, unless a randomized-controlled

trial is used to control for any confounding variables, we cannot conclude causal effects from these current findings.

Chapter 2's findings may have also been limited by high reported group means at baseline. Results from this study indicated that participants began the COACH program with good health-related behaviours, and thus could have limited the potential to observe more improvements in our evaluated outcome measures. This may be due to the self-report nature of the outcome measures and the presence of an outcome assessor in Chapter 2's study, which may have produced biased results due to social desirability. Social desirability bias can distort self-reports towards favourable directions, and thus creating more favourable reports during baseline or post-evaluation (e.g., providing responses that indicate higher levels of self-management).¹⁶³ High baseline reports might also be due to the volunteer sampling, as the study may have attracted older adults who were already concerned about their health and how to manage it. This would not only be affecting the baseline reports, but also post-intervention reports because of possibly inflations of the intervention's effect on participants' progress.

Social desirability can also be speculated for the qualitative interviews in Chapter 3. For qualitative research, strategies are suggested to limit biases. Some strategies for posing questions that were used when interviewing participants included: indirect questioning, providing assurance about confidentiality and anonymity protocols, and probing for more information using follow-up questions or prompts.¹⁶⁴ While the interview questions were kept open-ended and the proper strategies were implemented to limit the bias, social desirability may still arise, and thus, findings in this thesis should be interpreted with caution.

4.5 – Future Directions

The research findings may help to inform the development and delivery of future chronic disease management interventions, especially during unprecedented times that require quarantining, social isolation, and physical distancing. However, we currently cannot confirm any causal effects that the COACH may have had on participants because we used a single group, pre-post study design. Thus, future studies involving replicating the evaluation of COACH in a randomized-controlled trial can help to confirm its effectiveness on clinical outcomes after controlling for confounding variables.

Interestingly, most COACH participants were reported to have or had two or more chronic health conditions. This creates opportunities to further investigate in chronic disease management in the context of multi-morbidity, as it is also becoming common for individuals to have more than one health condition.¹⁶⁵ Current reports indicate arthritis, mood disorders or anxiety, and asthma as some of the most common chronic conditions prominent in multi-morbidity disease groupings.¹⁶⁵ This may help support the development of future programs that focus on these specific multi-morbidities. However, further investigation is needed within these common clusters to inform programs attempting to capture multi-morbidity factors.¹⁶⁵

Research findings in Chapter 3 further help to describe the experiences of older adults in COACH and how they practiced chronic disease management in their daily lives during COVID-19. One of the findings from this study suggests the idea of underlying processes that can help define the experiences of practicing chronic disease management in older adult populations. While this was described in previous literature,¹³⁸ further investigation is still needed to confirm true mechanisms involved. Further investigations about these underlying mechanisms can help future researchers easily define and generalize the different experiences of older adults practicing

chronic disease management. This can also further contribute to future developments of chronic disease management interventions by providing mechanisms that the intervention can support and build upon to further improve these practices.

Another finding outlines the idea of a mutual relationship between participants and their trained student coaches. Participants benefited from COACH by receiving support from their assigned coach. At the same time, participants felt they were helping to support their coaches' own learning and education while interacting with them during coaching sessions. Little is still known about this participant-student relationship and how participating in student-led interventions like COACH can impact their learning. Currently, we are conducting further research involving the nineteen student coaches that delivered the COACH program by inviting them to participate in semi-structured, one-on-one qualitative interviews. The coaches will be interviewed on the following: (1) their knowledge before and after leading COACH; (2) their interests and experiences leading the COACH sessions; and (3) their relationship with the participants with whom they collaborated. This further qualitative research would help to understand the student coach's perspective in the intervention, and thus provide further information for future interventions that choose to utilize health care students in their delivery modality.

4.6 – Conclusion

The purpose of this thesis was to develop an understanding of chronic disease management in older adults during COVID-19. The student-delivered **C**ommunity **O**utreach telehe**A**lth program for **C**ovid education and **H**ealth promotion (COACH) was developed to support the understanding of chronic disease management from a rehabilitation sciences master's student perspective. Overall, this thesis highlights chronic disease management strategies during

to include identifying purposes to optimize health, followed by using internal and external motivators to support self-management efforts during COVID-19. The student-led, telehealth-delivered COACH program was as an external motivator to give older adults further support for their self-management and self-efficacy efforts. Specifically, both self-management and self-efficacy were highlighted as important factors throughout participants' chronic disease management, especially during their COACH program experiences. However, an observed decline in areas of mental health-related quality of life warrants further investigations on the specific processes of chronic disease management experiences in older adults during COVID-19, especially on the paradox involving the increase of self-management and self-efficacy while mental health related-quality of life declines.

Understanding chronic disease management in older adults during COVID-19 is important in advancing areas of chronic care, especially now when there is increased demand for chronic disease management. With the use of health care students and telehealth, the COACH program helped to represent a low-cost, easily mobilized, and proactive approach to ensure effective health self-management among community-living older adults during unprecedented times such as the current COVID-19 pandemic. Thus, findings from COACH can help further inform future chronic disease management interventions and how to provide accessible chronic disease management support to older adults, especially during unpredictable times like COVID-19.

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APPENDICES

A: COACH “Healthy Living Booklet” Pages

Pre-Meeting: Self Health Review

Eating Habits and Nutrition

<i>Health Factor</i>	<i>Description / Examples</i>	<i>General Recommendations</i>	<i>Opportunity for Improvement?</i>
Eating Non-starchy Vegetables	Spinach, broccoli, kale, and other greens; peppers, carrots, eggplant, and many more! <i>(Not: starchy vegetables like potatoes)</i>	Prioritize vegetables of various colors as they are nutrient-rich, fibre-filled, and low calorie. Half of each meal plate should be vegetables, and vegetable-based snacks are optimal.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Eating Fruits	Blueberries, strawberries, bananas, apples, oranges, and more!	After vegetables, prioritize fruits over processed foods. Eating 1-2 pieces of fruit a day provides nutrients and not too many carbohydrates.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Avoiding Processed and “Junk” Foods	Fast foods, packaged and other pre-made foods, desserts, and treats – all the things that taste good but are bad!	Minimize all consumption of processed foods, choosing instead for whole foods you prepare yourself whenever possible. Desserts and treats should be used sparingly as they frequently are a source of excess calories.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Choosing Water and Unsweetened Beverages	Water, sugar-free coffee, tea, soda water.	Consume primarily water and other non-sweet beverages to prevent excess sugar intake and promote hydration. <i>(Note: natural juice is still high sugar and is not necessary in an otherwise balanced diet!)</i>	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High

Physical Activity and Strengthening Exercise

<i>Health Factor</i>	<i>Description / Examples</i>	<i>General Recommendations</i>	<i>Opportunity for Improvement?</i>
Physical Activity (Moderate to Vigorous)	Any activity equal or above the effort of a brisk walk or jog (heart rate up, breath heavily, sweating).	At least 5x per week for 30 minutes or more (150+ minutes per week) in bouts of at least 10 or more minutes at a time.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Resistance/Strength Building Activities	Weight training, body weight exercises, resistance bands, more challenging yoga, etc. Anything where you are moving your muscles against resistance to build strength.	At least 2x per week for all Canadians (including older adults), focusing on all major muscle groups (upper and lower body)	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Sedentary Behaviour	Sitting for extended periods of time without interruption (e.g., long periods of unbroken computer use, television watching, video gaming, etc.)	Ideally, we break up our sitting time. While no firm recommendations have been set out, evidence suggests that breaking up sitting time with light activity is associated with improved body composition and chronic disease risk. Try moving around for two minutes every 30 minutes or so.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High

Responsible Use of Substances

<i>Health Factor</i>	<i>Description / Examples</i>	<i>General Recommendations</i>	<i>Opportunity for Improvement?</i>
Smoking, Alcohol and Other Substances	Using addictive and/or toxic substances recreationally, for enjoyment, or stress relief (e.g., tobacco, vaping, marijuana, alcohol consumption, and others)	Recreational substances are typically addictive and toxic to the body – if desired, their use should be carefully considered, minimized or completely avoided. There is no known safe dose of alcohol, tobacco, and most other addictive substances.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High

Sleep

<i>Health Factor</i>	<i>Description / Examples</i>	<i>General Recommendations</i>	<i>Opportunity for Improvement?</i>
Sleep Quantity	Allowing sufficient time to rest each night to support mental and physical health	Adults, including older adults, are recommended to achieve 7-8 hours of sleep per night. Adopting good sleep hygiene habits can help with this (see section on sleep below).	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Sleep Quality	Having a sufficiently good or “sound” sleep to get the benefits of rest.	People need to cycle through the different “phases” of sleep multiple times throughout the night. Getting to sleep smoothly and staying asleep without disruptions allows us to benefit most from sleep. Again, good sleep hygiene is recommended.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High

