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Enhancing Metabolic Syndrome Surveillance for Adults Taking Second Generation Antipsychotic Medication

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Enhancing Metabolic Syndrome Surveillance for Adults Taking Second Generation Antipsychotic Medication

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Abstract

Background: Individuals prescribed Second-Generation Antipsychotics (SGAs) face an increased risk of developing metabolic syndrome (MetS), characterized by a higher prevalence of metabolic abnormalities such as diabetes, dyslipidemia, hypertension, and obesity. This heightened susceptibility significantly raises the chances of developing cardiovascular disease and type 2 diabetes (Abdulhaq et al., 2021; Chen & Nasrallah, 2019).

Objectives: This quality improvement project aims to address the management of MetS in patients with severe psychiatric disorders prescribed SGAs. Applying the theory of planned behavior (TPB) framework, this project seeks to gain insights into the determinants shaping clinician behavior and provide a comprehensive understanding of the reasons behind adherence or non-adherence to MetS management guidelines.

Methods: The intervention includes developing and evaluating an educational toolkit to enhance the knowledge, confidence, and skills of clinic staff in providing care for this patient population. Educational meetings were held, standardized screening protocols were established, and a workflow for ordering referrals to primary care physicians was implemented. The plan-do-study-act (PDSA) cycle was used for the quality improvement tool.

Findings: The project findings indicate that the standardized screening protocol effectively identifies individuals at risk for metabolic syndrome and promotes appropriate referrals. The implementation of the educational toolkit and screening protocol significantly support providers' confidence in screening metabolic health in patients, as evidenced by a statistically significant increase in overall M-BACK scores from pre implementation to post implementation (score = 8.69, p = .013, d = .38, N=44). However, there are opportunities for improvement, specifically regarding completion rates for specific risk factors and timely access to lab results.

Keywords: Metabolic Syndrome, Second-Generation Antipsychotics, Theory of Planned Behavior, Educational Toolkit, Standardized Screening, Quality Improvement.

Implications for Practice

Patients and the public were not directly involved in the design, implementation, or interpretation of this quality improvement project. However, the insights gained from this project contribute to improving the quality of care for individuals with severe psychiatric disorders prescribed SGAs and at risk of MetS development. The findings can advise future interventions aiming to increase metabolic health screening in this patient population, with the potential to lead to improved health outcomes and improved patient satisfaction.

Introduction

Metabolic syndrome is a cluster of conditions that collectively heighten an individual's susceptibility to cardiovascular diseases such as a stroke and myocardial infarction (Kuperberg et al., 2022; Kanji et al., 2021). Metabolic syndrome affects approximately 20% to 25% of adults globally. However, among individuals with mental illness, the prevalence of metabolic syndrome is notably higher, ranging from 37% to 44%. Given that heart disease is the leading cause of mortality in the United States, understanding and managing metabolic syndrome is critical (Kuperberg et al., 2022; Kanji et al., 2021). Despite the established guidelines for metabolic risk screening, their implementation in practice has been limited, leading to suboptimal screening rates.

Objective

The purpose of the project is to address the screening of MetS in patients with severe psychiatric disorders prescribed SGAs. This strategy ensures adherence to consensus guidelines set forth by the American Diabetes Association (2004) for metabolic monitoring and management. Additionally, advocating for collaborative healthcare approaches, endorsed by both the American Psychiatric Association (APA) and the American Diabetes Association (ADA), is essential to mitigate metabolic risks effectively. Evaluating the effectiveness of educational interventions through data-driven methods enables evidence-based decision-making for optimal outcomes. Lastly, the development of a sustainable monitoring workflow ensures continued management of MetS and its associated risk factors over time.

Literature Review

A comprehensive electronic search was conducted in multiple databases, including CINAHL, Google Scholar, ProQuest, PubMed, and Psychology ProQuest, limited to English language studies from 2017 to 2023. The search terms included mental disorders, atypical antipsychotics, metabolic side effects, metabolic syndrome, weight gain, practice guidelines, barriers, evidence-based intervention, and adults. The goal was to identify studies, including randomized controlled trials, systematic reviews, and other research types, focusing on implementing evidence-based guidelines for managing metabolic syndrome in adults with psychiatric disorders in outpatient settings. Duplicates were removed, following a thorough screening process based on PRISMA guidelines (see Appendix 1) (Page et al., 2021). The inclusion criteria centered on adult patients with psychiatric disorders in outpatient care, excluding studies on children or patients not prescribed atypical antipsychotics and studies which did not address metabolic syndrome. From the 231 studies retrieved, 24 articles met the inclusion criteria for further analysis.

Summary of Findings

The literature review provides evidence of the increased risk of MetS among psychiatric patients using antipsychotic medications, specifically SGAs. Numerous studies have reported a higher prevalence of MetS in this population, emphasizing the importance of effective monitoring and management (Kuperberg et al., 2022; Kanji et al., 2021; Rognoni et al., 2021). The ADA, APA, American Association of Clinical Endocrinologists, and North American Association, issued a consensus statement in 2004 regarding metabolic screening and monitoring for patients initiating or switching to new antipsychotic medications (American Diabetes

Association, 2004). The recommendations included obtaining medical history, assessing weight, BMI, waist circumference, blood pressure, fasting plasma glucose, and fasting lipid profile during the initial patient visit and with subsequent rechecks of metabolic parameters (American Diabetes Association, 2004). According to Clark et al. (2017), adherence to clinical practice guidelines is widely acknowledged as a crucial standard for delivering high-quality care and reducing practice variation. However, the existing literature reveals significant evidence of barriers and gaps in the adherence to these guidelines. These barriers present challenges to the effective monitoring and management of MetS risk factors in this patient population. Despite the existence of guidelines for metabolic risk screening, their implementation in clinical practice has been limited, as indicated by suboptimal screening rates (Abdulhaq et al., 2021; Galling et al., 2020).

