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Improving Cardiometabolic Health in Individuals Taking Antipsychotic Drugs at Burnaby Primary Care Clinic

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Submitted as Partial Fulfillment for the Doctor of Nursing Practice Degree

Regis University

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Abstract

Metabolic syndrome is a common health issue in individuals with mental health diagnoses and taking antipsychotic drugs. In this Doctor of Nursing Practice (DNP) pilot project, a nurse practitioner (NP) at mental health specialty primary care clinic in British Columbia, Canada, implemented an eight-week evidence-based program to motivate clients to initiate healthy behaviors. The project set the PICO question as "Do individuals with mental health illness being treated with antipsychotic drugs (and receiving treatment via telehealth visits) (P) who perform regular self-abdominal circumferences measurement and receive patient education about risks for metabolic syndrome (I) initiate more lifestyle-changing behaviors (O) than prior to these interventions? (C)".

The project recruited five mentally and physically stable participants receiving antipsychotic drugs associated with metabolic syndrome from the clinic. All the participants received education on the risks of metabolic syndrome and healthy behaviors from the NP via telephone. The participants were also encouraged to measure their abdominal girth and followed up every two weeks, up to eight weeks. Additionally, health-related quality of questionnaires (HRQOL) were administered at weeks one and eight to see if their health perception improved. Although HRQOL scores and abdominal circumference measurements did not change with statistical significance, the mean of abdominal circumference measurements declined at week eight. Furthermore, the participants who completed the program, initiated and maintained healthy behaviors in week eight. Although the results were limited to this clinic, this project suggests a potential for the future application of such a cardiometabolic program in the clinics in a similar setting in the region.

Keywords: DNP Project, Cardiometanolic, Metabolic Syndrome, Mental Health, Primary Care

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Executive Summary

Burnaby Primary Care Clinic in Burnaby, British Columbia, Canada, is operated by Fraser Health and provides primary care services to those with severe mental illnesses. Metabolic syndrome is a common issue in its clients. This quality improvement project implemented a cardiometabolic program aiming to improve health outcomes for its clients by having them start healthy behaviors, with the PICO question, "Do individuals with mental health illness being treated with antipsychotic drugs (and receiving treatment via telehealth visits) (P) who perform regular self-abdominal circumferences measurement and receive patient education about risks for metabolic syndrome (I) initiate more lifestyle-changing behaviors (O) than prior to these interventions? (C)".

This project started with a literature review in the fall of 2021, followed by determining the project design, methodology, sample size, data collection method and data analysis plan in the spring of 2022. It obtained approvals from Fraser Health and Regis University Ethics Committee in the Summer of 2022.

The project implementation took place through telephone visits with five consent clients between September 2022 and February 2023. After teaching healthy eating and exercise, clients engaged in feasible healthy behaviors of their choice with a bi-weekly telephone follow-up for eight weeks. Statistical analysis confirmed that the intervention was effective enough to have the participants initiate and maintain healthy behaviors for the duration of the program.

Project results support the future application of the project in similar clinics within the health region and a possible policy change on how to care for individuals with mental health diagnoses and metabolic syndrome in Fraser Health. The results also support a further shift in education and research to understand this clinical issue for future improvement in practice.

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Without technical support from a friend of mine, Tomoo Oshikawa, I would not have been able to complete my education. Lastly, I would be remiss in not mentioning my partner, Tyler Iwata, for his continuous support to keep my spirit and motivation high. I would also thank our dog Oscar for his entertainment and for brightening our home during the program.

Table of Contents

List of Appendices

Problem Recognition, Statement, PICO and Project Goal

This paper discusses a Doctor of Nursing Practice (DNP) quality improvement project to improve cardiometabolic health in clients with mental health disorders and taking antipsychotic drugs. Individuals experiencing severe mental health disorders typically require treatment with antipsychotic medications for a long-term period. Metabolic syndrome and associated premature cardiovascular disease are common health issues in this population and contribute to 10 to 20 years of decreased life expectancy of people with severe mental health disorders. (Cunningham et al., 2018). Burnaby Primary Care Clinic (PCC), staffed with a nurse practitioner (NP), a physician and a medical office assistant (MOA), lies in Metro Vancouver, British Columbia, Canada and provides primary care services mainly by telehealth to those with severe mental health illnesses and prescribed antipsychiatric medications. Metabolic syndrome is a common health issue at this clinic, and its goal is to improve healthcare delivery for better health outcomes for its clients. As such, this project proposed the PICO question as follows.

Do individuals with mental health illness being treated with antipsychotic drugs (and receiving treatment via telehealth visits) (P) who perform regular self-abdominal circumferences measurement and receive patient education about risks for metabolic syndrome (I) initiate more lifestyle-changing behaviors (O) than prior to these interventions? (C)

The proposed outcomes in this project were clients' improved engagement in healthy eating and/or exercising and improved quality of life (QOL). Thus, this project was patient-sensitive and intended to empower clients to manage their common physical issue of metabolic syndrome and promote the best possible health outcomes. DNP-prepared nurses must promote evidence-based practice (EBP) and clinical scholarship (Tymkow, 2021). Therefore, this project

identified the clinical issue and implemented EBP to improve care delivery in a scholarly manner.

Review of Evidence

Literature was obtained through the Regis University Library between September and November 2021 using Medline, Cumulative Index for Nursing and Allied Health Literature (CINAHL), and APA PsychInfo. The literature review was performed to understand the prevalence of the metabolic issue in the mental health population, causal relationships, practice gaps and interventions to improve health outcomes. Keywords used to search relevant literature were 'metabolic syndrome,' 'cardiometabolic,' 'mental health,' 'prevalence,' 'antipsychotic drug,' 'causal relationship,' 'practice gap,' 'intervention,' and 'telehealth.'. EBSCO host retrieved 711 articles with keywords 'metabolic syndrome,' 'mental health,' and 'antipsychotic drug,' 529 articles with keywords 'cardiometabolic,' 'intervention,' and 'mental health.' The EBSCO host retrieved 888 articles with keywords 'metabolic syndrome,' 'mental health,' and 'prevalence' to understand the prevalence of metabolic syndrome in people with mental health diagnoses. To understand causal relationships between antipsychotic drugs and metabolic syndrome, the EBSCO host retrieved six articles using keywords, 'metabolic syndrome,' antipsychotic drugs,' and 'causal relationship.' Likewise, the EBSCO host retrieved 20 articles with keywords, 'mental health,' 'metabolic syndrome,' and 'practice gap' to understand the practice gap. Furthermore, to understand the effect of telehealth, the EBSCO host obtained six articles with keywords 'cardiometabolic,' 'intervention,' and 'telehealth,' and nine articles with keywords 'metabolic syndrome, 'telehealth and 'mental health.' Therefore, the EBSCO host obtained a total of 2169 articles.

The articles were first limited to those published in 2016 or recent, peer-reviewed academic journals. Furthermore, the papers were distilled to meet similar clinical settings and populations, and 33 articles were selected. These included eight randomized control trials (level of evidence II), one controlled trial without randomization (level of evidence III), ten case-control or cohort studies (level of evidence IV), three systematic reviews of qualitative studies (level of evidence V), ten qualitative or descriptive studies (level of evidence VI), and one opinion or consensus paper (level of evidence VII) (Appendix A). Major themes from the literature review were 'prevalence, risk factors, and causal relationship' and 'practice gap and interventions,' The next section discusses the highlights of the original literature review.

Prevalence, risk factors, and correlating relationship

This section of the paper discusses the prevalence and risk factors of metabolic syndrome in the mental health population and reviews possible causal relationships between mental health and metabolic syndrome.

Prevalence

Research addressing metabolic syndrome in individuals with mental health disorders was found internationally. Gaughran et al. (2019) investigated the prevalence of metabolic syndrome after the first episode of psychosis in their prospective cohort study of 293 individuals in the United Kingdoms. Typically, antipsychotic drugs were commenced after the first episode of psychosis and associated rates of obesity increase from 17.8% to 23.7%, and glucose dysregulation rose from 12% to 23.7% in one year. In Australia, Lappin et al. (2018) described the metabolic syndrome in 58.3% of 451 patients taking the antipsychotic agent, clozapine. Morell et al. (2019) also found metabolic syndrome in 44% of 301 patients treated with long-acting injectable antipsychotic drugs. Similary, Erginer and Günüşen (2018) identified 49.6% of

psychiatric clients who met metabolic syndrome criteria in their descriptive research design in Turkey.

Internationally, metabolic syndrome was widespread in the population with mental health disorders. For example, in France, Kassm et al. (2019) confirmed that 42.2% of 353 individuals on the schizophrenia spectrum aged 55 years and older met metabolic syndrome criteria supporting the idea that metabolic syndrome is prevalent in the ageing population with psychiatric conditions. Similarly, a team in Canada and the United States investigated three academic institutions in Ontario, Ohio, and Missouri and confirmed that 51% of 435 aged 60 and older with mental health conditions also had metabolic syndrome (Mulvahill et al., 2017).

In Taiwan, Tzeng et al. (2020) explored a gender difference in metabolic syndrome in patients with severe mental health conditions. They concluded that metabolic syndrome is more prevalent in females than males under age 50; however, this trend reversed after age 50. As discussed above, metabolic syndrome exists in a high ratio in multiple adult age groups with mental health conditions.