Mental Health

<i>Health Factor</i>	<i>Description / Examples</i>	<i>General Recommendations</i>	<i>Opportunity for Improvement?</i>
Social Connection	Spending time with family, friends, community groups or interest groups; volunteering	In general, isolation is harmful to our health – building and maintaining relationships keeps us mentally and physically engaged in our lives and communities.	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High
Stress Management	Mindfulness meditation techniques, breathing techniques, talking to supportive persons	As a major driver of ill-health, healthy coping and stress management techniques should be used as needed, and a low-stress lifestyle should be pursued (exercise, high quality sleep and diet).	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High

Action Plan

Date: _____

Long term Health Goal(s)	
Action(s) I will take:	
How often will I do this? (daily, every other day, etc.)	
When will I take the action? (i.e., what will trigger me to act?)	
How will I track my progress? (e.g., log, app, activity tracker, etc.)	
What is my reward when I finish each time?	
How confident am I (out of 10) that I will be able to make this plan happen? _____/10	

Considerations:

- We recommend striving for gradual, sustainable shifts – over time they add up!
- Plan for the challenges – what is going to get in the way? How are you going to overcome those barriers?
- Change your environment for success – are there any things that you can do to modify your environment to support your goals? Think about the things that find you normally do – your existing habits – how might you change the cues in your environment to disrupt those and allow your new ones to form? If your TV is in the garage it will be hard to watch!
- Team up! For some of us, grabbing a friend or family member to join in can help motivate us and keep us honest.

Progress Check

Date: _____

How successful were you in following your plan?

Why, or why were you not, able to follow your plan?

How do you think your plan can be changed/revised?

(During your next call, work with your coach to modify the plan accordingly.)

B: TREND Statement Checklist

TREND Statement Checklist

Paper Section/ Topic	Item No	Descriptor	Reported?	
			✓	Pg #
Title and Abstract				
Title and Abstract	1	• Information on how unit were allocated to interventions	✓	iii
		• Structured abstract recommended	✓	iii
		• Information on target population or study sample	✓	iii
Introduction				
Background	2	• Scientific background and explanation of rationale	✓	17
		• Theories used in designing behavioral interventions	✓	18
Methods				
Participants	3	• Eligibility criteria for participants, including criteria at different levels in recruitment/sampling plan (e.g., cities, clinics, subjects)	✓	19
		• Method of recruitment (e.g., referral, self-selection), including the sampling method if a systematic sampling plan was implemented	✓	19
		• Recruitment setting	✓	19
		• Settings and locations where the data were collected	✓	20,27
Interventions	4	• Details of the interventions intended for each study condition and how and when they were actually administered, specifically including:	✓	26
		○ Content: what was given?	✓	26
		○ Delivery method: how was the content given?	✓	26
		○ Unit of delivery: how were the subjects grouped during delivery?	✓	26
		○ Deliverer: who delivered the intervention?	✓	26
		○ Setting: where was the intervention delivered?	✓	26
		○ Exposure quantity and duration: how many sessions or episodes or events were intended to be delivered? How long were they intended to last?	✓	26
		○ Time span: how long was it intended to take to deliver the intervention to each unit?	✓	18
○ Activities to increase compliance or adherence (e.g., incentives)	✓			
Objectives	5	• Specific objectives and hypotheses	✓	18
Outcomes	6	• Clearly defined primary and secondary outcome measures	✓	20-22
		• Methods used to collect data and any methods used to enhance the quality of measurements	✓	20
		• Information on validated instruments such as psychometric and biometric properties	✓	23-25
Sample Size	7	• How sample size was determined and, when applicable, explanation of any interim analyses and stopping rules	✓	19
Assignment Method	8	• Unit of assignment (the unit being assigned to study condition, e.g., individual, group, community)	✓	26
		• Method used to assign units to study conditions, including details of any restriction (e.g., blocking, stratification, minimization)	N/A	
		• Inclusion of aspects employed to help minimize potential bias induced due to non-randomization (e.g., matching)	N/A	

TREND Statement Checklist

Blinding (masking)	9	<ul style="list-style-type: none"> Whether or not participants, those administering the interventions, and those assessing the outcomes were blinded to study condition assignment; if so, statement regarding how the blinding was accomplished and how it was assessed. 	N/A	
Unit of Analysis	10	<ul style="list-style-type: none"> Description of the smallest unit that is being analyzed to assess intervention effects (e.g., individual, group, or community) 	✓	19
		<ul style="list-style-type: none"> If the unit of analysis differs from the unit of assignment, the analytical method used to account for this (e.g., adjusting the standard error estimates by the design effect or using multilevel analysis) 	N/A	
Statistical Methods	11	<ul style="list-style-type: none"> Statistical methods used to compare study groups for primary methods outcome(s), including complex methods of correlated data 	✓	28
		<ul style="list-style-type: none"> Statistical methods used for additional analyses, such as a subgroup analyses and adjusted analysis 	✓	28
		<ul style="list-style-type: none"> Methods for imputing missing data, if used 	N/A	28
		<ul style="list-style-type: none"> Statistical software or programs used 	✓	28
Results				
Participant flow	12	<ul style="list-style-type: none"> Flow of participants through each stage of the study: enrollment, assignment, allocation, and intervention exposure, follow-up, analysis (a diagram is strongly recommended) <ul style="list-style-type: none"> Enrollment: the numbers of participants screened for eligibility, found to be eligible or not eligible, declined to be enrolled, and enrolled in the study Assignment: the numbers of participants assigned to a study condition Allocation and intervention exposure: the number of participants assigned to each study condition and the number of participants who received each intervention Follow-up: the number of participants who completed the follow-up or did not complete the follow-up (i.e., lost to follow-up), by study condition Analysis: the number of participants included in or excluded from the main analysis, by study condition 	✓	19-28
		<ul style="list-style-type: none"> Enrollment: the numbers of participants screened for eligibility, found to be eligible or not eligible, declined to be enrolled, and enrolled in the study 	✓	19
		<ul style="list-style-type: none"> Assignment: the numbers of participants assigned to a study condition 	✓	19
		<ul style="list-style-type: none"> Allocation and intervention exposure: the number of participants assigned to each study condition and the number of participants who received each intervention 	✓	29
		<ul style="list-style-type: none"> Follow-up: the number of participants who completed the follow-up or did not complete the follow-up (i.e., lost to follow-up), by study condition 	✓	29
		<ul style="list-style-type: none"> Analysis: the number of participants included in or excluded from the main analysis, by study condition 	✓	29
		<ul style="list-style-type: none"> Description of protocol deviations from study as planned, along with reasons 	N/A	
Recruitment	13	<ul style="list-style-type: none"> Dates defining the periods of recruitment and follow-up 	✓	29
Baseline Data	14	<ul style="list-style-type: none"> Baseline demographic and clinical characteristics of participants in each study condition 	✓	29-31
		<ul style="list-style-type: none"> Baseline characteristics for each study condition relevant to specific disease prevention research 	✓	29-31
		<ul style="list-style-type: none"> Baseline comparisons of those lost to follow-up and those retained, overall and by study condition 	✓	26
		<ul style="list-style-type: none"> Comparison between study population at baseline and target population of interest 	N/A	
Baseline equivalence	15	<ul style="list-style-type: none"> Data on study group equivalence at baseline and statistical methods used to control for baseline differences 	N/A	