Poojari et al. (2023) identified limited accessibility, lack of education, resource constraints, and lower levels of patient capacity as obstacles to metabolic monitoring. Accessing primary care services was challenging for some patients with severe mental illness due to financial burdens (Poojari et al., 2023). Galling et al. (2020) revealed suboptimal rates of screening and monitoring for metabolic parameters, citing a lack of awareness and knowledge among healthcare professionals about the importance of monitoring metabolic risks.
The identified barriers and gaps in current management practices underscore the urgency for evidence-based interventions to improve metabolic monitoring. Fostering collaboration between mental health and primary care providers, empowering patients, and implementing improvement strategies at various levels, can bridge the knowledge-practice gap and optimize metabolic health (Melamed et al., 2019; Soda et al., 2021).

Organizational Assessment

Applying the McKinsey 7S Framework (Waterman et al., 1980), insight gained into the organization's strengths and weaknesses across its strategy, structure, systems, shared values, skills, style, and staff. The organization's approach is focused on providing comprehensive primary care and behavioral health services to underserved populations. The mission is clear and aligns with the organization's values. However, there is a need for the organization to update its Electronic Health Record (EHR) systems to improve the patient experience and ensure better collaboration with other healthcare organizations. The organization's SWOT analysis highlights strengths, including being an FQHC (Federally Qualified Health Center), having experienced and well-trained staff, and a strong reputation in the community for quality care. The organization emphasizes collaboration and care coordination, faces opportunities for improvement in raising public awareness of metabolic syndrome, fostering partnerships with healthcare providers, and enhancing staff development. Weaknesses encompass accessibility issues, language barriers, staff shortage, and outdated EHR systems. Patient non-compliance and potential policy changes regarding FQHCs and insurance structures further threaten care quality. Key stakeholders include patients, leadership, physicians, regulators, staff, interpreters, and the broader community, each playing vital roles in project success.

Clinical Question

This author aims to investigate the impact of developing and assessing an educational toolkit focused on Metabolic Syndrome (MetS) on clinic staff members' knowledge, confidence, and skills in caring for patients with severe mental illness who are at risk for MetS. The clinical question explores what is the impact of educational interventions in improving quality of care provided to patients by enhancing provider's understanding and capabilities in screening MetS

Guiding Framework

The integration of the Theory of Planned Behavior (TPB) into addressing barriers in managing MetS risk factors finds robust support in the literature. The TPB, originally developed by Fishbein and Ajzen in 1967 and further expanded by Ajzen, explores the relationship between beliefs, attitudes, intentions, and behavior (Alhamad & Donyai, 2021). This theory emphasizes that stronger intentions to perform a behavior are the primary determinants of whether the behavior will occur, with attitudes, subjective norms, and perceived behavioral control influencing these intentions (Alhamad & Donyai, 2021).

The application of the TPB provides valuable insights into the factors influencing clinician adherence to metabolic monitoring guidelines. Examining attitudes, subjective norms, and perceived behavioral control, the TPB helps explain the reasons behind adherence or non-adherence to guidelines. The use of TPB, target interventions such as the education programs, fosters a supportive culture, and addresses resource constraints can be developed to improve adherence to guidelines. This integration of theory into practice enables healthcare providers to enhance metabolic monitoring practices, resulting in better patient outcomes (Birken et al. 2017).

The desired outcomes of this project include improved screening rates for metabolic syndrome, increased adherence to clinical guidelines, and enhanced overall quality of care for individuals with severe psychiatric disorders prescribed SGAs through the application of these interventions. The project aligns with the principles of evidence-based practice and quality improvement, utilizing the PDSA cycle to guide implementation and evaluation (Taylor et al., 2014). Through collaborative efforts and a systematic approach, the author attempted to address

the complex challenges associated with metabolic syndrome management in this vulnerable population.

The interventions include educational sessions, standardized screening protocols, and referral processes to further comprehensive metabolic monitoring and management. These interventions are grounded in evidence-based practices and guidelines issued by organizations such as the APAand the ADA (Correll et al., 2018; Barton et al., 2020).

Methods

The project intervention, approved by the Institutional Review Board (see Appendix 4), included the implementation of an educational toolkit and consisted of several components to address knowledge gaps and enhance clinical practice. The educational meetings were targeted to healthcare providers who participated in educational meetings to increase their understanding of MetS and its association with SGAs. These meetings involved reviewing existing evidence, guidelines, and management recommendations, aiming to bridge the gap between knowledge and practice. Additionally,the intervention includes implementing the standardized workflow for MetS screening to ensure consistent assessment of all patients on SGAs. The workflow includes regular monitoring of key metabolic parameters such as weight, blood pressure, lipid profile, and fasting glucose levels. Moreover, there was a specific emphasis on the referral process by applying a structured process for referring patients to primary care physicians or specialists for further evaluation and management of MetS. The aim of the intervention is to promote collaboration between mental health and primary care providers to ensure thorough monitoring and management of metabolic risk factors. The evidence supporting this intervention is drawn from the literature, highlighting the effectiveness of educational interventions and collaborative approaches in improving metabolic monitoring practices in this population (Kanji et al., 2021;

Correll et al., 2018). In addition to the Theory of Planned Behavior, the PDSA

(Plan-Do-Study-Act) cycle was used as the guiding framework for implementing and evaluating

changes in practice, allowing for improvement based on team response and outcomes data

(Taylor et al., 2014). Both the PDSA and TPB framework are employed to bridge theory and

practice, facilitating the translation of research into clinical settings for this quality improvement

project (Taylor et al., 2014).

Implementation Strategies

The implementation strategies by Powell et al. (2015) were applied to enhancing

healthcare provider knowledge, facilitating the referral process, and implementing standardized

screening protocols to improve MetS screening among patients prescribed SGAs. To achieve

these, different deliverables timelines were structured, such as for training and education, care

coordination, and workflow integration. Training and education involved using the M-BACK

Questionnaire to evaluate barriers, attitudes, confidence, and knowledge, as well as the use of

educational resources and post-intervention surveys to gauge improvements (see Appendix 2)

(Watkins, A., et al. 2017). The facilitation of the referral process entailed enhancing

collaboration between psychiatrists and primary care providers, establishing standardized referral

protocols, and providing training and guidelines for streamlined referrals. The implementation of

standardized screening involved new workflow, professional collaboration, and screening

performance feedback to ensure consistency in MetS screening practices. These deliverables

aimed to improve provider knowledge, referrals, and consistency of screening, with the goal of

enhancing quality of care for patients prescribed SGAs. The M-BACK tool was selected for its

effectiveness and relevance, and is an important component in the project's goal to increase

metabolic monitoring (Watkins, A., et al. 2017). Permission to utilize the M-BACK tool was

obtained (see Appendix 3). The M-BACK tool is a five-point Likert scale including 16 questions with four domains: knowledge, confidence, attitudes, and practice barriers related to metabolic syndrome. The M-BACK tool aligns with the principles of evidence-based practice and quality improvement (Watkins, A., et al. 2017). The M-BACK is a valid and reliable tool for measuring the effectiveness of education programs aimed at improving behavioral health providers attitudes, confidence, and knowledge regarding metabolic syndrome (Watkins, A., et al. 2017).