Risk factors

A consensus addressing risk factors contributing to metabolic syndrome in people with psychiatric conditions was emerging. Multiple researchers discussed sedentary lifestyles and weight gain (Erginer & Günüşen, 2018; Gaughran et al., 2019) as risk factors for metabolic syndrome. In addition, antipsychotic medications such as clozapine, olanzapine, quetiapine, and long-acting injectable antipsychotic drugs are risk factors (Lappin et al., 2018; Ballon et al., 2018; Morell et al., 2019). Therefore, this paper also discussed the correlating relationships between antipsychotic medication and metabolic syndrome. Furthermore, genetic components as

risk factors were also presented and discussed (Maciukiewicz et al., 2018; Paderina et al., 2021; Postolache et al., 2018; Yu et al., 2016).

Correlating relationship

The development of metabolic syndrome in people with mental health disorders is multifactorial. An association between antipsychotic medications and metabolic syndrome was emerging yet not clearly defined. Some investigators proposed genetic factors as a causal connection. Yu et al. (2016) identified a single nucleotide polymorphism associated with antipsychotic drug-induced weight gain when they analyzed 547 Han-Chinese individuals with schizophrenia treated with antipsychotics. Yu et al. (2016) also identified two genome-wide significant nucleotide polymorphisms in the protein tyrosine phosphatase receptor type D after correcting age and gender. The same study was replicated in Canada by Maciukiewicz et al. in 2018, identifying the same protein tyrosine phosphatase receptor type D gene variants in European and Black people with schizophrenia living in Canada. Paderina et al. (2021) also report the same gene variations after genotyping 475 in Eastern Russia. These reports support genetic predisposition associating antipsychotic drugs with weight gain, and subsequent development of metabolic syndrome.

Postolache et al. (2018) found individuals with schizophrenia and major depressive disorder are at higher risk of developing metabolic syndrome and diabetes mellitus as some risk genes are co-shared. In one example, Postolache et al. (2018) claimed genes such as transcription factor 7-like 2 and proteasome 265 subunit were reported as an independent risk factor for adult-onset diabetes mellitus and schizophrenia.

Adipokine is a cell-signaling protein or cytokine that causes inflammation in adipose tissue and regulates insulin sensitivity in humans (Vedal et al., 2019). Vedal and colleagues

(2019) researched 1050 patients with severe mental health disorders taking antipsychotic drugs and 112 healthy individuals in Norway. They concluded that leptin/adipose ratios were associated with insulin resistance, and antipsychotics alter adipokine levels, possibly increasing insulin resistance.

Some researchers suggest other biochemical alterations in persons with mental health disorders and metabolic syndrome. For example, Prestwood et al. (2021), a team of researchers in Canada and the United States, explained schizophrenia as a systemic inflammatory condition with metabolic disturbance and suggested further investigations for possible anti-inflammatory treatment as an adjunct treatment. Lago et al. (2021) studied 100 Spanish patients with mental health disorders, including an equal number (n=25) of schizophrenia, bipolar disorder, major depressive disorder, and autism spectrum for peripheral blood mononuclear cells that potentially alter metabolic regulations. They concluded that peripheral blood cells become a surrogate model for metabolic alterations in people with schizophrenia following antipsychotic drug therapies.

These genetic factors, inflammation theories, and peripheral blood mononuclear cells are novel and yield more insights into the relationship between antipsychotic drugs and metabolic syndrome. Further research is indicated to understand the genetic impacts described in more detail.

Practice gaps and interventions

The next section of the literature review includes practice gaps between guidelines and actual clinical practice and effective interventions to combat metabolic syndrome. This project utilizes evidence-based practice (EBP). Therefore, the interventions used in this project were based on these research studies.

Practice gaps

For many years, clinicians have been aware of the high incidence of obesity, hypertension, dyslipidemia, impaired serum glucose level or diabetes presenting prematurely in people with psychiatric conditions. Although clinical guidelines recommend screening such conditions more frequently and treating them accordingly, many primary care clinics struggle to do so. This section of the paper discusses the current practice gaps and barriers in many different clinical settings.

Ali et al. (2021) reviewed international guidelines and listed their recommendations. In the United States, the Consensus Statement on Antipsychotic Drugs and Obesity and Diabetes guideline recommends checking baseline weight, abdominal circumference, fasting glucose, and lipids, then rechecking them quarterly and annually. However, the authors concluded most primary care practices and outpatient mental health clinics did not follow such guidelines. They recommend pharmacists' involvement in ongoing metabolic monitoring as pharmacists regularly encounter clients. Franch et al. (2016) suggested monitoring at least HDL cholesterol and abdominal circumference as they are good predictors of metabolic syndrome.

A literature review completed by Cunningham et al. (2018) further addressed the lack of screening for metabolic syndrome in individuals with severe mental health conditions. The authors claimed that barriers to screening were present at individual, organizational and system levels and suggested creating a flow sheet in electronic health records (EHRs) to prompt clinicians to screen for metabolic syndrome in their clients regularly.

Staton et al. (2016) reviewed 721 EHRs in one Australian mental health clinic and discovered that only 36% had a record of metabolic syndrome, and 54.8% of clients were not evaluated for metabolic syndrome due to missing data. The authors also recommend better EHR

forms for practitioners to assess, monitor and document metabolic syndrome in their clients. Similarly, Ward et al. (2018) randomly audited 100 charts from four mental health service clinics in Australia and found poorly documented metabolic syndrome in all sites. Further supporting the impact of implementing a prompt for metabolic screening in the EHR, Soda et al.(2021) in the United States rendered education to clients and staff and improved EHR monitoring forms for metabolic syndrome. As a result, clinicians' metabolic monitoring practice increased from 33% to 49% in the outpatient mental health clinic. Interestingly, Simoons et al. in the Netherland introduced an organizational-wide metabolic monitoring system program and successfully increased diagnosing metabolic syndrome in the outpatient clinic to work with clients with bipolar disorders.

Interventions

Multiple investigations claimed effective ways of screening for metabolic syndrome and interventions to address this condition. This section of the paper discusses some essential aspects of potential interventions for Burnaby PCC to adopt for its quality improvement activity.

Daumit et al. (2020) claimed behavioral counselling, care coordination, and care management are vital to reducing cardiovascular risk in persons with mental health conditions. However, Thege et al. (2021) in Canada recommend making interventions simple, focusing on diet and exercise only in the same population. Murphy et al. (2019) focused on diet and exercise education, documented abdominal circumference for three months, and successfully reduced abdominal circumference by 2.55 cm on average in a small sample of 10 clients in the United Kingdom. Nurses are well-positioned to educate on diet and exercise for clients with or without mental health issues. Nurse-led lifestyle interventions effectively reduced cardiovascular disease

as nurses closely monitored the progress and supported clients to continue their efforts for better health outcomes in two randomized control trials (Westland et al., 2017; Zhen et al., 2020).

Zheng et al. (2020) also found their intervention increased self-efficacy in the participants. Sawyer et al. (2020) argue the importance of motivational interviewing to approach holistically and increase client self-efficacy. As a result, their holistic interventions were associated with reduced lipid, glucose levels, and abdominal circumference. Blomquvist et al. (2018) qualitatively researched 16 Swedish clients with metabolic syndrome and psychiatric conditions. One of the common themes was that individuals with mental illness and metabolic syndrome benefit from support and motivation from others. Thus, motivational interviewing is essential to promoting lifestyle changes for clients with mental health conditions.

Telehealth has been a common practice since the Covid-19 pandemic emerged. Many clinics have been providing remote health services to their clients. Although most articles did not include clients with mental health issues, telehealth services to support a healthy diet and exercise were effective. Therefore, there is a potential to adopt them in the population with mental health and metabolic syndrome diagnoses. Uei et al. (2016) conducted a small study to examine the effectiveness of telehealth systems in Taiwan. Clients were satisfied with telehealth interventions as they did not have to attend clinics, which was often a physical and financial barrier to some people. Shang-Lin Chiang et al. (2020) conducted a telehealth exercise training program in their randomized controlled trial in Taiwan. They rendered 36 individual sessions to those with cardiovascular risks for 12 weeks, and this was associated with an increased participants' physical activity level and health-related quality of life.

In a randomized controlled trial in Germany, Haufe et al. (2019) rendered telehealth services to increase exercise to 543 autoworkers with metabolic syndrome. Participants were

monitored and encouraged by telephone appointments to improve and maintain their physical activities for up to 150 minutes per week for six months. This intervention was also influential in expanding their physical capabilities due to their increased daily physical activities.

Telephone application is another approach to provide telehealth services. For example, Lee et al. (2020) used a smartphone application to communicate with clients with schizophrenia and metabolic syndrome to sustain lifestyle change therapy in South Korea. They compared clients' BMI, abdominal circumference and lipid profile before and after the 12-week interventions to work on diet and exercise. As a result, utilizing a smartphone application effectively allowed clients to communicate with nurses and obtain resources.

Burnaby PCC has many Asian clients, including Korean, reflecting the regional ethnic demographics. Therefore, this study with the Korean population applies to our clinic

Project Significance and Scope

Based on the literature review, metabolic syndrome in this population is common and shortens life expectancy and compromises their quality of life. Furthermore, Burnaby PCC also faces the same challenges as they did not have effective interventions to treat metabolic syndrome. If this small pilot project was successful, Burnaby PCC could adopt this intervention as a part of their regular practice. Moreover, the results of this project would be disseminated professionally to other primary care NPs who work with a similar population in similar settings. Moreover, if this becomes a regular practice in Fraser Health, a health authority operator for Burnaby PCC, it may influence a future policy change in the organization.