TREND Statement Checklist

Numbers analyzed	16	<ul style="list-style-type: none"> Number of participants (denominator) included in each analysis for each study condition, particularly when the denominators change for different outcomes; statement of the results in absolute numbers when feasible 	✓	29
		<ul style="list-style-type: none"> Indication of whether the analysis strategy was “intention to treat” or, if not, description of how non-compliers were treated in the analyses 	N/A	
Outcomes and estimation	17	<ul style="list-style-type: none"> For each primary and secondary outcome, a summary of results for each estimation study condition, and the estimated effect size and a confidence interval to indicate the precision 	✓	32,34
		<ul style="list-style-type: none"> Inclusion of null and negative findings 	✓	32,34
		<ul style="list-style-type: none"> Inclusion of results from testing pre-specified causal pathways through which the intervention was intended to operate, if any 	N/A	
Ancillary analyses	18	<ul style="list-style-type: none"> Summary of other analyses performed, including subgroup or restricted analyses, indicating which are pre-specified or exploratory 	N/A	
Adverse events	19	<ul style="list-style-type: none"> Summary of all important adverse events or unintended effects in each study condition (including summary measures, effect size estimates, and confidence intervals) 	N/A	
DISCUSSION				
Interpretation	20	<ul style="list-style-type: none"> Interpretation of the results, taking into account study hypotheses, sources of potential bias, imprecision of measures, multiplicative analyses, and other limitations or weaknesses of the study 	✓	36-40
		<ul style="list-style-type: none"> Discussion of results taking into account the mechanism by which the intervention was intended to work (causal pathways) or alternative mechanisms or explanations 	✓	36-40
		<ul style="list-style-type: none"> Discussion of the success of and barriers to implementing the intervention, fidelity of implementation 	✓	36-40
		<ul style="list-style-type: none"> Discussion of research, programmatic, or policy implications 	✓	36-40
Generalizability	21	<ul style="list-style-type: none"> Generalizability (external validity) of the trial findings, taking into account the study population, the characteristics of the intervention, length of follow-up, incentives, compliance rates, specific sites/settings involved in the study, and other contextual issues 	✓	36-40
Overall Evidence	22	<ul style="list-style-type: none"> General interpretation of the results in the context of current evidence and current theory 	✓	36-40

From: Des Jarlais, D. C., Lyles, C., Crepaz, N., & the Trend Group (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health*, 94, 361-366. For more information, visit: <http://www.cdc.gov/trendstatement/>

C: Study Consent Forms



Participant Information Letter and Informed Consent Form **A student-delivered Community Outreach teleheAlth program for Covid education and Health promotion (COACH)**

Principal Investigator:

Dr. Brodie Sakakibara, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy, Centre for Chronic Disease Prevention and Management, Southern Medical Program, [removed for this thesis]

Co-Investigators:

Mr. Cam Clayton, MSc, MD Student, UBC; **Dr. Devin Harris**, MD, UBC Dept of Emergency Medicine, Interior Health Authority; **Dr. Chelsea Pelletier**, PhD, Assistant Professor, UNBC School of Health Sciences; **Dr. Julia Schmidt**, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy; **Ms. Michelle Yang**, BSc, MSc Student, UBC Rehabilitation Sciences, Centre for Chronic Disease Prevention and Management; **Dr. Jill Zwicker**, PhD, Associate Professor, UBC Dept of Occupational Science and Occupational Therapy.

Contact study coordinator Ms. Michelle Yang for study information and questions:
[removed for this thesis]

PURPOSE OF THE STUDY

Researchers from the University of British Columbia, University of Northern British Columbia, and Interior Health Authority are running a study to learn more about health coaching. Our purpose is to promote health and wellness to community-dwelling adults ages 65 years or older. This is particularly important during times of quarantine, social isolation, and physical distancing. This research aims to develop an evidence-based program to assist older individuals manage their health and well-being and improve their quality of life. It becomes especially important during unprecedented times (e.g., COVID-19 pandemic).

Before agreeing to participate in a research project, it is important that you read and understand the following explanation that describes the procedures, benefits, and risks of this study.

INVITATION

You are being invited to take part in this research study because you:

- i) ≥ 65 years of age
- ii) Have had no previous COVID-19 diagnosis by a health professional
- iii) Are able to follow and understand questions and instructions
- iv) Have access to a telephone or internet (for access to video conferencing software such as Zoom)
- v) Able to provide informed consent

You are not eligible to take part in this research study if you:

- i) Live in long-term care
- ii) Are actively engaged in other health promotion programs
- iii) Have health issues that are not controlled (e.g., symptoms, conditions, illnesses that are not being treated)
- iv) Have severe hearing loss (note: if it can be corrected, i.e., via hearing aid, then this will not apply and the participant is free to participate if they meet all other inclusion/exclusion criteria requirements)

Your participation is voluntary. You have the right to refuse to participate in this study. This information letter and consent form will tell you about the study procedures, risks and benefits. If you wish to participate, you will be asked to sign this form. You may still choose to withdraw from the study at any time without giving reason. You do not need to participate if you are uncomfortable with COVID-related topics. If you choose not to participate, you will not lose the benefit of any medical care, education, or other services to which you are entitled to, or are presently receiving. Please review the information in this document carefully when deciding whether you wish to be part of the research or not. Take time to read the following information carefully and to discuss it with your family, friends, and the study team before you decide. Sign this consent form only if you accept being a research participant.

STUDY FUNDING

This study is funded by the Interior Universities Research Coalition.

STUDY PROCEDURES

If you say “Yes, I want to be in the study,” the following describes the study procedures:

1. Baseline Evaluation Session (1.0 hour)

You will be assigned a unique study ID, and asked to undergo a ‘virtual’ baseline evaluation via telephone or video-conference. During this session, you will work with a trained assessor who will ask you to complete several questionnaires. Answers to these questionnaires will serve as pre-study measurements to use and compare with post-study measurements. We will ask you to complete questionnaires that require both baseline and post-intervention responses. These include: (i) your ability to manage your health and well-being; (ii) perceived stress, depression and anxiety; (iii) social support; (iv) quality of life; and (v) and your belief in your ability to promote healthy lifestyles for yourself. We will also collect sociodemographic information and information on any current underlying health conditions. During this session, rest breaks may be taken at any time. In addition, you do not have to answer any question you feel uncomfortable answering.

2. Student COACH Telehealth Intervention (3.0 to 4.5 hours over 2 months)

After the baseline evaluation, you will be enrolled in the COACH program. In this program, you will receive:

- i) A **healthy lifestyle manual** with information about how to manage health and why is important. It also features common health-related behaviours that are considered risk factors for chronic diseases, and strategies to better manage your health-related behaviours.

ii) A **health report card** that you will complete with your health coach as indication of your 'baseline' health behaviour levels.

iii) **COVID-19 education** (as per the BC Centre for Disease Control) and reinforcement by coaches of orders, notices and guidance, per the Provincial Health Officer.

iv) **Tailored health coaching**, delivered via telephone or videoconferencing by health professional students (e.g., medical undergraduate students).

- Over 2 months, you will receive six 30- to 45-minute telephone/video-conference sessions with a trained student-coach from a health professional program. During each session, you will work with your coach to identify potential health-related behaviours to modify and improve.

3. Post-intervention Evaluation Session (1.0 hour)

After the end of the COACH program, you will be asked to again meet with the trained assessor. During this session, the assessor will ask you to complete the same questionnaires that you completed at the baseline evaluation session. You will also be asked to complete a satisfaction survey to obtain your thoughts about the COACH program. During this session, rest breaks may be taken at any time. In addition, you do not have to answer any question you feel uncomfortable answering.

4. Post-intervention Interview (45 minutes)

You may also be invited to participate in an interview. A small number of participants that participated in the coaching sessions will be selected. The purpose of this interview is to learn more about your experiences in the COACH program. This includes factors that influence acceptance and satisfaction, as well as areas for improvement.

TOTAL TIME FOR STUDY (5.0 to 7.25 hours)

- Baseline evaluation via telephone/video conferencing = **1.0 hour**
- Six 30- to 45-minute telephone/video conference sessions over 2 months = **3.0 to 4.5 hours**
- Post-intervention evaluation = **1.0 hour**
- Post-intervention interview (note: only select participants will be interviewed) = **0.75 hour**

POTENTIAL BENEFITS OF THE STUDY

The COACH program may have the potential to improve your health-related behaviours. Such improvements may reduce your risk of developing a chronic disease or other underlying health issues. The COACH program may also improve your ability to manage your health and well-being. The potential benefits, however, cannot be guaranteed. The information we gather will also be of benefit to people organizing community-based health promotion programs that are delivered by students in health profession programs.

POTENTIAL RISKS OF THE STUDY

We do not think there is anything in the study that could harm you or be bad for you. However, sometimes answering questions about feelings and experiences makes people uncomfortable. You do not have to answer all of the questions, and any that make you feel uncomfortable, you

may skip. If any COVID-related questions are brought up during interviews or coaching sessions that will make you uneasy, you may skip them. Any concerns can be reported to Principal Investigator, Dr. Brodie Sakakibara at [removed for this thesis], or by email at [removed for this thesis].

Some people may find the focus of the program and survey difficult. In such cases, a list of resources will be provided to participants.

CONFIDENTIALITY

Your confidentiality will be respected. You will be assigned a unique study number as a participant in this study. This number will not include any personal information that could identify you (i.e., Personal Health Number, SIN, or your initials, etc.). Only this number will be used on any research-related information collected about you during the course of this study. Your identity (i.e., your name or any other information that could identify you) as a participant in this study will be kept confidential. Information that contains your identity will remain only with the Principal Investigator and/or designate, and with your assigned student coach. The list that matches your name to the unique study number that is used on your research-related information will not be removed or released without your consent unless required by law. Your rights to privacy are legally protected by Canadian laws, ensuring your privacy is respected.