Results

The implementation of a standardized screening workflow for metabolic syndrome results across different aspects is varied, with certain components showing significant improvement while others remain unchanged. With a sample size of 44, certain components of the screening process, such as the collection of patient information and blood pressure measurement, had high completion rates of 100%, indicating effective integration into practice. Other areas, such as screening for family history and waist circumference measurement, had lower rates of completion at 43.2% and 77.3%, respectively. The stage of monitoring intervals completion rates of 88.6% suggests adherence to the workflow and shows a positive sign in the adoption of standardized screening practices.

Lab results of 20.5 % of patients (N=44) had pending test results, which delays required diagnostic criteria of metabolic syndrome. Among patients with available results, 52.273% showed negative screening for MetS, and 27.273% tested positive for metabolic syndrome criteria (see Graph 1). All patients who met the criteria for MetS were electronically referred to primary care providers for evaluation and management, ensuring timely follow-up and appropriate care. Since the referral process is one of the significant deliverables, this referral rate indicates successful implementation of the process component of the screening workflow.

Screening Results

20.5%

52.3%

27.3%

■ Negative   ■ Positive   ■ Lab pending
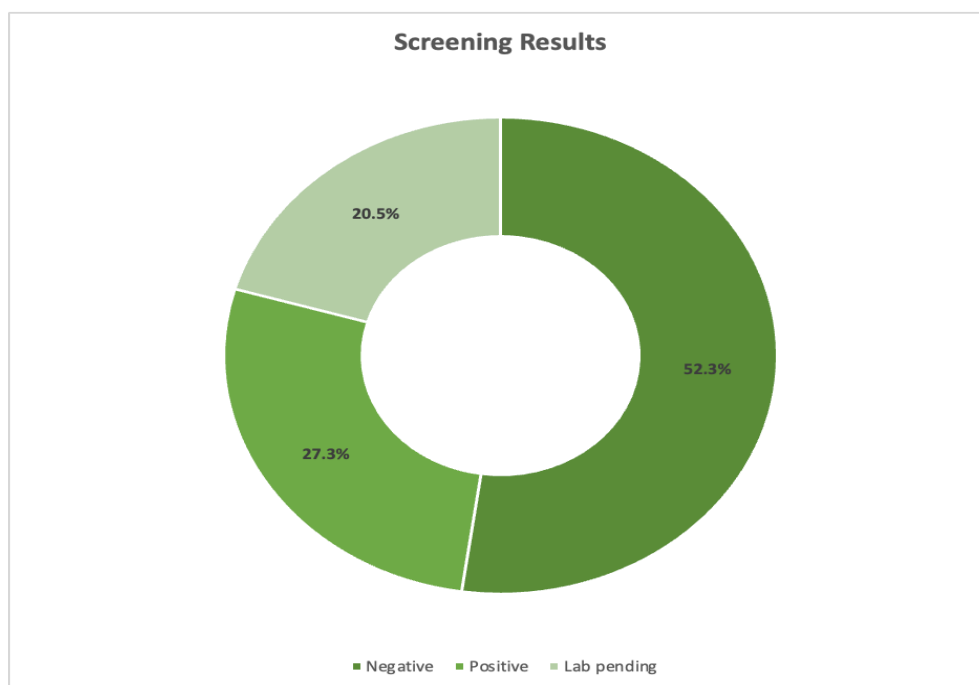
Graph 1

The implementation of the workflow is further supported by an analysis of providers' knowledge, attitudes, and confidence levels before and after the intervention (see Graph 2) . The results indicating a significant increase in overall M-BACK scores from pre and post implementation, specifically in the confidence levels domain (d = 1) and marginally in knowledge (d = 2.08) When examining the results for metabolic health and medication side effects, there is not a significant change in barriers or attitudes domains. These findings suggest the educational sessions' PowerPoint and educational toolkit in combination with the screening workflow effectively enhanced the providers' confidence in managing patients at risk for metabolic syndrome.
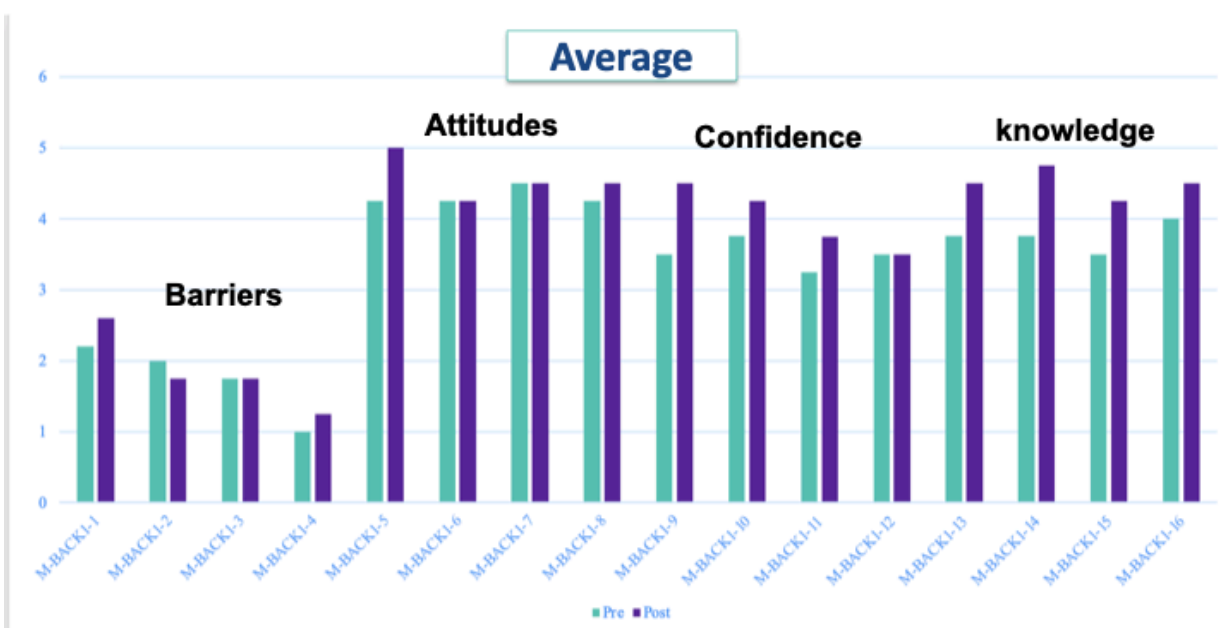
Graph 2