The NP conducted this quality improvement project only at Burnaby PCC under the supervision of the DNP Project Chair. The NP further received suggestions from the mentor at Progress Housing Society, Burnaby, British Columbia, Canada, as needed. In addition, the result

of this project was limited to Burnaby PCC, and the results would not be generalized to other clinics.

Foundational Theories

Foundational theories are critical to supporting this quality improvement project. One grand theory and two mid-range theories were applied to underpin and model throughout the project.

Roy's adaptation model (RAM)

Roy's adaptation model (RAM) supported this project since clients with mental health diagnoses, metabolic syndrome, and diabetes mellitus were asked to adopt lifestyle changes. RAM was first presented in 1964 by Sister Callista Roy (Wills, 2019) and described a person is a holistic, adaptive model that utilizes a coping process to adapt to the environment (Roy, 2009). When a person is stressed or stimulated by stressors, they attempt to cope with them and behave to adapt to the new circumstances.

RAM has been widely used in clinical practice, education, and research in the last 50 years (Jennings, 2017), and it meets nursing standards and is congruent with current nursing interventions. RAM is also used in many countries (McEwen, 2019); therefore, it was valid in cross-cultural settings adding its applicability to the multi-cultural clients at Burnaby PCC.

Self-efficacy

Self-efficacy is a psychosocial theory that fosters learning to increase human function (Bandrura, 1977) and emerged in the literature review as a means to encourage and support lifestyle changes in clients with mental health issues and metabolic syndrome. For example, Zheng et al. (2020) discovered an increase in self-efficacy in participants after providing nurse-led interventions to promote healthy behaviors. Providing lifestyle change education, such as

healthy diet and exercise and having clients measure abdominal circumference were opportunities to promote their self-efficacy and an invitation to their health journey.

Stages of change theory

Prochaska's stages of Change Theory (1979) also supported the Burnaby PCC framework for quality improvement. This theory encourages clients to change their lifestyles for better health outcomes. Sawyer et al. (2020) utilized motivational interviewing in their study, and participants moved their stages of change from contemplation to action stage. Combining self-efficacy and change theory can foster behavioral change in people (Dilks & McEwen, 2019).

Market/Risk Analysis

This section of the paper discusses market and risk analysis and begins with a SWOT analysis to identify the strengths and limitations of Burnaby PCC. Then it further discusses driving, restraining, sustaining forces, stakeholders, and cost-benefit analysis for the project.

SWOT analysis

The strengths of Burnaby PCC include that it is fully publicly funded, does not charge user fees, and is the only mental health specialty primary care clinic in the city. In addition, since introducing an EHR in 2017, the clinic has significantly reduced prescription errors and can now access hospital documents and lab reports online. In addition, the clinic is attached to Burnaby Mental Health Team (MHT), an outpatient mental health service for clients. Psychiatrists, nurses, counsellors, activity specialists and occupational therapists provide team-based support to the clients. Furthermore, introducing telehealth by phone amid the Covid 19 pandemic made it easier for clients to consult health issues with the care providers by saving their time, cost, and effort to attend the clinic. Telehealth has been well received by the Burnaby PCC clients.

The weaknesses of Burnaby PCC are that they are open only on weekdays, and clients have no access to services on the weekend and after hours. There is no on-call service, either. Therefore, clients must attend a walk-in clinic if they cannot wait to see care providers at Burnaby PCC for the next business day. Furthermore, due to an office fire in 2020 fall, the clinic lost the office space, and their clients have limited access to in-person appointments.

The future opportunities of Burnaby PCC are to provide better cardiometabolic care to people living with mental health illnesses in Burnaby, promoting a sense of health and prolonging their life expectancy. If this project becomes standard care at Burnaby PCC, it may influence a future policy change within Fraser Health. The clinic will finally have a new office space in 2023, with all full-time staff back in the office. Therefore, clients will have more access to in-person appointments if they request.

However, the threats to Burnaby PCC are the potential for reduced public funding if the census becomes low. The clinic currently receives referrals constantly; however, the future trend is unpredictable. Due to the nature of the public health care system, the political climate may affect future funding to the clinic. Furthermore, the recent labor shortage may challenge hiring care providers and an MOA if the current staff resigns for a new opportunity. Finally, as previously discussed, Burnaby PCC will move to a new location in 2023 where people can access it by bus, but not by train, which may have access difficulty for some clients.

Driving, restraining and sustaining forces

Fraser Health department of NPs, the Director of Fraser Health and the site manager of Burnaby MHT all supported this project as a means to contribute to the quality care the clinic offers.

On the contrary, the restraining force was a potential lack of buy-ins from the clients. Clients had to read and sign an informed consent form and answer health-related quality of life (HRQOL) questionnaires before and after the interventions, which might have made them feel that such a process was cumbersome. Also, the commitment of this project was eight weeks in total; thereby, some clients might have felt it was lengthy.

However, the success of this program provided a framework for NP to incorporate it into the standard of care and offer it to any clients at Burnaby PCC who wish to pursue a healthy lifestyle. Furthermore, the cost of this intervention was minimal and did not strain the operational budget of the clinic. Therefore, this program can be sustainable if the clinic can offer it to its clients.

Market Analysis

Burnaby PCC cares for clients with vulnerabilities. Many are on income assistance and welfare. Furthermore, all suffer from mental health disorders, past trauma experiences and chronic health conditions. This population's lack of health literacy is expected due to limited educational backgrounds. There is no other place in the city to specialize in such a challenging population to provide primary care. Therefore, Burnaby PCC keeps playing an essential role in delivering necessary primary care, including cardiometabolic care to its clients.

Identification of stakeholders and the project team

The immediate stakeholders for Burnaby PCC were the clients, clients' families and support system, the NP, a physician who also works at the clinic, the MOA, the site manager of the BMHT, and the director of mental health and substance use in Fraser Health. Additionally, the department of NPs at Fraser Health was aware of and supporting this project and was a

crucial stakeholder. Furthermore, all Burnaby MHT multidisciplinary staff were essential stakeholders.

The immediate project team for this quality improvement project included the principal project conducting student or the NP of Burnaby PCC, clients and the MOA at Burnaby PCC. Furthermore, the site manager for Burnaby MHT, psychiatrists, nurses, counsellors, and social workers at Burnaby MHT are all virtual project team members as the student closely communicates with them on the progression of the project. Finally, the faculty members at Regis University who supervised the student and the mentor who provided expertise and support to the student are the central project team members.

Budget for the Project and Cost-Benefit Analysis

The budget required for this project was minimal. For example, a body measurement tape costs six dollars, a journal book costs three dollars, mailing a small packet costs seven dollars, and a stamp for returning a signed consent form costs two dollars. The project prepared 20 sets of items mentioned above, costing 360 dollars. In addition, the project requires printing educational materials and envelopes. Therefore, the project secured 40 dollars for such necessities. Thus, this project's budget was $400 the most. This budget included applicable taxes. The project did not include labor costs for the NP and the MOA, as this quality improvement project was implemented within their working hours (Appendix B).

Emergency room (ER) visits cost Fraser Health significantly. For example, between 2020 and 2021, cardiac-related ER visits to Burnaby Hospital were 4944 (Fraser Health, 2021). Burnaby Hospital is where Burnaby PCC clients typically receive emergency and inpatient services. In addition, each ER visit involving diagnostic tests at Burnaby Hospital costs approximately 1400 dollars (Fraser Health, 2022). Therefore, Fraser Health spent 6,921,600

dollars for Burnaby Hospital ER to treat cardiovascular cases between 2020 and 2021. Furthermore, an acute care hospital stay costs approximately 1200 dollars a day plus expenses for cardiac procedures (Fraser Health, 2022). Therefore, if they are admitted to the cardiac unit from the emergency room, the total costs of treating cardiac cases will be astronomical.

On the other hand, this quality improvement project costs less than 400 dollars. Therefore, if the project prevents one cardiac-related ER visit, it will cover the project's cost. In addition, if this project becomes a routine program as the nurse practitioner's daily work, it will save ER visit costs and contribute to clients' quality of life.

Project Objectives

This section of the paper further presents the project objectives. It begins with the project's mission, vision statements, and goals. Then finally, it will discuss the project processes and expected outcomes of the quality improvement activity.

Mission and value statements

This project aimed to implement an EBP to improve cardiometabolic health in registered Burnaby PCC clients who suffer from severe mental health illnesses and are prescribed antipsychotic medications. This project's vision was to improve the quality of life for individuals experiencing severe mental health issues and metabolic syndrome.

Fraser Health's mission statement is "Better Health. Best in health care." The vision statement is, "To improve the health of the population and the quality of life of the people we serve." (Fraser Health, 2021). Therefore, this project's mission and vision statements aligned with Fraser Health's position.

Goals of the project and expected outcomes

The project aimed to establish an evidence-based method to improve cardiometabolic health at Burnaby PCC and offered it to its clients. As previously discussed, Burnaby PCC did not have established care to manage metabolic syndrome in its clients. The clinic discussed the risks of metabolic syndrome and gave handouts to them; however, such interventions were not effective enough.