If you choose to use video conferencing, the videoconferencing program used to administer the coaching sessions will be a UBC-licensed version of Zoom ©. The following security measures are used to ensure participant confidentiality:

- Meeting links will only be shared with the participant and coach.
- The meeting will be locked after it has started to avoid other people from entering the coaching sessions.
- A waiting room will be used to invite participants into their coaching sessions.
- A password will be needed to gain access to the meeting room.
- Participants may also turn off the video camera at any time during the session.
- Participants may also mute the microphone at any time during the session.

Please refer to the following link for more information on what will be done to maintain participant confidentiality:

https://ethics.research.ubc.ca/sites/ore.ubc.ca/files/documents/Zoom_Guidance.Apr-2020.pdf

Electronic files will be encrypted and saved on a password protected server in the Department of Occupational Science and Occupational Therapy, which only the Principal Investigator, Co-Investigators, and the study coordinator have access to the files.

IF YOU WITHDRAW YOUR CONSENT TO PARTICIPATE

You may withdraw from this study at any time without giving a reason. If you choose to enter the study and then decide to withdraw at a later time, the study team will have a discussion with you about what will happen to the information already collected. You have the right to request the destruction of your information collected during the study. You may also choose to leave the study and allow the investigators to keep the information already collected about you until that point. If you choose to have the data collected about you destroyed, this request will be respected.

to the extent possible. Please note, however, that there may be exceptions where the data will not be able to be withdrawn. One such example is where the data is no longer identifiable (meaning it cannot be linked in any way back to your identity) or where the data have been merged with other data. If you would like to request the withdrawal of your data, please let the study team know.

IF SOMETHING GOES WRONG

By signing this form, you do not give up any of your legal rights. You also do not release the research team, participating institutions, or anyone else from their legal and professional duties. If you become ill or physically injured as a result of participation in this study, medical treatment will be provided to you. Your provincial medical plan will cover this at no additional cost to you. If you have any concerns, please contact Dr. Brodie Sakakibara (Principal Investigator) for further information at [removed for this thesis].

YOUR COST TO PARTICIPATE

There is no cost to you to participate in this study. To defray your time, a \$25 honorarium will be provided each time participants complete a data selection session (e.g., baseline, post-intervention). An extra \$25 will be provided for those that will be selected to participate in the follow-up interview. The honorarium will be distributed each time a data collection session is complete and will be given to participants via e-transfer from Dr. Brodie Sakakibara (principal investigator). If you'd like to receive the coaching sessions via video-conference, you will require an internet connection. Some internet service plans have limited use per month. If you have a limited use internet service plan, and you exceed your monthly usage, you will be responsible for any additional charges by your service provider.

AFTER THE STUDY IS COMPLETED

The results of this study will be reported in a graduate thesis, published in journal articles, and presented at educational and scientific meetings. The graduate thesis associated with this project will be publicly available on the internet. If you check “**YES**” to wanting to receive results of the study, you will receive a short summary of the study results after all data is analyzed.

You will be asked if you wish to be contacted for participation in future research projects. If you check “**YES**”, we may contact you in the future for participating in another study, at that time, you will be asked to sign another consent form specific to that study.

WHO TO CONTACT WITH QUESTIONS ABOUT THE STUDY

If you have any questions about this research study you can contact the Principal Investigator, Dr. Brodie Sakakibara at [removed for this thesis], or by email at [removed for this thesis].

WHO TO CONTACT IF YOU HAVE COMPLAINTS OR CONCERNS ABOUT THE STUDY

If you have any concerns or complaints about your rights during this research, contact the Research Participant Complaint Line in the University of British Columbia Office of Research Ethics toll free at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. This includes any questions as a research participant and/or your experiences while participating in this study. It is also possible to contact the Research Complaint Line by email at

RSIL@ors.ubc.ca. Please reference the study number H20-01368 when calling Research Services or emailing the Complaint Line so that staff can better assist you.



Informed Consent Form

A student-delivered Community Outreach telehealth program for Covid education and Health promotion (COACH)

Principal Investigator:

Dr. Brodie Sakakibara, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy, Centre for Chronic Disease Prevention and Management, Southern Medical Program, [removed for this thesis]

Co-Investigators:

Dr. Devin Harris, MD, UBC Dept of Emergency Medicine, Interior Health Authority; **Dr. Julia Schmidt, PhD**, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy; **Dr. Jill Zwicker, PhD**, Associate Professor, UBC Dept of Occupational Science and Occupational Therapy; **Mr. Cam Clayton, MSc, MD Student**, UBC; **Ms. Michelle Yang, BSc, MSc Student**, UBC Rehabilitation Sciences, Centre for Chronic Disease Prevention and Management

Contact study coordinator Ms. Michelle Yang for study information and questions:

[removed for this thesis]

Consent to Participate:

This is not a contract and I understand that I do not give up any legal rights by signing it. By signing the form, I am indicating that:

- I have read and understood the subject information and consent form.
- I have had the opportunity to ask questions and have had satisfactory responses.
- I understand that all the information collected will be kept confidential and that the results will only be used for scientific objectives.
- I understand that my participation in this study is voluntary and I am free to refuse to participate or withdraw at any time without changing the quality of care that I receive.
- I understand I am not waiving any legal rights as a result of signing this consent form.
- I have read this form and I freely consent to participate in this study.
- I have been told that I will receive a dated and signed copy of this form.

Consent: Participating in the study

- Yes, I consent to participating in the study**
- No, I do not consent to participating in the study**

I would like to receive the study results after the study has been completed

- Yes**
- No**

I would like to be contacted for future studies

- Yes**
- No**

Full Name: _____

Email Address: _____

Date: _____

Time: _____

Email Address: _____

Participant Signature



Participant Information Letter and Informed Consent Form
A student-delivered Community Outreach teleheAlth program for Covid education and Health promotion (COACH) – Qualitative Component

Principal Investigator:

Dr. Brodie Sakakibara, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy, Centre for Chronic Disease Prevention and Management, Southern Medical Program, [removed for this thesis]

Co-Investigators:

Mr. Cam Clayton, MSc, MD Student, UBC; **Dr. Devin Harris**, MD, UBC Dept of Emergency Medicine, Interior Health Authority; **Dr. Chelsea Pelletier**, PhD, Assistant Professor, UNBC School of Health Sciences; **Dr. Julia Schmidt**, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy; **Ms. Michelle Yang**, BSc, MSc Student, UBC Rehabilitation Sciences, Centre for Chronic Disease Prevention and Management; **Dr. Jill Zwicker**, PhD, Associate Professor, UBC Dept of Occupational Science and Occupational Therapy.

Contact study coordinator Ms. Michelle Yang for study information and questions:
[removed for this thesis]

PURPOSE OF THE STUDY

Researchers from the University of British Columbia and Interior Health Authority are undertaking a study to learn more about health coaching to promote health and wellness, particularly during times of quarantine, social isolation, and physical distancing in community-dwelling adults ages 65 years or older during COVID-19. We are evaluating a student-delivered Community Outreach teleheAlth program for COVID education and Health promotion (COACH), where students in health profession programs (e.g., medical school) will deliver a standardized health coaching program, via telephone or video-conference, to adults 65 years of age or older. This research will help to develop evidence-based programs to assist older individuals to manage their health and well-being and improve their quality of life, particularly during unprecedented times (e.g. COVID-19 pandemic).

In this portion of the study, we would like to explore the experience of participants in the COACH program. The purpose of this study is to explore and further understand the experience of individuals who completed the COACH program. This will help guide the integration of this program into practice, if warranted.

You are invited to participate in this portion of the study because you have completed the COACH program.

Your Participation is Voluntary:

1. Your participation is voluntary; it is up to you to decide whether or not to take part in this study. This consent form will tell you about the possible benefits and risks of this study.
2. If you wish to participate, you will be asked to sign this form. If you decide to take part in this study, you are still free to withdraw at any time and without giving any reason.
3. If you do not wish to participate you will not lose the benefit of any medical care to which you are entitled or are presently receiving.

Who can participate in this study?

- Participants who have completed the COACH program.

What the Study Involves:

- The study will take place via telephone or a video-conference platform (e.g., Zoom). Ten to 15 of the participants in the COACH program will be interviewed.

Study Funding

This study is funded by the Interior Universities Research Coalition.