In conclusion,the overall success of the implementation is evident despite areas of the standardized screening protocol showing room for improvement, such as completion rates for specific risk factors and timely access to lab results. The workflow shows effectiveness in identifying patients at risk for metabolic syndrome, appropriate referrals, and increasing providers' confidence in managing metabolic health. Further evaluation is necessary to optimize the screening process and in order to ensure consistent adherence to best practices in metabolic syndrome monitoring.

Discussion and Implications

In the evaluation of the impact of educational interventions on metabolic syndrome surveillance, several key findings emerged. Firstly, the effectiveness of the educational interventions and the new screening workflow in enhancing providers' knowledge, attitudes, confidence, and skills related to metabolic syndrome surveillance was evident. The pre- and

post-education survey results indicated improvements in these areas, suggesting that the interventions successfully addressed gaps and support engagement in the MetS screening process.

The educational intervention targets specific areas of concern identified in the literature review and organizational assessment, such as suboptimal screening rates; the interventions facilitated the implementation of standardized screening protocols with streamlined referral processes. These interventions contributed to improved metabolic syndrome screening guidelines and the integration of constant practices into existing workflows. As a recommendation, future initiatives should be considered for the organization as they update its EHR systems. As a recommendation, it would be advisable to implement integrated screening processes into the EHR systems to enhance efficiency and accuracy in patient care. This integration has the potential to significantly enhance adherence to screening protocols and alleviate the burden of screening via paperwork. Additionally, finding a champion within the organization can continue to promote implementation efforts, advocate for the adoption of new protocols, and provide support and guidance throughout the process. Champions play a critical role in change and ensuring sustained adherence to best practices in surveillance and specifically in metabolic syndrome (Powell et al., 2015).

Communication and interprofessional collaboration played a central role in supporting the success of the educational interventions. Fostering collaboration between mental health providers and primary care providers and facilitating communication channels, the interventions promoted a holistic approach to metabolic syndrome screening. Collaboration ensured that patients received extensive care and timely referrals when needed, which ultimately led to and enhanced patient outcomes (Reynolds et al., 2021).

This discussion acknowledges the limitations during the implementation. Workflow disruptions, and initial resistance to change were among the obstacles faced. However, proactive measures were taken to address these, including ongoing training and support for providers and the formation of feedback mechanisms to address barriers and concerns.

Sustainability is an essential consideration, in addition to strategies for sustaining the improvements achieved through the educational interventions and the new screening process including ongoing monitoring and evaluation, leadership support, stakeholder engagement, and the integration of monitoring practices into the clinic policies (Taylor et al., 2014). In addition, quality improvement efforts and ongoing research may support MetS screening clarifications as well as exploring additional interventions, and addressing challenges in metabolic syndrome monitoring among patients on second-generation antipsychotic medication.

Conclusions

The insights gained from this project contribute to improving the quality of care for individuals with severe psychiatric disorders prescribed SGAs and at risk of developing MetS. Future interventions in this area can benefit from these findings, potentially leading to improved health outcomes. Through the application of the TPB framework and the implementation of educational interventions, this project has shed light on the determinants shaping clinician behavior and provided valuable insights into adherence to MetS management guidelines. While significant progress has been made in identifying at-risk individuals and promoting referrals, there are opportunities for improvement, particularly in addressing completion rates for specific risk factors and ensuring timely access to lab results. By addressing these challenges, the organization can further optimize the effectiveness of interventions and ensure comprehensive care for patients at risk of MetS.

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Appendix

Appendix 1

Identification of studies via databases and registers

Identification
- CINAHL: 46
- Google Scholar: 88
- ProQuest: 20
- PubMed: 57
- Psychology ProQuest: 20

Total: 231

Records removed before screening:
Duplicate records removed: 77
Records marked as ineligible by automation tools: 10
Records removed for other reasons: 20

Total records removed: 107

Screening

Records screened: 124

Records excluded**:
Excluded by a human: 28
Excluded by automation: 10

Total records excluded: 38

Reports sought for retrieval. (n = 5)

Reports not retrieved. (n = 1)

Reports assessed for eligibility. (n = 40)

Reports excluded:
Children: 5
Not full article: 8
Not in English: 4

Total reports excluded: 17

Included

Studies included in review. (n = 24)

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Appendix 2

Reference code_____   Date_____

The M-BACK Questionnaire

1. My workload prevents me doing any health promotion activities with consumers.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. Consumers with a severe mental illness are not interested in improving their physical health.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. Informing clients about the possible effects medications may have on their physical health will increase non-adherence.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. Screening for metabolic syndrome and physical health interventions are pointless as poor physical health outcomes are unavoidable.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. Metabolic health screening is an important part of my role as a mental health clinician.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. Giving smoking cessation advice is an important part of my role as a mental health clinician.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. Encouraging consumers to increase their level of physical activity is an important part of my role as a mental health clinician.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. Discussing nutritional intake is an important part of my role as a mental health clinician.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. I am confident in my ability to screen for metabolic syndrome.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

10. I am confident in providing smoking cessation advice to consumers.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

11. I am confident in prescribing exercise interventions to prevent / treat metabolic syndrome.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. I am confident in using dietary interventions to prevent / treat metabolic syndrome in consumers.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

13. I have a good knowledge of metabolic syndrome.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

14. I understand how to screen for metabolic syndrome.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

15. I understand how to read pathology reports for lipids and glucose results.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

16. I understand the metabolic side-effect profiles of different neuroleptic medication.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Appendix 3

Permission letter

Andrew Watkins <andrew.watkins@unsw.edu.au>
To: Ilanit Marx <ilanit.marx@gmail.com>

Mon, Sep 4, 2023 at 9:11 PM

Hi Ilanit,

Thanks for your email. The M-BACK is freely available for you to use.