By introducing an evidence-based practice, clients were encouraged to adhere to healthy lifestyles longer and increase their self-efficacy, confidence, and quality of life. Many clients had challenges practicing healthy behaviors. However, simplifying strategies and giving choices with ongoing follow-up by phone was expected to be more effective and support clients' long-term commitment to healthy behaviors to improve quality of life.

Project process

The project started after the approvals from the internal review board (IRB) of Regis University and the ethics committee of Fraser Health. First, the NP and the MOA approached clients by phone to ask about their interest in participating in the project. Once they expressed their interest in participating in the project, the NP obtained consent from clients by having them sign the consent form or receiving verbal consent by phone. Then the MOA sent an education package, including a body measurement tape and a journal book, to clients to start. The MOA booked the first telephone appointment with the NP, and then the NP followed them up every two weeks up to eight weeks. The last client appointment was intended to finish by the end of October to early November 2022. Second, the data was intended to collect towards the end of 2022. Third, in January 2023, the NP planned to statistically analyze the data under the supervision of a statistician, and the NP intended to complete the final dissemination paper of

this project by March 2023. Finally, upon completing oral defense, the NP plans to present the project to other NPs working with a similar population in outpatient settings in Fraser Health to disseminate the result by the spring of 2023.

Logic Model

This proposal includes a logic model to conceptualize this project further (Appendix C). A logic model is a project that indicates a method and evaluation to answer the PICO question (Rouen, 2020). The project identified its resources, activities, outputs, short- and long-term outcomes, and future impact. Therefore, creating a logic model made this project more visible and explanatory. Although the project ends in eight weeks, the hope was that clients eventually would achieve their target body weight, BMI, fasting glucose, hemoglobin A1C and lipid panels and gain a sense of the quality of life and self-efficacy in the future. Therefore, the logic model presented the short- and long-term outcomes.

Methodology and Measurement

Project Method and Outcomes

This quasi-experimental pilot project with pre and post-tests planned to recruit a small number of eligible clients to a one-on-one telehealth session to educate risks of metabolic syndrome and practical ways to initiate a healthy diet and exercise. The participants were intended to learn a proper method to measure their abdominal girth, measure their abdominal circumference each week, and be encouraged to keep a journal of their progress for eight weeks. According to the Centre for Disease Control and Prevention (2022), they must stand, place a measurement tape horizontally just above the pelvic bones, and read the measurement when they breathe out. In addition, clients were encouraged to measure the same way in centimeters when they measured their abdominal circumference for data consistency and interrater reliability.

The NP followed up with the participants by telephone every two weeks for eight weeks to coach their healthy lifestyles. Furthermore, quality of life questionnaires were administered pre and post-interventions to compare.

The project's outcomes aimed at a continuation of healthy behaviors of their choice, reduction in abdominal circumference, and increasing HRQOL scores.

Independent and Dependent Variables

This pilot project identified independent, dependent, and extraneous variables. The independent variables were client education on healthy diet and exercise, clients' self-abdominal girth measuring, and bi-weekly telephone follow-ups. The results of abdominal girth measurement readings, clients' initiation of healthy behaviors and quality of life questionnaire results were the dependent variables.

Participants received a project package, including a consent form, a tape measure, education materials, instruction on measuring the abdominal circumference, and a journal booklet. Upon providing informed consent, they were instructed to measure and document abdominal girth once a week. Also, clients were encouraged to document any healthy behaviour they had achieved for the day in the journal booklet.

HRQOL is a well-established short questionnaire developed by the Centre for Disease Control and Prevention (CDC) to measure individuals' physical and mental health (CDC, 2021.). In addition, HRQOL can be administered by phone (CDC, 2021). Thus, the NP called the participants to score HRQOL before and after the interventions.

Extraneous Variable

Extraneous variables are confounding factors that could affect the outcomes of the projects or dependent variables (Terry, 2018). This project identified clients' mental health,

physical conditions, and stress levels as possible extraneous variables. Therefore, clients who were mentally unstable, struggling with treatment, and/or suffering from severe substance use disorder were excluded from the project.

Primary Outcome Measures

The NP collected data by phone. It was convenient and the best possible way to obtain all necessary information compared to clients' mailing documents back to the office. Therefore, after eight weeks of intervention, the NP asked participants if they were still practicing healthy behaviors. The data were statistically analyzed to observe whether they had gained healthy behaviors. Second, the NP collected participants' abdominal girth measurements at week one and week eight to compare. Clients documented their abdominal girth readings, and all the measurements were converted into centimeters and statistically analyzed. Third, the NP administered HRQOL by phone before and after the interventions, and scores were statistically analyzed.

Power, Sample size and Sampling

This DNP project was a pilot study with a small sample because recruiting clients who could commit to the eight-week intervention was challenging. Therefore, 10 to 20 clients' participation in the project was realistic. Also, some dropouts were expected. Thus, the project set a confidence level of 0.95 with a probability of 0.25 to calculate the necessary participating number, 10 (N = 10), using a simple formula for calculating sample size in pilot studies developed by Viechtbauer et al. (2015).

The participants had to be registered clients at Burnaby PCC, receiving antipsychotic drugs to treat and suffer from weight gain and/or metabolic syndrome outlined by Adult Treatment Panel (ATP) III of the National Cholesterol Education Program Guideline developed

by the National Institution of Health (NIH) in 2001. Then the NP and an MOA recruited potential participants for the project. The selection of participants was based on convenience sampling, and they were not randomized. Thus, the project sample was biased and not homogenized. Furthermore, the sample size was small and would affect the generalizability of the results.

Validity and Reliability

HRQOL is validated in health care research (CDC, 2021) and was administered by the same NP for data consistency and interrater reliability. However, some threats were foreseeable to interfere with this project's validity and reliability. For example, the data collection depended on self-reports from the participants due to the nature of telehealth. Therefore, the data must be interpreted with such consideration. Also, abdominal girth measurement techniques would vary from client to client, lacking accuracy. As such, the NP instructed all participants on the proper abdominal girth measurement technique. Furthermore, during the project, changes in the participants' mental and physical health status were a predictable threat that was impossible to control. Finally, participant dropouts from the project might occur during the duration of eight weeks, affecting sample size and reliability. Thus, this project would plan to recruit as many clients as possible beyond 10 participants.

Data and Data Analysis

This pilot project identified abdominal circumference measurements at weeks one, four and eight, HRQOL scores at weeks one and eight, and reports of continuation of selected healthy behaviours at week eight as collectable data to answer the PICO question. The data were statistically analyzed by using IBM SPSS software. The following paragraphs will discuss each data and a plan for data analysis.

Abdominal Circumference Measurement

First, this project intended to compare each participant's abdominal circumference measurements at weeks one and eight. Since an individual's two abdominal measurements were to be compared, they were considered ordinal-level dependent variables rather than interval-level dependent variables. The difference in measurements pre- and post-interventions showed the effectiveness of the independent variables. First, the column chart displays weeks one and eight measurements in centimetres. Then, descriptive statistical analysis was performed to observe a significant difference before and after the interventions.

HRQOL Scores

HRQOL asks 14 questions about their health and health perception (CDC, 2021) (Appendix D). The NP called individual participants to collect weeks one and eight scores. HRQOL scores are interval/ratio-level dependent variables. Therefore, data was displayed in the column chart and then analyzed using an inferential statistical analysis to observe whether the participants gained their quality of life after the interventions.

Reports of Continuation of Healthy Behaviors

The most important aspect of this project was the participants continued healthy behaviors of their choice. Therefore, the NP also called the participants to ask if they still continued any selected healthy behaviors focusing on healthy eating and exercising at week eight. These data were first answered by yes or no and will be displayed in the column chart. Then, if they answered yes, they could further explain what healthy actions they continued at week eight. If they answered no, they could also explain why they quit healthy behaviours before week eight. Whether the participants have committed healthy behaviours is a nominal-level variable; therefore, the data were analyzed using an inferential statistical analysis to validate the

difference hypothesis. Additional data on what types of healthy behaviors the participants continued after week eight and why they did not continue any healthy behaviours were displayed in the spreadsheet to add some qualitative information.

Threats to Validity and Reliability in the Analysis of the Data

The project had some threats to the validity and reliability in the data analysis. First, abdominal circumference measurements and reports on the continuation of healthy behaviors were all self-reported by the participants. Therefore, its accuracy is limited, and the audience for the report must read the result with such consideration. Abdominal circumference was performed by the same technique by the client to avoid instrumental threats to validity. For example, if the client measures their abdominal circumference in a standing position before breakfast, in centimeters, the client was encouraged to measure the same method at the same time. Furthermore, missing data was possible in this project. For example, the participants forgot to document abdominal circumference readings, although the NP provided a notebook to encourage them to write any healthy behaviors they have achieved for the day and abdominal measurements every week.

Additionally, mortality or a loss of participants may affect the validity of the data. This project predicted that the participants' change in mental health status or a stressful life event might occur during the eight weeks, affecting their journal documentation and participation in the project.

HRQOL scores were collected by the NP by phone at weeks one and eight for interrater reliability. However, the data were also based on self-reports; therefore, limitations to the accuracy remained. Furthermore, the testing effect was a concern as pre- and post-tests consist of

the same questions. Thus, to minimize the testing effect, pre-test and post-test were administered only once at the most extended interval of eight weeks.