Evaluations:

- In a 45-60 minute audio-recorded interview, we will ask you to discuss your thoughts and experiences on
 - Various components of the COACH program; and
 - How you managed your health during the COVID pandemic.

Time Commitment for the Study:

- 1 audio recorded interview (45-60 minutes).

Benefits

- Participants may not directly benefit from this portion of the study.

Risks

- We do not think there is anything in this study that could harm you or be bad for you. However, sometimes answering questions about feelings and experiences makes people uncomfortable. You do not have to answer all of the questions, and any that make you feel uncomfortable, you may skip.

If you withdraw your consent to participate:

Your participation is voluntary. If you decide to enter the study and withdraw, you do not have to provide any reasons for your withdrawal. There will be no penalty and your medical care will not be affected.

If something goes wrong

By signing this form, you do not give up any of your legal rights and you do not release the research team, participating institutions, or anyone else from their legal and professional duties. We do not anticipate any risk of injury or harm for this interview-portion of the study. If you have any concerns, please contact Dr. Brodie Sakakibara (principal investigator) for further

information at [removed for this thesis].

Your cost to participate:

There is no cost to you to participate in this study. You will be offered a \$25 honorarium for your time if you choose to participate in this one-on-one interview. The \$25 honorarium will be distributed after participants complete the interview via e-transfer from Dr. Brodie Sakakibara (principal investigator). If you'd like to do the interview via video-conference, you will require an internet connection. Some internet service plans have limited use per month. If you have a limited use internet service plan, and you exceed your monthly usage, you will be responsible for any additional charges by your service provider.

Confidentiality

Your confidentiality will be respected. You will be assigned a unique study number as a participant in this study. This number will not include any personal information that could identify you (i.e., Personal Health Number, SIN, or your initials, etc.). Only this number will be used on any research-related information collected about you during the course of this study. Your identity (i.e., your name or any other information that could identify you) as a participant in this study will be kept confidential. Information that contains your identity will remain only with the Principal Investigator and/or designate, and with your assigned student coach. The list that matches your name to the unique study number that is used on your research-related information will not be removed or released without your consent unless required by law. Your rights to privacy are legally protected by Canadian laws, ensuring your privacy is respected.

If you choose to use video conferencing, the videoconferencing program used to administer the coaching sessions will be a UBC-licensed version of Zoom ©. The following security measures are used to ensure participant confidentiality:

- Meeting links will only be shared with the participant and coach.
- The meeting will be locked after it has started to avoid other people from entering the coaching sessions.
- A waiting room will be used to invite participants into their coaching sessions.
- A password will be needed to gain access to the meeting room.
- Participants may also turn off the video camera at anytime during the session.
- Participants may also mute the microphone at anytime during the session.

Please refer to the following link for more information on what will be done to maintain participant confidentiality:

https://ethics.research.ubc.ca/sites/ore.ubc.ca/files/documents/Zoom_Guidance.Apr-2020.pdf

The interviews will be audio recorded for the purposes of data collection and analyses. They will be transcribed and coded for analyses. Recordings will be transcribed by a member of the research team. No identifying information will be transcribed. Electronic files of transcriptions will be encrypted and saved on a password protected server in the Department of Occupational Science and Occupational Therapy, which only the Principal Investigator, Co-Investigators, and the study coordinator have access to the files. Audio-recordings will be deleted immediately after being transcribed.

After the study is completed

The results of this study will be reported in a graduate thesis, published in journal articles, and presented at educational and scientific meetings. The graduate thesis associated with this project will be publicly available on the internet. If you check “**YES**” to wanting to receive results of the study, you will receive a short summary of the study results after all data are analyzed.

Who to contact with questions about the study

If you have any questions about this research study you can contact the Principal Investigator, Dr. Brodie Sakakibara at [removed for this thesis], or by email at [removed for this thesis].

Who to contact if you have complaints or concerns about the study

If you have any concerns or complaints about your rights during this research, contact the Research Participant Complaint Line in the University of British Columbia Office of Research Ethics toll free at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. This includes any questions as a research participant and/or your experiences while participating in this study. It is also possible to contact the Research Complaint Line by email at RSIL@ors.ubc.ca. Please reference the study number H20-01368 when calling Research Services or emailing the Complaint Line so that staff can better assist you.



Informed Consent Form

A student-delivered Community Outreach telehealth program for Covid education and Health promotion (COACH) – Qualitative Component

Principal Investigator:

Dr. Brodie Sakakibara, PhD, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy, Centre for Chronic Disease Prevention and Management, Southern Medical Program, [removed for this thesis]

Co-Investigators:

Dr. Devin Harris, MD, UBC Dept of Emergency Medicine, Interior Health Authority; **Dr. Julia Schmidt, PhD**, Assistant Professor, UBC Dept of Occupational Science and Occupational Therapy; **Dr. Jill Zwicker, PhD**, Associate Professor, UBC Dept of Occupational Science and Occupational Therapy; **Mr. Cam Clayton, MSc, MD Student**, UBC; **Ms. Michelle Yang, BSc, MSc Student**, UBC Rehabilitation Sciences, Centre for Chronic Disease Prevention and Management

Contact study coordinator Ms. Michelle Yang for study information and questions:
[removed for this thesis]

Consent to Participate:

This is not a contract and I understand that I do not give up any legal rights by signing it. By signing the form, I am indicating that:

- I have read and understood the subject information and consent form.
- I have had the opportunity to ask questions and have had satisfactory responses.
- I understand that all the information collected will be kept confidential and that the results will only be used for scientific objectives.
- I understand that my participation in this study is voluntary and I am free to refuse to participate or withdraw at any time without changing the quality of care that I receive.
- I understand I am not waiving any legal rights as a result of signing this consent form.
- I have read this form and I freely consent to participate in this study.
- I have been told that I will receive a dated and signed copy of this form.

Consent: Participating in the study

- Yes, I consent to participating in the study**
- No, I do not consent to participating in the study**

Consent: Audio recording the interview session

- Yes, I consent to the interview session being recorded**
- No, I do not consent to the interview session being recorded**

I would like to receive the study results after the study has been completed.

Yes

No

I would like to be contacted for future studies.

Yes

No

Full Name: _____

Email Address: _____

Date: _____

Time: _____

Email Address: _____

Participant Signature

D: Outcome Measures Assessment Booklet



THE UNIVERSITY
OF BRITISH COLUMBIA



A student-delivered Community Outreach teleheAlth program for Covid education and Health promotion (COACH)

Assessment Booklet

MEASUREMENT SESSIONS

General Duties

1. Have the Evaluation Booklet (hard copy or online versions) and pen (note: administrator of evaluation booklet will have a hardcopy, but the participants will be sent an online version).
2. Explain to the participant the general purpose of the measurement session and the time commitment.
3. Administer the measures using the online version of the Evaluation Booklet, which will be emailed to the participant.
4. Be sure to put the participant's study ID, and date on each data form, and indicate that the measurement session is 'Baseline' or 'Post-intervention'.

At the end of the measurement sessions:

- Thank the participant for their involvement
- Explain that the other measurement session will occur after the end of the 2-month COACH program (i.e., post-intervention).
- Remind the participant that if they have any questions or concerns about the study, that they may contact the study PI, Dr. Brodie Sakakibara (information also on consent form that they have).

OUTLINE OF MEASURES AND ESTIMATED TIME

Session 1	Session 2
Baseline Measures	Post-intervention Measures
Participant Information Sheet 10-minutes	
Functional Co-morbidity Index 3-minutes	
HeiQ Survey 10-minutes	HeiQ Survey 10-minutes
Depression, Anxiety, Stress Scale (DASS) 10-minutes	Depression, Anxiety, Stress Scale (DASS) 10-minutes
Medical Outcomes Study (MOS): Social Support Survey Instrument 10-minutes	Medical Outcomes Study (MOS): Social Support Survey Instrument 10-minutes
Short Form-36 10-minutes	Short Form-36 10-minutes
Self-Rated Abilities for Health Practices Scale (SRAHP) 10-minutes	Self-Rated Abilities for Health Practices Scale (SRAHP) 10-minutes
	COACH Satisfaction Survey 10-minutes
Total est. time: 63-minutes	Total est. time: 60-minutes

PARTICIPANT INFORMATION FORM

Please fill out the following information about yourself:

Age: _____	Sex: M F
Birthplace: _____	
Current city/town you live in: _____	
Marital Status:	
<input type="checkbox"/> Never married	<input type="checkbox"/> Married/common law
<input type="checkbox"/> Separated/divorced	<input type="checkbox"/> Widowed
Family Size (how many people live in your household): _____	
Years of formal education (high school = 12): _____	
Highest Education Level (please check one)	
<input type="checkbox"/> no formal education	<input type="checkbox"/> graduated trade school
<input type="checkbox"/> some primary or elementary school	<input type="checkbox"/> some college or university
<input type="checkbox"/> primary or elementary completed	<input type="checkbox"/> graduated from college or university
<input type="checkbox"/> some high school	<input type="checkbox"/> some post-graduate school (i.e., PhD, MSc)
<input type="checkbox"/> graduated from high school	<input type="checkbox"/> graduated from post- graduate school
<input type="checkbox"/> some trade school	<input type="checkbox"/> other, please specify _____
What is your current employment status?	
<input type="checkbox"/> Employed, working full-time (30 hours or more per week)	
<input type="checkbox"/> Employed, working part-time (under 30 hours per week)	
<input type="checkbox"/> Retired	
<input type="checkbox"/> Unable to work due to long-term illness/ disability	
<input type="checkbox"/> Unemployed	
<input type="checkbox"/> Other, please specify: _____	

What is your total approximate household income before taxes?