Good luck with your project.

With thanks

Dr Andrew Watkins

From: Ilanit Marx <ilanit.marx@gmail.com>
Date: Tuesday, 5 September 2023 at 2:38 am
To: Andrew Watkins <andrew.watkins@unsw.edu.au>
Subject: Seeking permission to use M-Back questionnaire

You don't often get email from ilanit.marx@gmail.com. Learn why this is important

My name is Ilanit Marx and I am a DNP student at Grand Valley State University.

I am seeking permission to use your M-Back questionnaire from your article.

I consider using 1 or 2 sections to ensure that I am utilising a validated questionnaire. But we may use the complete questionnaire.

Could you please let me know if I have your permission to use the M-Back questionnaire for my graduate project on educating psychiatric providers about the importance of metabolic screening in patients taking antipsychotic medications.

Thank you in advance for your consideration.

Appendix 4

GRAND VALLEY STATE UNIVERSITY
www.gvsu.edu

Date: December 01, 2023

To: Heather Krull
From: Office of Research Compliance & Integrity
Project Title: Improving Metabolic Syndrome Screening and Knowledge in Patients with Severe
                        Psychiatric Disorder on Second-Generation Antipsychotics
Project Number: 24-126-H
Submission Type: IRB Research Determination Submission

Action: Not Research
Effective Date: December 01, 2023
Review Type: Administrative Review

Thank you for your submission of materials for your planned scholarly activity. It has been determined
that this project does not meet the definition of research* according to current federal regulations. The
project, therefore, does not require further review and approval by the IRB.

Scholarly activities that are not covered under the Code of Federal Regulations should not be described
or referred to as *"research"* in materials to participants, sponsors or in dissemination of findings. While
performing this project, you are expected to adhere to GVSU's code of conduct and any discipline-
specific code of ethics.

A summary of the reviewed project and determination is as follows:
    The purpose of this project is to develop and evaluate an educational toolkit on Metabolic Syndrome
    to enhance the knowledge and skills of providers who care for patients with severe psychiatric
    disorders prescribed second-generation antipsychotic medications. Project activities are systematic in
    nature but are not designed to be generalizable beyond the participating organization. As such, this
    project does not meet the federal definition of research and further IRB review/approval is not
    required.

This determination letter is limited to IRB review. It is your responsibility to ensure all necessary
institutional permissions are obtained prior to beginning this project. This includes, but is not limited to,
ensuring all contracts have been executed, any necessary Data Sharing Agreements and Material
Transfer Agreements have been signed, and any other outstanding items are completed.

If you have any questions, please contact the Office of Research Compliance and Integrity at (616) 331-
3197 or rci@gvsu.edu. Please include the project title and project number in all correspondence with our
office.

*Research is a systematic investigation, including research development, testing, and evaluation, designed to
develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).

Enhancing Metabolic Syndrome Surveillance for Adults Taking Second Generation Antipsychotic Medication

Ilanit Marx BSN,MA
DNP Project Final Defense
4/25/2024

Grand Valley State University

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Faculty Advisors
Dr. Heather Chappell
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XXXXXX

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Objectives for Presentation

1. Explore the Clinical Phenomenon of Metabolic Syndrome Surveillance Among Adults on Second Generation Antipsychotic Medication.
2. Synthesis of Literature Support and Theoretical Framework for Surveillance Interventions, Organizational Assessment Findings, and Project Plan:
3. Discuss Results of the Metabolic Syndrome Surveillance Quality Improvement (QI) Project
4. Obtain Approval for DNP Completed Project

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Introduction

Metabolic Syndrome in SGA Patients

Individuals on second-generation antipsychotics (SGAs) at elevated risk for Metabolic Syndrome (MetS), encompassing diabetes, dyslipidemia, hypertension, and obesity (Abdulhaq et al., 2021; Chen & Nasrallah, 2019).

Critical Concerns and Implications

Addressing MetS risk is vital due to potential severe health consequences and increased healthcare costs, paralleling the significance of managing chronic health conditions in the general population.

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Background

Urgent Need for Monitoring

- MetS raises risks of cardiovascular disease and type 2 diabetes, emphasizing the importance of adherence to metabolic monitoring guidelines (Kanji et al., 2021).

Closing Knowledge Gaps

- Bridging healthcare provider knowledge gaps on MetS is crucial for patient care (Kanji et al., 2021).
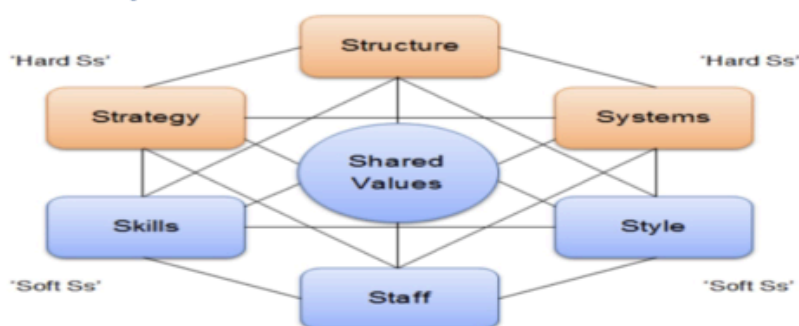
Guideline Adherence is Key

- Following clinical guidelines is essential for improved patient outcomes and preventing long-term MetS complications (Liu et al., 2022).