Finally, the project acknowledged the limitation of the generalizability of the results due to its small sample size and sampling method. Although similar setting clinics exist in the Fraser Health operation to provide primary care to the same population, generalization of the project outcomes is limited to Burnaby PCC.

Missing Data Management Plan

Missing data in a small pilot study is detrimental due to the limited sample size (Polit, 2010). Therefore, alternatively, mid-point data collection served as another solution. For example, week-four abdominal circumference measurements could be compared with week-one measurements instead of week eight. Thus, week-four measurements will be additionally collected and compared with week one if a significant number of the participants dropped out after week four.

Database and Data Dictionary

The following data were collected as basic demographic data; gender, age, highest education achieved, financial status, primary mental health diagnosis, antipsychotic drugs that contribute to metabolic syndrome, and whether the patient meets the ATP III criteria of metabolic syndrome. Furthermore, dependent variables of the abdominal circumference at weeks one, four and eight, HRQOL scores at weeks one and eight, and reports of continuation of healthy behaviors at week eight were entered into a data dictionary. Additionally, the list of healthy behaviors at week eight and the reason they quit healthy behaviors were entered in a different tab of the data dictionary.

Responsibilities related to Human Subjects' Protections

It is paramount for any research or quality improvement conductors to acknowledge possible ethical issues in their projects. First, participants should benefit from participation in the project, which is the basis of beneficence (Terry, 20218). In this project, participants benefited by gaining knowledge on metabolic syndrome and healthy behaviours. Even if they drop out of the project, they could keep the educational materials on diet and exercise, the tape measure, and the journal book.

Second, the participants' autonomy must be ensured with informed consent (Terry, 2018). In this project, a consent form disclosed all aspects of the project to the participants, including benefits and possible risks. For example, keeping different lifestyles, such as eating healthy food and exercising for eight weeks, may have caused emotional stress. Therefore, the participants were allowed to request extra telehealth visits to mitigate this. In addition, minor musculoskeletal injuries may entail after exercising. Thus, this risk was explicitly explained in the consent form. Furthermore, prior to starting physical exercise, all the participants were to be screened for medical clearance using physical activity readiness questionnaires (PAR-Q), a validated screening tool for the adult population (Molina et al., 2017). The participants read the consent form and voluntarily answered their decision to join the project or not. If they wished to withdraw from the project before the end, they were to be allowed to do so with no obligation or penalty (Appendix E). Any participants' autonomous decisions were not to alter our clinical relationship because an undue influence should not occur on any study participants (Collaborative Institutional Training Initiative [CITI], 2021) (Appendix F).

Third, vulnerability must be carefully examined when recruiting participants (Terry, 2018). This project excluded clients with unstable mental health and/or struggling with substance

use because they cannot fully understand the nature of the project to give consent due to such medical vulnerability. In addition, the participants may have limited educational backgrounds and income, as many are on disability benefits. Educational materials were written in English at the eighth-grade level, and the participants chose healthy behaviors within their financial capacity.

Finally, participants' privacy and confidentially had to be protected. Thus, individual participants were not to be identified by name. In addition, data were kept nonnominal and stored in a password-protected desktop computer.

Timeline

Since the fall of 2021, the NP has identified a PICO question for this project and conducted a literature review to support the project ideas. In addition, the NP conducted a power analysis to determine the number of participants in this project in January 2022. The NP commenced the project upon approval of IRB and Fraser Health later in August 2023. First, the NP and MOA of Burnaby PCC approached clients to recruit. Second, the MOA mailed out the clients a project package, including educational materials, a measurement tape, a journal book, and a consent form. Third, clients were booked for the first telephone appointment with the NP to learn about the risks of metabolic syndrome, diet and exercise. The clients then reported their baseline abdominal girth measurement, completed a PAR-Q form, signed the consent form, and completed pre-test HEQOL questionnaires. The MOA booked clients every two weeks up to eight weeks, which continued towards February 2023. Then the NP completed data collection.

The NP analyzed the data with guidance from a statistical expert using the IBM SPSS software in February 2023 and completed the final dissertation paper on this project by April 2023. After the capstone defense, the NP planned to present the project report to the NP group in

Fraser Health which works with a similar population and then seek additional professional opportunities for dissemination (Appendix G).

Project Implementation, Findings, and Results

This project obtained approvals from Fraser Health Research Ethics Board (Appendix H) and Regis University Internal Review Board (Appendix I) in August 2022. Then clients who were mentally and physically stable, taking antipsychotic drugs to control their mental health diagnoses and always concerned about their weight and metabolic issues were selected and invited to this project. Five clients expressed their interest, and participation consent was obtained verbally or in writing. After having the clients read the project package, the first telephone appointment was individually booked to initiate the project. Unfortunately, one client dropped out at week six due to a family emergency and mental health deterioration. The data collection lasted until early February 2023.

Treatment Procedure

After participants read the project package, including an invitation letter to the project, a consent form explaining the nature of this program, risks and benefits, and educational materials on diet and exercise, clients called our clinic to book a telephone appointment. Upon the first appointment, clients asked questions about the program or the content of the educational materials, shared their feelings towards metabolic syndrome and learned about future risks of metabolic syndrome from the NP. Furthermore, participants discussed feasible healthy behaviors they could make for the long term with the NP. In addition, HRQOL questionnaires were completed, and baseline abdominal girth measurement was collected during the first appointment.

All participants followed up with the NP every two weeks to report their progress, ask questions and share their feelings and struggle with healthy behaviors. Each client had four follow-up appointments with NP to complete the program. Unfortunately, one of the participants dropped out at week six due to a family emergency and mental health deterioration. Some clients missed scheduled follow-up appointments. In such a case, they were rescheduled for the same week. Therefore, everyone attended the required telephone appointments.

Abdominal girth readings were collected at weeks one, four and eight. Some clients also gave weight at weeks four and eight. Unfortunately, one of the clients could not give abdominal girth reading at week eight because the participant lost a measurement tape. However, this participant gave weight instead of the abdominal circumference measurement.

All participants answered HRQOL questionnaires at weeks one and eight, except for the one who dropped out.

Data Collection

The project collected the following data. The data identifier was a numbering system to protect participants' privacy. These data were stored in a locked desktop computer that only the investigator of this project could access with password protection.

Basic Demographics

Age, gender, educational background, financial source, mental health diagnoses, antipsychotic drug names contributing to their metabolic health, and metabolic issues were collected upon the first appointment. Additional data was also obtained from their chart as necessary.

The five participants consisted of one male and four female clients. Two participants were in their 30's, one in their 40's and two were in their 50's. In addition, one graduated from a

four-year university, three graduated from two-year college programs, and one had post-secondary vocational training. Only one participant was in full-time employment. Others were on provincial disability benefits and unemployed. Two of them had bipolar disorder; one had major depressive disorder of paranoid type, one had schizophrenia, and one had schizoaffective disorder.

Participants were taking medications that alter metabolism daily as prescribed. Although each drug and dosage differs, the medications the participants took were one or combinations of aripiprazole, clozapine, olanzapine, quetiapine and ziprasidone.

All participants met the ATP III criteria of metabolic syndrome. They had abdominal obesity and two or more indications such as impaired glucose level, adult-onset diabetes mellitus, hypertension, hypoalphalipoproteinemia and hyperglycemia.

All participants gave consent to participate in the cardiometabolic program verbally or in writing after reading the program package. The NP answered all relevant questions by phone before they gave consent.

PAR-Q medical clearance form was filled out for three participants. One already had a PAR-Q medical clearance form signed previously. In addition, one developed a cardiac issue; therefore, the final decision of whether to exercise or not was made by a cardiologist.

Project Data

On the first appointment, all clients reported their abdominal circumference measured using a provided measurement tape and instruction on how to measure abdominal girth. One participant also gave their weight taken at home on day one. Abdominal girth reading was further collected at weeks four and eight, the last appointment. Two other clients also gave weight as

they had a scale at home. Since one participant dropped out at week six, this individual's last abdominal girth reading was at week four.

It was the first time for all participants to answer HRQOL questionnaires. HRQOL questionnaires were administered upon the first appointment and the last appointment. Again, due to the dropout, four participants completed HRQOL, both the initial and the final telephone visit.

At week eight, the NP asked the participants if they still continued healthy behaviors. Again, all participants who completed the program reported that they carried on healthy behaviors of their choice to improve their health.

Statistical Analysis

This pilot project used IBM SPSS statistical analysis software version 29.0. Basic demographics, abdominal circumference data, HRQOL pretest and posttest, and initiation of lifestyle changing behaviors were analyzed with descriptive analysis.

Basic Demographics

Five clients participated, one male (20%) and four females (80%). The youngest participant’s age was 35, and the oldest was 59. The mean participants’ age was 45.8.

60% completed a two-year college education, 20% achieved a four-year university education, and 20% completed post-secondary training (Table 1

In addition, 80% depended on provincial disability benefits, and 20% were in full-time employment. Indo-Canadians comprised 60% of the participants; the rest were 20% African and 20% Caucasian (Table 1).

The most common mental health condition was bipolar disorder (40%); the other three conditions were equally distributed as major depressive disorder (20%), schizophrenia (20%) and schizoaffective disorder (20%) (Table 1).