- | | |
|--|---|
| <input type="checkbox"/> Less than \$30,000 | <input type="checkbox"/> \$30,000 - \$39,000 |
| <input type="checkbox"/> \$40,000 - \$49,999 | <input type="checkbox"/> \$50,000 - \$59,999 |
| <input type="checkbox"/> \$60,000 - \$69,999 | <input type="checkbox"/> \$70,000 - \$79,999 |
| <input type="checkbox"/> \$80,000 or more | <input type="checkbox"/> Prefer not to answer |

How do you describe your race or ethnicity?

- Asian or Asian Indian
- White
- Hispanic, Latino, or Spanish
- Black or African American
- Indigenous
- Middle eastern or north African
- Other: _____

Languages spoken at home: _____

Religion (please specify your religion):

- Christianity
- Islam
- Judaism
- Buddhism
- Hinduism
- N/A
- Prefer not to answer
- Other, please specify: _____

FUNCTIONAL COMORBIDITY INDEX

When I read off the health condition, I will ask that you indicate yes or no if you have or had this particular condition. That is, has a doctor told you that you have this health condition?

Item Number	Disease	Yes	No
1	Arthritis (rheumatoid and OA)		
2	Osteoporosis		
3	Asthma		
4	Chronic Obstructive Pulmonary Disease (COPD), acquired respiratory distress syndrome (ARDS), or emphysema		
5	Angina		
6	Congestive heart failure (or heart disease)		
7	Heart attack (myocardial infarct)		
8	Neurological disease (such as multiple sclerosis or Parkinson's)		
9	Stroke or TIA		
10	Peripheral vascular disease		
11	Diabetes type I and II		
12	Upper gastrointestinal disease (ulcer, hernia, reflux)		
13	Depression		
14	Anxiety or panic disorders		
15	Visual impairment (such as cataracts, glaucoma, macular degeneration)		
16	Hearing impairment (very hard of hearing, even with hearing aids)		
17	Degenerative disc disease (back disease, spinal stenosis or severe chronic back pain)		
18	Obesity and/or body mass index > 30 (weight in kg/height in meters ²)		
TOTAL			

HEIQ SURVEY

For each question, check a single box by crossing it (X): Please indicate how strongly you disagree or agree with the following statements by checking the response which best describes you right now.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. On most days of the week, I do at least one activity to improve my health (e.g., walking, relaxation, exercise)					
2. Most days I am doing some of the things I really enjoy					
3. As well as seeing my doctor, I regularly monitor changes in my health					
4. I often worry about my health					
5. I try to make the most of my life					
6. I know what things can trigger my health problems and make them worse					

7. My health problems make me very dissatisfied with my life					
8. I am doing interesting things in my life					
9. I do at least one type of physical activity every day for at least 30 minutes (e.g., walking, gardening, housework, golf, bowls, dancing, Tai Chi, swimming)					
10. I have plans to do enjoyable things for myself during the next few days					
11. I have a very good understanding of when and why I am supposed to take my medication					
12. I often feel angry when I think about my health					
13. On most days of the week, I set aside time for healthy activities (e.g., walking, relaxation, exercise)					

14. I feel hopeless because of my health problems					
15. I feel like I am actively involved in life					
16. When I have health problems, I have a clear understanding of what I need to do to control them					
17. I carefully watch my health and do what is necessary to keep as healthy as possible					
18. I get upset when I think about my health					
19. I walk for exercise, for at least 15 minutes per day, most days of the week					
20. With my health in mind, I have realistic expectations of what I can and cannot do					
21. If I think about my health, I get depressed					
22. If I need help, I have plenty of people I can rely on					

23. I have effective ways to prevent my symptoms (e.g., discomfort, pain and stress) from limiting what I can do in my life					
24. I have very positive relationships with my health care professionals					
25. I have a very good idea of how to manage my health problems					
26. When I have symptoms, I have skills that help me cope					
27. I try not to let my health problems stop me from enjoying life					
28. I have enough friends who help me cope with my health problems					
29. I communicate very confidently with my doctor about my health care needs					
30. I have a good understanding of equipment that could make my life easier					
31. When I feel ill, my family and carers really understand what I am going through					
32. I confidently give health care professionals the information they need to help me					

33. I get my needs met from available health care resources (e.g., doctors, hospitals and community services)					
34. My health problems do not ruin my life					
35. Overall, I feel well looked after by friends or family					
36. I feel I have a very good life even when I have health problems					
37. I get enough chances to talk about my health problems with people who understand					
38. I work in a team with my doctors and other health care professionals					
39. I do not let my health problems control my life					
40. If others can cope with problems like mine, I can too					

DEPRESSION, ANXIETY, STRESS SCALES (DASS)

Please read each statement and select a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any one statement.

0 = Did not apply to me at all

1 = Applied to me to some degree or for some of the time

2 = Applied to me to a considerable degree or for a good part of time

3 = Applied to me very much or most of the time

1. I found it hard to wind down

0 1 2 3

2. I was aware of dryness in my mouth

0 1 2 3

3. I couldn't seem to experience any positive feeling at all

0 1 2 3

4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)

0 1 2 3

5. I found it difficult to work up the initiative to do things

0 1 2 3

6. I tend to over-react to situations

0 1 2 3

7. I experienced trembling (e.g., in the hands)

0 1 2 3

8. I felt that I was using a lot of nervous energy

0 1 2 3

9. I was worried about situations in which I might panic and make a fool of myself

0 1 2 3

10. I felt that I had nothing to look forward to

0 1 2 3

11. I found myself getting agitated

0 1 2 3

12. I found it difficult to relax

0 1 2 3

13. I felt downhearted and blue

0 1 2 3

14. I was intolerant of anything that kept me from getting on with what I was doing

0 1 2 3

15. I felt I was close to panic

0 1 2 3

16. I was unable to become enthusiastic about anything

0 1 2 3

17. I felt I wasn't worth much as a person

0 1 2 3

18. I felt that I was rather touchy

0 1 2 3

19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)

0 1 2 3

20. I felt scared without any good reason

0 1 2 3

21. I felt that life was meaningless

0 1 2 3

MEDICAL OUTCOMES STUDY (MOS): SOCIAL SUPPORT SURVEY INSTRUMENT

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Check the box on each line.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/informational support					
Someone you can count to listen to you when you need to talk					
Someone to give you information to help you understand a situation					
Someone to give you good advice about a crisis					
Someone to confide in or talk to about yourself or your problems					
Someone whose advice you really want					
Someone to share your most private worries and fears with					
Someone to turn to for suggestions about how to deal with a personal problem					
Someone who understands your problems					

Tangible support					
Someone to help you if you were confined to bed					
Someone to take you to the doctor if you needed it					
Someone to prepare your meals if you were unable to do it yourself					
Someone to help with daily chores if you were sick					
Affectionate support					
Someone who shows you love and affection					
Someone to love and make you feel wanted					
Someone who hugs you					
Positive social interaction					
Someone to have a good time with					
Someone to get together with for relaxation					
Someone to do something enjoyable with					
Additional item					
Someone to do things with the help you get your mind off things					

SHORT FORM-36 (SF-36)

This set of questions asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by marking the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

1. In general, would you say your health is (Please tick one box):
 - Excellent
 - Very good
 - Good
 - Fair
 - Poor

2. **Compared to ONE YEAR AGO**, how would you rate your health in general **NOW**?
 - Much better than one year ago.
 - Somewhat better now than one year ago.
 - About the same as one year ago.
 - Somewhat worse now than one year ago.
 - Much worse now than one year ago.

3. The following items are about activities you might do during a typical day. **Does your health now limit you in these activities?** If so, how much?