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Assessment of Organization

McKinsey 7-S Framework

(McKinsey & Company, 2008; Jurevicius, 2021)
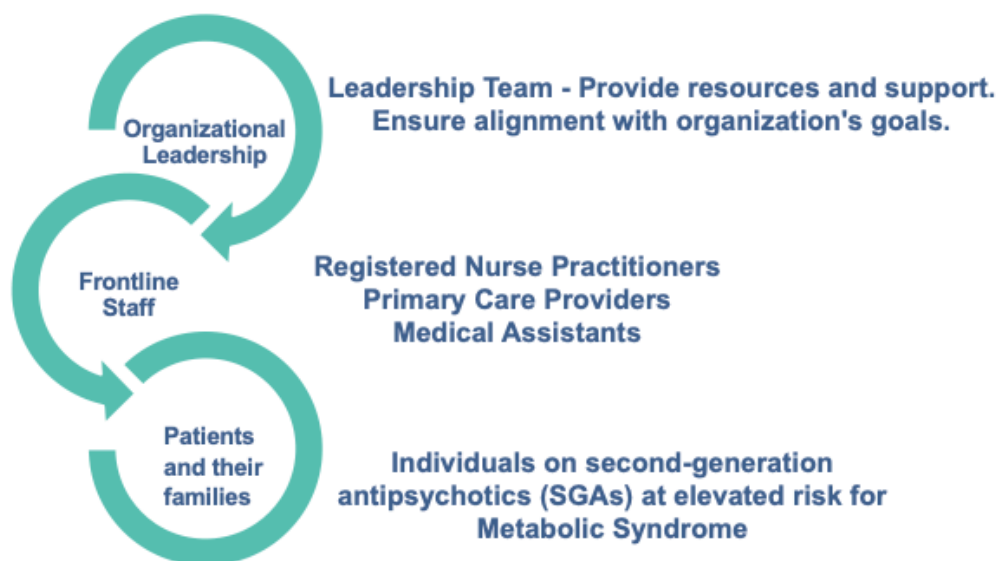
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McKinsey 7-S Framework (Waterman et al., 1980)

Aspect	Organization Assessment Finding
Strategy	Clear strategy aligned with mission and values
Systems	Systems need updating for enhanced patient experience and collaboration
Shard Values	Strong emphasis on shared value guiding decision making
Staff	Varied skills among staff, but shortage of medical assistance noted
Leadership Style	Collaborative and patient centered leadership fosters strong provider patient relationship
Stricture	Clear organization stricture, potential for optimization

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Key Stakeholders

Organizational Leadership

Leadership Team - Provide resources and support. Ensure alignment with organization's goals.

Frontline Staff

**Registered Nurse Practitioners
Primary Care Providers
Medical Assistants**

Patients and their families

Individuals on second-generation antipsychotics (SGAs) at elevated risk for Metabolic Syndrome

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SWOT Analysis

Strengths	Weaknesses
Accessibility Faith-Centered Wellness Focus FQHC Status Skilled Staff Comprehensive Services	Language Barriers Screening and Prevention Staff Shortage Communication Challenges Outdated EHR. Patient Compliance Vulnerable Patient Population HRSA Policy Changes Economic Impact
Opportunities	**Threats**
Procedures and Policies Awareness Partnerships Staff Development Technology Integration	Non-compliance from patients HRSA Policy changes related to FQHC - Potential changes with the current insurance structure due to policy changes Economic conditions that may impact the ability of patients to pay for services.

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Literature Review: Aims

Purpose:
- Examine SGA use's link to Metabolic Syndrome (MetS), weight gain, and cardiovascular complications.
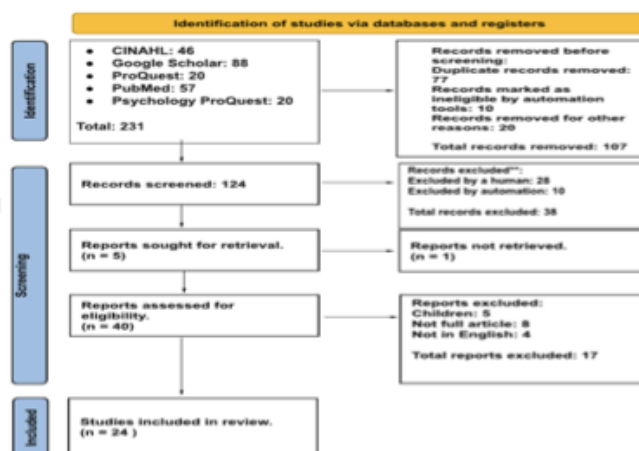
Aims
- Assess MetS prevalence in SGA-prescribed patients, identify management gaps, and explore evidence-based interventions.
- Inform future research, policy, and clinical practice enhancements.

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PRISMA Figure

Comprehensive electronic databases using CINAHL Complete and PubMed for articles published between 2017 to 2023.
Second search was conducted in an internet-based search engine due to large amount of literature available on research topic.

Identification of studies via databases and registers

Identification
- CINAHL: 46
- Google Scholar: 88
- ProQuest: 20
- PubMed: 57
- Psychology ProQuest: 20

Total: 231

Records removed before screening:
Duplicate records removed: 77
Records marked as ineligible by automation tools: 10
Records removed for other reasons: 20

Total records removed: 107

Screening

Records screened: 124 → Records excluded**:
Excluded by a human: 28
Excluded by automation: 10
Total records excluded: 38

Reports sought for retrieval. (n = 5) → Reports not retrieved. (n = 1)

Reports assessed for eligibility. (n = 40) → Reports excluded:
Children: 5
Not full article: 8
Not in English: 4
Total reports excluded: 17

Included

Studies included in review. (n = 24)

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

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Literature Review: Theme Synthesizes

Theme	Literature Synthesis: Evidenced-Based Strategies
Increased **Risk of MetS** among Psychiatric Patients Using Antipsychotic Medications	• Increased prevalence of metabolic abnormalities such as diabetes, dyslipidemia, hypertension, and obesity in this population (Abdulhaq et al., 2020; Barton et al., 2020; Kanji et al., 2021; Padhy et al., 2020). • Association between SGAs and MetS, underscoring the importance of monitoring and interventions to mitigate associated risks (Abdulhaq et al., 2020; Barton et al., 2020).
Multifactorial Risk Factors for MetS in Psychiatric Patients on Antipsychotic Medications	• MetS risk in psychiatric patients on SGAs is multifactorial, influenced by factors such as lifestyle choices, genetics, inflammation, and psychiatric disorders (Kanji et al., 2021). • SGAs, notably clozapine and olanzapine, elevate the risk of weight gain, glucose intolerance, and elevated lipid levels , significantly increasing the likelihood of cardiovascular disease and type 2 diabetes (Nguyen et al., 2022; Abdulhaq et al., 2021; Chen & Nasrallah, 2019).