Table 1

Basic demographics

Gender	Male – 1, Female – 4
Age	30's – 2, 40's – 1, 50's – 2
Ethnicity	African – 1, Caucasian – 1, Indo-Canadian – 3
Education	University – 1, College – 3, Post-secondary training – 1
Income	Full-time employment – 1, Provincial Disability Benefit – 4
ATP III Metabolic Syndrome Criteria	All met the criteria
Psychiatric Diagnoses	Bipolar – 2, Major Depressive Disorder – 1, Schizoaffective – 1, Schizophrenia - 1
Medications	Aripiprazole, clozapine, olanzapine, risperidone, quetiapine, ziprasidone

Abdominal Circumference

The participants self-measured abdominal circumference in centimeters using the given measurement tape. These measurements are ordinal level, and due to the small sample size, measurements indicated a skewed distribution. Therefore, measurements were compared with baseline, and final measurements in the pilot program using Wilcoxon signed ranks test.

This test indicated a difference between the baseline and final measurement, and that difference was statistically significant ($Z=-2.023$, $p=0.048$) (Table 2).

Table 2

Test Statistics[a]: Abdomina Circumference

	finalabdcirc - wkoneabdcirc
Z	**-2.023[b]**
Asymp. Sig. (2-tailed)	**.043**

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Next, a Friedman Test was run to compare all three abdominal circumference measurements, with the results indicating no statistically significant difference (x^2=-1.826, p=.068) (Table 3).

Table 3

Test Statistics[a]

N	**4**
Chi-Square	**5.733**
df	**2**
Asymp. Sig.	**.057**

a. Friedman Test

However, a review of the mean scores for the three measurements showed the mean scores dropped from 2.75 for the first measurement to 1.13 for the final measurement (Table 7).

Table 4

Friedman Test

Ranks

	Mean Rank
wkoneabdcirc	**2.75**
wkfourabdcirc	**2.13**
finalabdcirc	**1.13**

This indicates the intervention was reducing the abdominal circumference measurements despite not being statistically significant.

HRQOL

Out of five participants, four completed both the pre and post-HRQOL questionnaires. Each answer corresponds to a coded number. However, the original questionnaires had errors in coding. For example, the answer, ‘don’t know/not sure,’ to question 3 in the activity limiting questionnaire was coded as 777. Since the other codings were all single digits, this coding was corrected to 7 before entering data into SPSS software (Appendix D).

HRQOL results from pre and posttests were also analyzed with Wilcoxon Ranked Test, a non-parametric test (Table 5).

Table 5

Wilcoxon Signed Ranks Test: HRQOL

Ranks

		N	Mean Rank	Sum of Ranks
postagg - preagg	Negative Ranks	27[a]	21.31	575.50
	Positive Ranks	15[b]	21.83	327.50
	Ties	2[c]		
	Total	44		

a. postagg < preagg

b. postagg > preagg

c. postagg = preagg

Some answers were missing, and they were treated as missing data. It resulted in Z test statistics -1.553 and asymptotic sig 0.120, which means no difference in pre and post-HRQOL questionnaires (Table 6). This is possibly due to the level of bias and their small sample size.

Table 6

Test Statistics: HRQOL

	postagg - preagg
Z	-1.553[b]
Asymp. Sig. (2-tailed)	.120

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Initiation of Heathy Behaviors After the Intervention

The NP provided education about the risks of metabolic syndrome and the importance of healthy behaviors inviting the participants to plan feasible diet and exercise regimens within their mental, physical and financial capacities. At the end of the pilot project, all participants who completed the program continued the healthy behaviors of their choice. (Table 7)

Table 7

Healthy Behaviors at week 8

Patient ID	Diet	Exercise
01	Eating fish twice a week Cooking at home Less buying outside food	Walk for 30 min twice a week on lunch break
02	Dropped out	Dropped out
03	Cooking for self with beans, vegetables and fruits	Home treadmills three times a week
04	Eating less (especially in carbohydrates)	Walking or biking for 30 mins a day
05	No food after 5 pm	Home exercise watching exercise video

The null hypothesis for this PICO question is: Individuals with mental health illness being treated with antipsychotic drugs (and receiving treatment via tele health visit) who perform regular self abdominal circumference and receive patient education about the risk for metabolic syndrome do not initiate more lifestyle changing behaviors than prior to these interventions.

The analysis was also performed with Wilcoxon Ranked Test, rejecting the null hypothesis with statistical significance. There is a difference between pre-diet and post-diet regimens as well as pre-exercise and post-exercise regimens. The difference was statistically significant ($Z = -2.000$, $p = 0.046$) (Table 8).

Table 8

Test Statistics[a] : Initiation of Heathly Behavior

	postdiet - prediet	postexercise - preexercise
Z	-2.000[b]	-2.000[b]
Asymp. Sig. (2-tailed)	.046	.046

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Therefore, the pilot project demonstrated that the NP's provision of education as an intervention helped the participants initiate healthy behaviors.

Project Findings and Results

This project identified the following findings and results. Each item contains implications for future clinical practice.

Gender, Age, Ethnicity, Educational Background and Income

For this project, ten clients were approached, and five participants were successfully recruited by convenience sampling. Female clients have more tendency to complain about their weight than male clients at Burnaby PCC. Thus, the project initially selected ten clients who constantly expressed concerns about their weight and other metabolic issues, consisting of eight female and two male clients. Weight stigma and body image play more critical roles in women than men (Aimé et al., 2020), and more female clients participated in this pilot project than male clients.

Three female participants were Indo-Canadian, one female was African, and one male was Caucasian. The City of Burnaby is a home for many immigrants from Asian countries

(Provincial Health Services Authority, n.d.). Therefore, clients at Burnaby PCC include people with various ethnic backgrounds.

Educational preparation is also associated with higher health literacy (Viswanathan et al., 2018). The majority of clients at Burnaby PCC have the minimum academic preparation. However, three participants had college-level education; one had post-secondary education, and another had a university education. All participants understood cardiometabolic syndrome risks well and, at the same time, had an insight into their health status and issues. Therefore, participants could complete the eight-week program except for one client whose mental health deteriorated due to a family emergency.

Only one participant was in full-time employment. The rest were on provincial disability benefits, and their income was minimal. Yet, income is one of the crucial health determinants (Viswanathan et al., 2018) and a key to sustaining a healthy lifestyle. Therefore, this pilot project was mindful of suggesting financially feasible healthy behaviors to the participants.

Limitations, Recommendations, and Implications for Change

Limitations of the Project

The most significant limitation of this project was the small sample size. Initially, power analysis suggested a minimum of ten participants to yield confidence in succeeding in this project. However, motivation plays a major role in changing one's lifestyle (Guertin et al., 2020), and not all prospective participants were ready to pursue healthy behavors at the time of the approach resulting in a small sample size.

Furthermore, convenient sampling posed additional bias. Clients who were mentally and physically stable and constantly complained of weight and cardiometabolic issues were selected. Therefore, the results must be interpreted with such consideration.

In addition, due to the nature of the telephone visit, all the data were self-reported. Thus, the accuracy of the data, such as abdominal circumference measurements, could be questionable. Although the instruction on correctly measuring their abdominal girth was given with an illustration, some participants struggled when measuring their abdominal circumference. This was another limitation of this project; therefore, cautious interpretation is required.

The participants were naïve to HRQOL. In addition, due to the relatively long duration between the pretest and posttest, they may not have remembered all the questions in HRQOL. However, it is reasonable to consider possible compromised test-retest reliability as the NP explained to the participants the purpose of administering HRQOL questionnaires at the beginning and completion of the cardiometabolic program.

Recommendations

It is common to see metabolic syndrome in Burnaby PCC, and this project successfully translated current knowledge into practice. However, some amendments and flexibility will yield better clinical application.

First, three of the five participants already had a scale at home in this pilot project. In addition, some clients struggled to measure abdominal girth with a measurement tape. Therefore, the program can leave it up to clients whether they want to use a scale at home or a measurement tape if they do not have easy access to a scale. This could lessen measurement errors. In addition, once Burnaby PCC returns to the new office space, in-person follow-ups can be offered for NP to measure their weight or abdominal circumference in the office.

Second, depending on the client's needs, the duration of the program could be increased or decreased. For example, one of the clients wanted to continue the program for more than eight weeks. Ongoing follow-ups are essential to continuing healthy behaviors (Jonsson et al., 2023), and many diet and exercise programs in the literature are longer than eight weeks. Therefore, longer duration of follow-ups may be offered when requested by clients. On the contrary, if the client feels that eight weeks of involvement is too long, the duration of the follow-up can be shortened to keep this program low-barrier.

Third, this pilot project recruited clients who met the ATP III criteria of metabolic syndrome. However, the future program could recruit any clients who have any issues with metabolic syndrome. For example, Burnaby PCC cares for many clients with only obesity, impaired glucose, hypertension or elevated cholesterol. Therefore, it could offer the cardiometabolic program to them or anybody who wants to improve their lifestyles.

Fourth, to maintain this program accessible to anybody in the clinic, educational materials must be concise and easy to read, and food selection must be within the participant’s budget. Exercise instructions also must be budget-sensitive as purchasing a gym membership is not always affordable for the client.

Fifth, it is assumed that all clients continue to take antipsychotic drugs unless their psychiatrist discontinues them. Therefore, educating clients to continue their medications to manage mental health diagnoses is vital. This program does not mean to encourage clients to reduce the dose or stop taking their antipsychotic drugs because of the weight gain side effects. Instead, it promotes them manage weight gain while taking the necessary medications. Clear communication with the client may be required not to mislead them.