Activities	Yes, limited a lot	Yes, limited a little	No, not limited at all
<u>Vigorous activities</u> , such as running, lifting heavy objects, participating in strenuous sports?	1	2	3
<u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?	1	2	3
Lifting or carrying groceries?	1	2	3
Climbing several flights of stairs?	1	2	3
Climbing one flight of stairs?	1	2	3
Bending, kneeling or stooping?	1	2	3

Walking more than a mile ?	1	2	3
Walking several blocks?	1	2	3
Walking one block?	1	2	3
Bathing or dressing yourself?	1	2	3

4. During the **past 4 weeks**, have you had any of the following problems with your work or other regular activities *as a result of your physical health*?

	Yes	No
Cut down on the amount of time you spent on work or other activities?	1	2
Accomplished less than you would like?	1	2
Were limited in the kind of work or other activities?	1	2
Had difficulty performing the work or other activities (for example, it took extra effort)?	1	2

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	Yes	No
Cut down on the amount of time you spent on work or other activities?	1	2
Accomplished less than you would like?	1	2
Didn't do work or other activities as carefully as usual?	1	2

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?
- Not at all
 - Slightly
 - Moderately
 - Quite a bit
 - Extremely

7. How much bodily pain have you had during the past 4 weeks?
- None
 - Very mild
 - Mild
 - Moderate
 - Severe
 - Very severe
8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
- Not at all
 - A little bit
 - Moderately
 - Quite a bit
 - Extremely
9. These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the **past 4 weeks...**

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
Did you feel full of pep?	1	2	3	4	5	6
Have you been a very nervous person?	1	2	3	4	5	6
Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
Have you felt calm and peaceful?	1	2	3	4	5	6
Did you have a lot of energy?	1	2	3	4	5	6
Have you felt downhearted and blue?	1	2	3	4	5	6

Do you feel worn out?	1	2	3	4	5	6
Have you been a happy person?	1	2	3	4	5	6
Did you feel tired?	1	2	3	4	5	6

10. During the **past 4 weeks**, how much of the time has your **physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?

- All of the time
- Most of the time.
- Some of the time
- A little of the time.
- None of the time.

11. How TRUE or FALSE is **each** of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
I seem to get sick a little easier than other people?	1	2	3	4	5
I am as healthy as anybody I know?	1	2	3	4	5
I expect my health to get worse?	1	2	3	4	5
My health is excellent?	1	2	3	4	5

SELF-RATED ABILITIES FOR HEALTH PRACTICES SCALE (SRAHP)

The following questions ask you whether you are able to perform various health practices within the context of your lifestyle and any disability you have. This includes any kind of assistance you have available to you (e.g., an attendant to help you with stretch exercises).

Please read each question and select a number 0, 1, 2, 3 or 4 which indicates how much the statement applies to you. There are no right or wrong answers. Do not spend too much time on any one statement.

- 0 = Not at all
- 1 = A little
- 2 = Somewhat
- 3 = Mostly
- 4 = Completely

I AM ABLE TO....

1. Find healthy foods that are within my budget

0 1 2 3 4

2. Eat a balanced diet

0 1 2 3 4

3. Figure out how much I should weigh to be healthy

0 1 2 3 4

4. Brush my teeth regularly

0 1 2 3 4

5. Tell which foods are high in fiber content

0 1 2 3 4

6. Figure out from labels what foods are good for me

0 1 2 3 4

7. Drink as much water as I need to drink every day

0 1 2 3 4

8. Figure out things I can do to help me relax
- 0 1 2 3 4
9. Keep myself from feeling lonely
- 0 1 2 3 4
10. Do things that make me feel good about myself
- 0 1 2 3 4
11. Avoid being bored
- 0 1 2 3 4
12. Talk to friends and family about the things that are bothering me
- 0 1 2 3 4
13. Figure out how I respond to stress
- 0 1 2 3 4
14. Change things in my life to reduce my stress
- 0 1 2 3 4
15. Do exercises that are good for me
- 0 1 2 3 4
16. Fit exercise into my regular routine
- 0 1 2 3 4
17. Find ways to exercise that I enjoy
- 0 1 2 3 4
18. Find accessible places for me to exercise in the community
- 0 1 2 3 4

19. Know when to quit exercising

0 1 2 3 4

20. Do stretching exercises

0 1 2 3 4

21. Keep from getting hurt when I exercise

0 1 2 3 4

22. Figure out where to get information on how to take care of my health

0 1 2 3 4

23. Watch for negative changes in my body's condition (pressure sores, breathing problems)

0 1 2 3 4

24. Recognize what symptoms should be reported to a doctor or nurse

0 1 2 3 4

25. Use medication correctly

0 1 2 3 4

26. Find a doctor or nurse who gives me good advice about how to stay healthy

0 1 2 3 4

27. Know my rights and stand up for myself effectively

0 1 2 3 4

28. Get help from others when I need it

0 1 2 3 4

COACH SATISFACTION SURVEY: SURVEY OF PARTICIPANT EXPERIENCES

Evaluates the patient’s experience with the program staff, the usefulness of the services received, and satisfaction with the overall coaching program. Each item rated on a Likert Scale (Strongly disagree, Disagree, Neutral, Agree, Strongly Agree). Participants are to be reminded that their responses on all assessments (including this satisfaction survey) will remain anonymous.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Self Communication and Facilitation					
My privacy was sufficiently protected					
I always had a say in what was happening					
I was treated with respect					
I never knew what was going on					
There was adequate follow-up from one session to another					
Things were explained to me in an understandable way					
Staff listened carefully					
Usefulness of the Services					
I would recommend this program to others					
The program has helped me improve my skills in self-management					
I spent more time during my daily life thinking about how to better improve the way I manage my health					
Equipment					
I found it easy to communicate and attend the sessions via phone or video conferencing call					

I could easily hear the staff person while attending the session on the phone/video conferencing call					
The staff person could easily hear me through the telephone/video conferencing call					
I found the use of the telephone/video conferencing call programs a good alternative for delivering health support resources					
Program Structure					
There was enough time to work through the coaching program sessions					
There were sufficient numbers of sessions in the coaching program					
Overall, I was satisfied with the coaching program					

Any additional feedback/comments that you would like to give to the research team about this program:

E: COREQ Checklist

COREQ (Consolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	45
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	45
Occupation	3	What was their occupation at the time of the study?	45
Gender	4	Was the researcher male or female?	45
Experience and training	5	What experience or training did the researcher have?	45
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	45
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	45
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	45
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	42
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	42-43
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	42-43
Sample size	12	How many participants were in the study?	42-43
Non-participation	13	How many people refused to participate or dropped out? Reasons?	42-43
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	45
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	45
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	44
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	45-46
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	45
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	45
Field notes	20	Were field notes made during and/or after the interview or focus group?	46
Duration	21	What was the duration of the interviews or focus group?	45
Data saturation	22	Was data saturation discussed?	47
Transcripts returned	23	Were transcripts returned to participants for comment and/or	47

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	46
Description of the coding tree	25	Did authors provide a description of the coding tree?	46
Derivation of themes	26	Were themes identified in advance or derived from the data?	46
Software	27	What software, if applicable, was used to manage the data?	46
Participant checking	28	Did participants provide feedback on the findings?	47
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	48-63
Data and findings consistent	30	Was there consistency between the data presented and the findings?	48-63
Clarity of major themes	31	Were major themes clearly presented in the findings?	48-63
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	48-63

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

F: Qualitative Interview Guide

Before we begin, we would like to first thank you again for participating in our COACH program and we hope that the coach helped you in managing your own health during times of COVID and kept you up to date with all the COVID information. And thank you for agreeing to be part of the interview so that we can hear about and learn from your experiences. I have a set of questions to assess your experiences prior to participating, as well as your thoughts about participating in the COACH program. An important purpose of this interview is to gather your feedback about the COACH program. Your comments will be used to improve the program. Please feel free to express your honest experiences and opinions.

As mentioned in the consent form, I will record this interview for the purposes of data analysis for this project. However, your comments will be kept confidential and no personal information such as your name, age, or birthday will be recorded. Are you ready to proceed with the interview?

A. Experiences in managing health prior to participating in the COACH program [Prior to COVID]

To begin, I would like to ask a few questions about your experiences in managing your own health during your daily life before COVID began and before participating in the COACH program.

1. Please tell me about your experiences in trying to keep a healthy lifestyle.

Prompts:

- a. What did you do each day to lead a healthy lifestyle? [medications, food/nutrition, exercise/physical activity, etc.]
- b. What strategies, if any, did you have to support you in leading a healthy lifestyle?