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Literature Review: Theme Synthesizes

Theme	Literature Synthesis: Evidenced-Based Strategies
Barriers in the Management of Metabolic Syndrome Risk Factors	• Accessibility, lack of education, and resource constraints (Poojari et al., 2023). • Financial structured systems burdens • limited awareness of metabolic syndrome (Nguyen et al., 2022). • Lack knowledge (Galling et al., 2020). • Adherence to metabolic screening guidelines (Abdulhaq et al., 2021).
Consensus **Guidelines** for Metabolic Screening and Monitoring	• Implement comprehensive metabolic screening during initial patient visits and follow-up assessments. • Assess weight, BMI, waist circumference, blood pressure, fasting plasma glucose, and lipid profiles. (American Diabetes Association, 2004; Kanji et al., 2021; Nguyen et al., 2022; Abdulhaq et al., 2021; Chen & Nasrallah, 2019)

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Literature Review: Theme Synthesizes

Theme	Literature Synthesis: Evidenced-Based Strategies
Evidence-Based Interventions for Metabolic Monitoring and Management	• Collaborate between mental health and PCP • Multidisciplinary care teams • Provider education, reminder systems, and metabolic monitoring tools - improve screening rates. • Switching to antipsychotic medications with a lower risk (Barton et al., 2020; Correll et al., 2018; Chang et al., 2021; Bersani et al., 2017; Melamed et al., 2019; Lydon et al., 2021; Soda et al., 2020)

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Evidence for Project

- **Toolkit** implementation for metabolic screening in users of antipsychotic medication (Barton et al. 2020)
- **Collaborative** healthcare, advocated by APA and ADA, is crucial for mitigating metabolic risks (Correll et al., 2018).
- Interventions target **provider, patient, and system** levels to enhance screening effectiveness (Melamed et al., 2019).
- **Collaboration** among services is vital for a holistic understanding of health (Correll et al., 2018; Mitchell et al., 2018; Melamed et al., 2019).
- Individualized interventions, such as **peer-led support**, facilitate healthy behaviors (Ali et al., 2020).
- **Training** is essential for delivering comprehensive care (Ali et al., 2020).
- **Integrating primary care and mental health services** is vital for improving screening practices (Bozymski et al., 2018).
- **Addressing barriers** through stigma reduction, family involvement, healthcare professionals' education, and resource optimization is crucial for improvement (Ali et al., 2020).

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Clinical Question

Can the development and evaluation of an educational toolkit on Metabolic Syndrome (MetS) potentially enhance the knowledge, confidence, and skills of clinic staff in providing care for patients with severe mental illness at risk for MetS?

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Project Objectives

- **Improve Metabolic Monitoring**
- **Ensure adherence to consensus guidelines**
- **Advocate for collaborative healthcare**
- **Evaluate Intervention Effectiveness**
- **Sustain Monitoring Workflow**

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Setting and Project Design

Quality Improvement: Healthcare Center Michigan

- Enhance healthcare services
- Focus on improving patient care and health outcomes
- Initiatives span clinical practices, patient engagement, and operational efficiency
- Commitment to meeting and exceeding healthcare standards
- Tailoring services to address community needs

Participants

- Primary Care Physician
- Psychiatric-Mental Health Nurse Practitioners (PMHNPs)
- Medical Assistants

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Timeline

November	December	February/March	March	March	April
• Creation of Educational Materials • Creation of Standardized Referral Protocols • Creation of Referral Guidelines •Creation of Interdisciplinary Team Meetings •Creation of a Consistent Screening Protocol	• Creation of a written job description for medical assistance and mental health providers • Preparation of copies of the M-BACK questionnaire • Creation of written procedure and process for metabolic syndrome screening	• Implement workflow process and procedure for MA and providers • Implement team education • Creation of an excel spreadsheet to track screening forms and referrals.	• Implement workflow process and procedure for MA and providers • Collection of data will take place biweekly during project implementation. • Create sustainability plan.	• Data collection period. • Collection of data will take place biweekly during project implementation. • Analysis of Referral rate, M-BACK questionnaire.	• DNP scholarly defense. • Upload final defense into Scholar Works.

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Conceptual Model for Phenomenon

- Developed by Fishbein and Ajzen in 1967. TPB explores the link between beliefs, attitudes intentions, and behavior (Alhamad & Donyai, 2021).
- In TPB, stronger intentions drive behavior.
- Attitudes, norms, and perceived control shape intentions.(Alhamad & Donyai, 2021).
- TPB predicts health behaviors and adherence in healthcare.(Yastica et al., 2020).
- It is widely recognized and frequently used in the healthcare field.
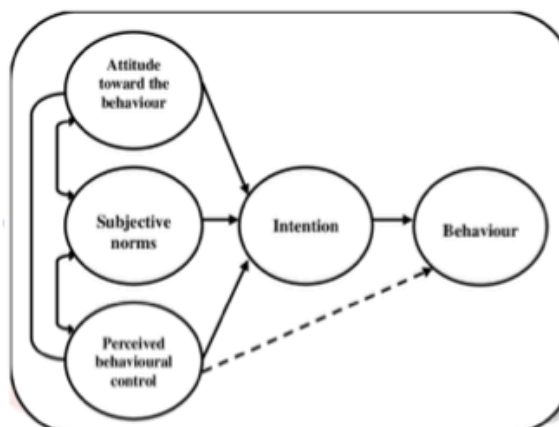
Theory of planned behaviour (TPB), Icek Ajzen, 1991

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Implementation Model/Framework

In addition to the Theory of Planned Behavior, the PDSA (Plan-Do-Study-Act) cycle used as the guiding framework employed to bridge theory and practice, facilitating the translation of research into clinical settings for this quality improvement project (Taylor et al., 2014).