Finally, further research on qualitative aspects of clients who struggle with mental health and metabolic syndrome is recommended to improve this program because this pilot program is based mainly on quantitative research outcomes. Qualitative research on clients' perspectives towards their health and healthy behaviors was limited through literature review. Therefore, understanding their perception will improve the program in depth.

Implications for Change

The success of this pilot program implies policy change in the Mental Health and Substance Use division of Fraser Health. For example, adding the cardiometabolic program to the standard of care is highly recommended as this is an excellent nurse-led intervention. Nurses and NPs can promote and support healthy behaviors in their clientele, aiming at reducing cardiovascular events at an early age and promoting better health perception in individuals who attend mental health specialty primary care clinics within Fraser Health. Traditionally, the importance of cardiometabolic care in clients taking antipsychotic drugs has been addressed, and some clinics have been monitoring clients' weight, glucose, and lipids. However, there were no specific interventions to work with clients. Therefore, this is an opportunity for Fraser Health to consider standardizing the cardiometabolic program in mental health specialty clinics. Fraser Health is a large public sector health authority, and there may be institutional barriers to policy change. For example, it may be challenging to approach the right level in the organization to discuss policy change due to bureaucratic obstacles. However, the department of nurse practitioners of Fraser Health may be able to liaise with the appropriate committee in this organization to advocate a policy change on how we care for our vulnerable population.

Most outpatient clinics use the same electronic health record (EHR) to document daily progress notes. Therefore, another area of improvement is adding a new documentation template

and a flowsheet to EHR. Such forms already incorporated in the EHR will be helpful for busy clinicians to provide necessary care and document appropriately, which will further standardize the cardiometabolic program in Fraser Health.

Furthermore, nursing schools, including NP programs in British Columbia, should teach cardiometabolic programs as a practice methodology in mental health nursing. Students must understand the seriousness of cardiometabolic consequences in this vulnerable population and the necessity of such programs to promote optimal health when they work with clients in the mental health field.

Conclusion

Cardiometabolic health concerns are common in individuals with mental health diagnoses and taking antipsychotic drugs. Nurses, including NPs, are well positioned to identify the issue and provide a practical intervention to their clients at a primary care level. Educating clients about the risks of cardiometabolic consequences and inviting them to make feasible plans to work on diet and exercise with ongoing telephone follow-ups motivate clients to initiate and maintain healthy behaviors to improve their health. Although the project results are limited to Burnaby PCC, this pilot project can be further applied to other clinics with similar populations in the Fraser Health region with possible policy changes on caring for high-risk populations. In addition, such an intervention can be taught as a methodology in local nursing schools. Finally, future research in more qualitative aspects of individuals with mental health and metabolic syndrome would improve the intervention with an in-depth understanding of the issue.

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Appendix A

Levels of Evidence Table for DNP Project

Level of Evidence	Number of Articles	Authors and Year
I Systematic Review or Metanalysis	0	
II Randomized, Controlled Trial	8	Daumit, G. L., Dalcin, A. T., Dickerson, F. B., Miller, E. R., Evins, A. E., Cather, C., ... & Wang, N. Y. (2020). Haufe, S., Kerling, A., Protte, G., Bayerle, P., Stenner, H. T., Rolff, S., ... & Tegtbur, U. (2019). Mulvahill, J. S., Nicol, G. E., Dixon, D., Lenze, E. J., Karp, J. F., Reynolds III, C. F., ... & Mulsant, B. H. (2017). Sawyer, A. T., Wheeler, J., Jennelle, P., Pepe, J., & Robinson, P. S. (2020). Westland, H., Bos-Touwen, I. D., Trappenburg, J. C., Schröder, C. D., de Wit, N. J., & Schuurmans, M. J. (2017). Zheng, X., Yu, H., Qiu, X., Chair, S. Y., Wong, E. M. L., & Wang, Q. (2020). Chiang, S. L., Shen, C. L., Chen, L. C., Lo, Y. P., Lin, C. H., & Lin, C. H. (2020). Ballon, J. S., Pajvani, U. B., Mayer, L. E., Freyberg, Z., Freyberg, R., Contreras, I., Rosenbaum, M., Leibel, R. L., & Lieberman, J. A. (2018).
III Controlled Trial without Randomization	1	Soda, T., Richards, J., Gaynes, B. N., Cueva, M., Laux, J., McClain, C., ... & Jarskog, L. F. (2021).
IV Case-control or Cohort Study	10	Gaughran, F., Stahl, D., Stringer, D., Hopkins, D., Atakan, Z., Greenwood, K., ... & Ismail, K. (2019). Kassm, S., Hoertel, N., Naja, W., McMahon, K., Barrière, S., Blumenstock, Y., ... & CSA Study group. (2019). Lappin, J. M., Wijaya, M., Watkins, A., Morell, R., Teasdale, S., Lederman, O., ... & Curtis, J. (2018). Yu, H., Wang, L., Lv, L., Ma, C., Du, B., Lu, T., ... & Yue, W. (2016). Maciukiewicz, M., Gorbovskaya, I., Tiwari, A. K., Zai, C. C., Freeman, N., Meltzer, H. Y., ... & Müller, D. J. (2019). Morell, R., Curtis, J., Watkins, A., Poole, J., Fibbins, H., Rossimel, E., ... & Lappin, J. (2019). Paderina, D. Z., Boiko, A. S., Pozhidaev, I. V., Bocharova, A. V., Mednova, I. A., Fedorenko, O. Y., ... & Ivanova, S. A. (2021). Stanton, R., Platania-Phung, C., Gaskin, C. J., & Happell, B. (2016). Thege, B., Emmanuel, T., Hill, S., & Wells, L. (2021). Tzeng, W. C., Chiang, Y. S., Feng, H. P., Chien, W. C., Tai, Y. M., & Chen, M. J. (2020).
V Systematic Review of Qualitative or Descriptive Studies	3	Cunningham, C., Riano, N. S., & Mangurian, C. (2018). Postolache, T. T., del Bosque-Plata, L., Jabbour, S., Vergare, M., Wu, R., & Gragnoli, C. (2019). Prestwood, T. R., Asgariroozbehani, R., Wu, S., Agarwal, S. M., Logan, R. W., Ballon, J. S., ... & Freyberg, Z. (2021).

VI Qualitative or Descriptive Study	10	Blomqvist, M., Sandgren, A., Carlsson, I. M., & Jormfeldt, H. (2018). Erginer, D. K., & Günüşen, N. P. (2018). Franch Pato, C. M. F., Rodríguez, V. M., & Valverde, J. I. F. (2017). Lago, S. G., Tomasik, J., van Rees, G. F., Rubey, M., Gonzalez-Vioque, E., Ramsey, J. M., ... & Bahn, S. (2021). Lee, K., Choi, H. S., & Han, M. (2020). Murphy, J. A., Oliver, G., Ng, C. H., Wain, C., Magennis, J., Opie, R. S., ... & Sarris, J. (2019). Simoons, M., Mulder, H., Doornbos, B., Raats, P. C., Bruggeman, R., Cath, D. C., ... & van Roon, E. N. (2019). Uei, S. L., Tsai, C. H., & Kuo, Y. M. (2016). Vedal, T. S. J., Steen, N. E., Birkeland, K. I., Dieset, I., Reponen, E. J., Laskemoen, J. F., ... & Jönsson, E. G. (2019). Blomqvist, M., Sandgren, A., Carlsson, I. M., & Jormfeldt, H. (2018).
VII Opinion or Consensus	1	Ali, R. S. A., Jalal, Z., & Paudyal, V. (2021).

(Melnyk & Fineout-Overholt, 2015)

Appendix B

Budget and Resources for DNP Project

Items	Cost
Body measurement tape	$6 x 20 = $120
Journal book	$3 x 20 = $60
Return stamp	$2 x 20 = $40
Mailing small packet (via Canada Post)	$7 x 20 = $140
Total	**$360**

Appendix C

Concept Model

RESOURCES	ACTIVITIES	OUTPUTS	SHORT & LONG-TERM OUTCOMES	IMPACT
In order to accomplish our set of activities we will need the following:	*In order to address our problem or asset we will accomplish the following activities:*	*We expect that once accomplished these activities will produce the following evidence of service delivery:*	*We expect that if accomplished these activities will lead to the following changes in 1-3 then 4-6 years:*	*We expect that if accomplished these activities will lead to the following changes in 7-10 years:*
NP/Primary Care Clinic	Pts measure abdo cir. weekly Pt education on MetS	Abd cir. measurement readings Initiation to healthy eating and regular exercising based on self-report upon follow-up appointment	↑Awareness to MetS Ongoing healthy eating and regular exercising ↓Hgb A1C, Lipids, BP ↓Wt/BMI	Delay DM II, hyperlipidemia, obesity, & premature cardiovascular events, or prevent premature deaths ↑QOL, ↑Self-efficacy
SW, Ns, Psychiatrist	Encouraging pts to initiate healthy eating and regular exercising	Pts maintain a working relationship with staff to express feelings toward practicing a healthy diet and regular exercising	Stabilized Mood, ↑motivation to maintain healthy eating and regular exercising	↑QOL,↑ Self-efficacy Pts continue healthy eating and regular exercising for long term
Electronic Health Record system	Document progress, file lab reports, book follow up appts	Appointment schedule	Effective flow of care Ensure follow-up appts and continuous care	Efficient care delivery Cost-effective care
Fraser Health (institution)	Funds to NP/PCC Support for DNP project	DNP project implementation at Burnaby PCC	Burnaby PCC can continue to support pts with MetS	Ongoing funds to NP/Burnaby PCC Policy/guideline change to treat MetS in psychiatry

Appendix D

CDC HRQOL–14

Healthy Days Core Module

1. Would you say that in general your health is:

	Please read.			**Do not read these responses.**	
a.	Excellent	1		Don't know/Not sure	7
b.	Very good	2		Refused	9
c.	Good	3			
d.	Fair	4	or	e. Poor	5

2. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

a. Number of Days	_ _	Don't know/Not sure	7 7
b. None	8 8	Refused	9 9

3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

a. Number of Days	_ _	Don't know/Not sure	7 7
b. None	8 8	Refused	9 9

If both Q2 AND Q3 = <None>, skip next question.