2. What challenges, if any, did you experience when you were attempting to keep a healthy lifestyle?

Prompts:

- a. Personal challenges (i.e., mood, emotions)?
- b. Environmental challenges (i.e., community situation)?
- c. Occupational/activity challenges (i.e., roles, responsibilities, etc.)?
- d. Did you have strategies to help overcome those challenges?

3. Did you have any community resources/services that you accessed to help manage those challenges before COVID?

Prompts:

- a. How did you find out about those resources/services?
- b. How often did you use the resource/service?
- c. How, if at all, did those community resources/services help? [knowledge, skills, confidence]

4. Is there anything else you would like to say about your experiences before COVID in terms of managing your health?

B. Transitioning experiences of health management during COVID-19

The next few questions are related to your experiences in managing your health during the COVID-19 pandemic.

1. How did the restrictions implemented to combat COVID-19 affect your health and overall lifestyle? How did the social distancing, quarantining, etc. impact you?

Prompts:

- a. How did your health behaviours during your daily life change because of COVID-19?
 - b. New challenges that may have emerged from the emergence of COVID-19?
[participation in life roles, emotional challenges, etc.]
 - c. How did your daily life activities change?
 - d. How did your psychological health change?
2. Prior to enrolling in this program, how did you adjust to the current practices of quarantine, self-isolation, and social distancing?

C. Role of COACH to ensure ‘informed and activated patients’

The next questions ask about your experience with the COACH program in managing your health after enrolling in the program during COVID.

1. Please describe your overall experience in the COACH program.

2. What were your experiences with your health coach?

Prompts:

- a. What is your perception of the coach’s knowledge, expertise, communication, ability to motivate, etc.
 - b. What is your perception of the quality of your partnership/relationship/fit with your coach?
3. What are your thoughts on students from health professional programs as a coach rather than health professionals?
 4. What were your experiences with the healthy lifestyle manual?
Prompts:
 - a. What, if anything, did you find most beneficial about the manual?
 - b. What, if anything, was not useful for you?
 5. What impact, if at all, has COACH had on your ability to manage your health?
Prompts:
 - a. knowledge (risk factors, symptoms)?
 - b. behaviour (more active in managing your health)?
 - c. How do you think the program influenced your confidence?
 6. What areas were beneficial for you in the COACH program?
 7. What suggestions, if any, do you have to improve the COACH program?
 8. Would you recommend the COACH program to others? Why or why not?

9. Is there anything else you would like to say about your experience with the COACH program?

That concludes the interview. Thank you for your participation.

G: Coding Guide

Nodes

Name	Description	Files	References
1 - Bio (participant characteristics)		16	43
2 - Before COVID			
2.1 - Describing the physical or cognitive activities in a participant's everyday life that supported in managing their health before COVID-19	Describing the types of physical/cognitive activities that the participant would partake in during their daily lives in order to manage their health before COVID-19.	21	64
2.2 - Experiencing challenges when attempting to managing their health before COVID-19	Description of challenges that the participant faced in their life when attempting to manage their health and maintain good health behaviours before COVID-19 began.	18	50
Experiencing new challenges that emerged before COVID-19 while managing your health		7	10
Experiencing pre-existing challenges that were worsened over time while managing your health		5	11
2.3 - Using strategies to help overcome challenges or obstacles that occurred when managing their health	Description of any strategies that the participant tried to use to help overcome the challenges that they experienced when trying to manage their health.	18	41

Name	Description	Files	References
2.4 - Describing types of motivators or motivating strategies to support the participants as they were managing their own health before COVID-19	Description of any areas of motivation (driving factors for their actions, willingness and goals) that were used by the participant to support the management of their health before COVID-19.	14	17
Extrinsic motivators (i.e., doing the action or behaviour for a reward or to avoid negative outcomes)		9	11
Intrinsic motivators (i.e., actions or behaviour that the participant does is the reward)		7	7
2.5 - Using types of resources that supported the participants as they were managing their own health before COVID-19	Description of any areas of resources that were used by the participant to support the management of their health before COVID-19 (i.e., community centres, gyms, outdoors, home, etc.)	19	51
2.6 - Describing the participants own thoughts or attitudes towards their own health before COVID-19 began.	The participant's attitudes or mindset about managing their health (i.e., how easy/hard it was for them to motivate themselves in managing their health) before COVID-19.	19	49
Describing any shifts or changes in the participant's thoughts or attitudes		2	2
3 - During COVID			
3.1 - Describing the physical or cognitive health activities in a	Describing the types of physical/cognitive activities in which the participant would partake during their daily lives in order to manage their health during COVID-19	19	58

Name	Description	Files	References
participant's everyday life during COVID-19			
3.2 - Experiencing challenges when attempting to manage their health during COVID-19, and how these challenges may have interfered with their health or health-related behaviours	Description of challenges that the participant faced in their life when attempting to manage their health and maintain good health behaviours during COVID-19	16	41
Experiencing new challenges that emerged during COVID-19 while managing their health		17	35
Experiencing pre-existing challenges that occurred before COVID-19 that may have worsened over time during COVID-19		4	15
3.3 - Using strategies to help adjust to challenges that occurred during COVID-19	Description of any strategies that the participant tried to use to help overcome the challenges that they experienced when trying to manage their health during COVID-19.	17	39
3.4 - Describing types of motivators or motivating strategies to support the participants as they were managing their own health during COVID-19	Description of any areas of motivation or motivating strategies that were used by the participant to support the management of their health during COVID-19.	3	5
Extrinsic motivators (i.e., doing the action or behaviour for a		2	5

Name	Description	Files	References
reward or to avoid negative outcomes)			
Intrinsic motivators (i.e., actions or behaviour that the participant does is the reward)		4	5
3.5 - Using types of resources that supported the participants as they were managing their own health during COVID-19	Description of any areas of resources that were used by the participant to support the management of their health during COVID-19 (i.e., community centres, gyms, outdoors, home, etc.)	13	30
3.6 - Describing the participant's own thoughts or attitudes towards their own health during COVID-19	The participant's attitudes or mindset about managing their health. (i.e., how easy/hard it was for them to motivate themselves in managing their health).	15	33
Describing any shifts or changes in the participant's thoughts or attitudes		7	9
3.7 - Navigating through daily life changes that occurred during COVID-19 (outside of health management; indirectly related to health)	Describing changes to daily routine, social interactions, etc. during COVID-19 [that are not directly related to their health] and how they adjusted to these life changes as they were happening. (i.e., adjusting to the social distancing/isolation restrictions that were implemented during COVID-19)	21	69
3.8 - Describing any added stressor(s) during COVID-19 caused by external or major life events	Describing any life events that the participants experienced that may have added stress onto the participant while COVID-19 was occurring. This includes life events that may also be happening to people that are close to the participant from whom the participant gets added stress. [i.e., death of a family member; medical illnesses (not COVID); fire; laid off from work (the participant themselves or someone close to them)]	6	15
4 - COACH program			

Name	Description	Files	References
4.1 - Interaction or relationship with the COACH	Describing their opinions on their assigned coach (.ie., communication, the coach's knowledge/skills/personality, how well they "fit" together as a pairing) and how well the coach supported them in setting the goals and action plans that they created during the coaching sessions.	21	81
4.2 - Thoughts on using students as the program coaches	Describing their thoughts on the use of medical school students as the coaches that led the coaching sessions.	20	29
4.3 - Thoughts on the structure of the program (i.e., length, number of sessions, the goal setting and action planning, the booklet)	Describing the length, number of sessions, the goal setting/action planning, the booklet. Specifically, what worked/didn't work for them and what could be improved upon for the future.	21	94
Suggestions for improving the COACH program		18	40
4.4 - Thoughts of the COVID-19 information that was delivered through the COACH program	Describing about the COVID-19 information (general/current updates on COVID-19) provided in the booklet and/or by the coaches during each session.	5	8
4.5 - Experiences using Zoom or telephone to receive the coaching sessions	Describing quality of audio/video, ease of use/delivery of sessions, preference between phone and Zoom meetings.	11	14
4.6 - New knowledge or information gained as a result of participating in the COACH program	Factual information/knowledge about health that the participant did not know about prior to participating in COACH, or information that was clarified for them during COACH.	15	25
4.7 - New skills or behaviours that were gained as a result of participating in the COACH program	Skills/behaviours that were implemented in the participants' daily life (i.e., new activities, continuation the goal setting and planning by themselves outside of COACH).	18	46
4.8 - New views or attitudes on their own health (or health in	New/refined views about one's own health.	19	35

Name	Description	Files	References
general) as a result of participating in the COACH program			
5 - Quotes		3	7