4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

a. Number of Days	_ _	Don't know/Not sure	7 7
b. None	8 8	Refused	9 9

- - - - - CONTINUED ON NEXT PAGE - - - - -

(CDC HRQOL-14 – continued)

Activity Limitations Module

These next questions are about physical, mental, or emotional problems or limitations you may have in your daily life.

1. Are you LIMITED in any way in any activities because of any impairment or health problem?

a. Yes	1	Don't know/Not sure	7
b. No	2	Refused	9

If <No> or <Don't know/Not sure> or <Refused>, go to Q1 of Healthy Days Symptoms Module.

2. What is the MAJOR impairment or health problem that limits your activities?

Do not read. Code only one category.

a. Arthritis/rheumatism	0 1	h. Heart problem	0 8	Don't know/Not sure	7 7
b. Back or neck problem	0 2	i. Stroke problem	0 9	Refused	9 9
c. Fractures, bone/joint injury	0 3	j. Hypertension/high blood pressure	1 0		
d. Walking problem	0 4	k. Diabetes	1 1		
e. Lung/breathing problem	0 5	l. Cancer	1 2		
f. Hearing problem	0 6	m.Depression/anxiety/emotional problem	1 3		
g. Eye/vision problem	0 7	n. Other impairment/problem	1 4		

3. For HOW LONG have your activities been limited because of your major impairment or health problem?

Do not read. Code using respondent's unit of time.

a. Days	1 _ _	Don't know/Not sure	7 7 7
b. Weeks	2 _ _	Refused	9 9 9
c. Months	3 _ _		
d. Years	4 _ _		

4. Because of any impairment or health problem, do you need the help of other persons with your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?

a. Yes	1	Don't know/Not sure	7
b. No	2	Refused	9

5. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?

a. Yes	1	Don't know/Not sure	7
b. No	2	Refused	9

Healthy Days Symptoms Module

1. During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?

a. Number of Days _ _ Don't know/Not sure 7 7

b. None 8 8 Refused 9 9

2. During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?

a. Number of Days _ _ Don't know/Not sure 7 7

b. None 8 8 Refused 9 9

3. During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?

a. Number of Days _ _ Don't know/Not sure 7 7

b. None 8 8 Refused 9 9

4. During the past 30 days, for about how many days have you felt you did NOT get ENOUGH REST or SLEEP?

a. Number of Days _ _ Don't know/Not sure 7 7

b. None 8 8 Refused 9 9

5. During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?

a. Number of Days _ _ Don't know/Not sure 7 7

b. None 8 8 Refused 9 9

Appendix E

Letter of Consent/Invitation to the Program

Improving Cardiometabolic Health at Burnaby Primary Care Clinic Consent Form

Dear Burnaby Primary Care Clinic Clients:

I am inviting you to participate in a quality improvement program that promotes healthy behaviours in people who suffer from weight gain and metabolic syndrome. This is also my doctoral (doctor of nursing practice) project supervised by Dr. Carol Wallman at Regis University, Denver, Colorado, USA.

Purpose of the program

This project will allow clients to learn the risks of metabolic syndrome and practical ways of healthy eating and exercise. Eventually, this project will increase the sense of health in participating clients.

What will happen during the program?

- You will learn about the risks of metabolic syndrome, healthy eating, and exercise.
- You will choose your practical ways of healthy behaviours and practice at your own pace.
- You will be asked 14 questions about your current health perception and satisfaction before and after the program.
- You will be encouraged to measure your abdominal girth weekly and keep a journal about your progress daily.
- You will be followed up every two weeks by telephone for up to eight weeks.

Possible discomfort, risks and side effects

Minor muscle/joint pains and aches are common when starting exercise, which is transient. In addition, changing lifestyles may increase your stress level. However, you are welcome to book extra telephone visits with me to address such issues.

Possible benefits

You will learn about the risks of metabolic syndrome and practical ways for healthy behaviours. Also, you may keep all the education materials, a journal, and a measurement tape.

Your rights and confidentiality

Your participation is completely voluntary, and you can opt-out at any time of the program. Your participation or decision to withdraw from the program will not affect your being at Burnaby Primary Care Clinic. This project's reports will not have your name or identifiers (i.e. date of birth or PHN). Confidentiality and privacy are kept according to Fraser Health guidelines. If you have any questions or concerns, please call me at 604-412-6571. NP Steven Hashimoto

** I understand the nature of the program explained above and my participation. Hence, I give my informed consent to participate in this program.

Name: Signature: Date:

Appendix F

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Steven Hashimoto (ID: 10930589)
- **Institution Affiliation:** Regis University (ID: 745)
- **Institution Email:** shashimoto@regis.edu
- **Institution Unit:** Lorette Heights School of Nursing
- **Phone:** 6047605537

- **Curriculum Group:** Human Research
- **Course Learner Group:** Social Behavioral Research Investigators
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 47230587
- **Completion Date:** 08-Feb-2022
- **Expiration Date:** 07-Feb-2025
- **Minimum Passing:** 80
- **Reported Score*:** 98

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	06-Feb-2022	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	06-Feb-2022	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	06-Feb-2022	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	07-Feb-2022	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	07-Feb-2022	5/5 (100%)
Assessing Risk - SBE (ID: 503)	07-Feb-2022	5/5 (100%)
Informed Consent - SBE (ID: 504)	07-Feb-2022	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	08-Feb-2022	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	08-Feb-2022	5/5 (100%)
Informed Consent and Incidental Findings in Research with Human Subjects (ID: 17342)	08-Feb-2022	4/5 (80%)
Students in Research (ID: 1321)	08-Feb-2022	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

Verify at: www.citiprogram.org/verify/?kd6199998-5066-4a65-98fe-28974ff1cb9d-47230587

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix G

DNP Project Timeline

Time	Planned Project
November – December 2021	• Completion of the literature review
January – February 2022	• Power analysis and determine the size of participants in the DNP project
February – April 2022	• Making patient educational materials and planning for implementation
May – August 2022	• Completion of the DNP project proposal and defense
September – December 2022	• Implementation of the DNP project and data collection
January – April 2023	• Statistical analysis of the data • Completion of the DNP project report • Final Defense • Dissemination in NP group in Fraser Heatlh

Appendix H

Fraser Health Research Ethics Board
FHA, Evaluation and Research Services
#400, 13450 102nd Avenue, Surrey, BC V3T 0H1
Phone: 604.587.4436 Fax: 604.930.5425

MEMORANDUM

TO: **Steven Hashimoto**

FROM: Ene Agada
Research Ethics Coordinator

DATE: 2022 July 08

RE: **Improving Cardiometabolic Health at MHSU Burnaby Primary Care Clinic**

This letter will acknowledge that the above-mentioned study does not require review and approval by the Fraser Health Research Ethics Board. Quality improvement and evaluation studies do not require research ethics board approval in accordance with both Fraser Health Research Policy Article 3.3 (Excluded Studies), and the current Tri-Council Policy Statement 2: Ethical Conduct for Research Involving Humans, Article 2.5 which states:

Quality assurance and quality improvement studies, program evaluation activities, and performance reviews, or testing within normal educational requirements when used exclusively for assessment, management or improvement purposes, do not constitute research for the purposes of this Policy, and do not fall within the scope of REB review.

That being said, quality improvement and evaluation does not preclude publication of these types of studies. This memorandum can be provided to any journal as evidence that your study was deemed to be exempt from FHREB review per TCPS 2 Article 2.5 above.

Good luck with the implementation of your project. Please note that the confidentiality of any collected data must be preserved at all times in compliance with Fraser Health policies.

Ene Agada,
Research Ethics Coordinator, Fraser Health Research Ethics Board

Appendix I

REGIS UNIVERSITY

REGIS.EDU

Institutional Review Board

DATE:	August 9, 2022
TO:	Steven Hashimoto
FROM:	Regis University Human Subjects IRB
PROJECT TITLE:	[1934942-1] Improving cardiometabolic health at Burnaby Primary Care Clinic
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF NOT RESEARCH
DECISION DATE:	August 9, 2022

Thank you for your submission of New Project materials for this project. The Regis University Human Subjects IRB has determined this project does not meet the definition of human subject research under the purview of the IRB according to federal regulations.

The project may proceed as written.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact the Institutional Review Board at irb@regis.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Regis University Human Subjects IRB's records.