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Implementation Framework Objectives

Goal	Strategies	Deliverables	TPB
Enhance Mental Health Care Providers' Knowledge and Improve understanding of Metabolic Syndrome (MetS) and its risk factors for effective patient care	- Utilize the M-BACK Questionnaire for assessment - Distribute educational materials - Conduct post-intervention surveys (Powell et al., 2015).	- Launch educational programs - Initiate cultural changes - Establish feedback mechanisms - Improve resource accessibility	Attitude: Assessing knowledge and attitudes.
Referral Process and Standardized Screening Workflow	- Develop and implement quality monitoring tools - Create an excel spreadsheet to track outcomes - Track successful referrals (Powell et al., 2015).	- Creation of quality monitoring tools - Implementation of tracking system for referrals	Subjective Norms: Influencing referral behavior.

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Recommendations for metabolic risk factor monitoring in patients with severe mental illness or on antipsychotic medication

Risk factor	Timing of assessment					
	First year of antipsychotic				Ongoing monitoring*	
	Baseline	6 weeks	3 months	12 months	Quarterly¶	Annually¶
Personal and family history of diabetes, hypertension, or cardiovascular disease	X					X
Smoking status, physical activity, diet△	X	X	X		X	
Weight, body mass index△	X	X	X		X	
Blood pressure△	X	X	X		X	
Fasting glucose or HbA1c◇	X	X§	X	X		X
Lipid profile (fasting or nonfasting)	X		X	X		X

(UpToDate, 2023)

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Does your patient exhibit three out of the following five traits?

1. •Abdominal obesity, defined as a waist circumference ≥102 cm (40 in) in men and ≥88 cm (35 in) in females

   Today measurement _____
   Today BMI_____
   Today Weight_____

2. •**Serum triglycerides** ≥150 mg/dL (1.7 mmol/L) or drug treatment for elevated triglycerides

3. •**Serum high-density lipoprotein (HDL)** cholesterol <40 mg/dL (1 mmol/L) in males and <50 mg/dL (1.3 mmol/L) in females or drug treatment for low HDL cholesterol

4. •Blood pressure ≥130/85 mmHg or drug treatment for elevated blood pressure

   Today BP measurement _____

5. •Fasting plasma glucose (FPG) 100 to 125 mg/dL (5.6 to 6.9 mmol/L) indicates prediabetes or HbA1c ≥ 6.5% (48 mmol/mol).

   Today Blood glucose/HbA1c

   Labs ordered today

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☐ Based on the information provided, we have diagnosed the patient with metabolic syndrome.

☐ Based on the information provided, screening for metabolic syndrome is negative. Next screening will be scheduled accordingly.

MAKE YOUR DIAGNOSIS

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Budget

Revenue = $13,800 (Project Manager Time) + $3,564 (Site Mentor Time) - $1,000 (Equipment) + $198 (Printing Cost) total: $16,562

Expenses = $13,800 (Project Manager Time) + $3,564 (Site Mentor Time) - $1,000 (Equipment) + $198 (Printing Cost) + $100 (Toolkit Binders) Total Expenses = $16,662

Net Operating Plan = -$100

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Ethical Considerations

- All screening forms were stored in double-locked and shredded after being scanned into the patients' electronic health records

- IRB determination not human subject research.

- M-BACK questionnaire and key securely stored with double locks, accessible only to the project manager and faculty advisor.

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Hypothesis

The null hypothesis: there is no difference between the pre-implementation and post-implementation scores

The alternative hypothesis is that there is a significant difference

Results
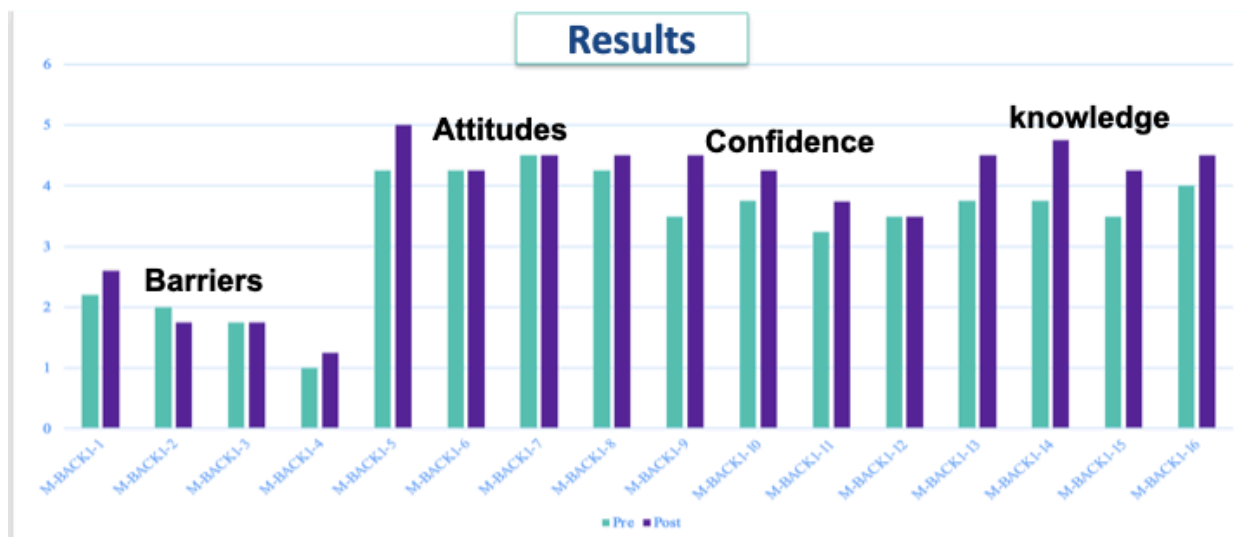
Paired-samples t-test: Overall M-BACK scores increased significantly from Pre to Post (8.69, p = .013, d = .38).

Impact of Intervention on Healthcare Providers' M-BACK Scores

- Specific Changes:
  - Increased Confidence:
    - Significant increase observed (5.20, **p = .035**, d = 1).
  - Marginal Increase in Knowledge:
    - Marginally increased knowledge (2.77, **p = .109**, d = 2.08).
- No Significant Barriers or Attitudes:
  - No evidence of increased knowledge related to handling barriers or attitudes (both p > .10).

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Provider 1

MetS Biomarkers Parameters N=44
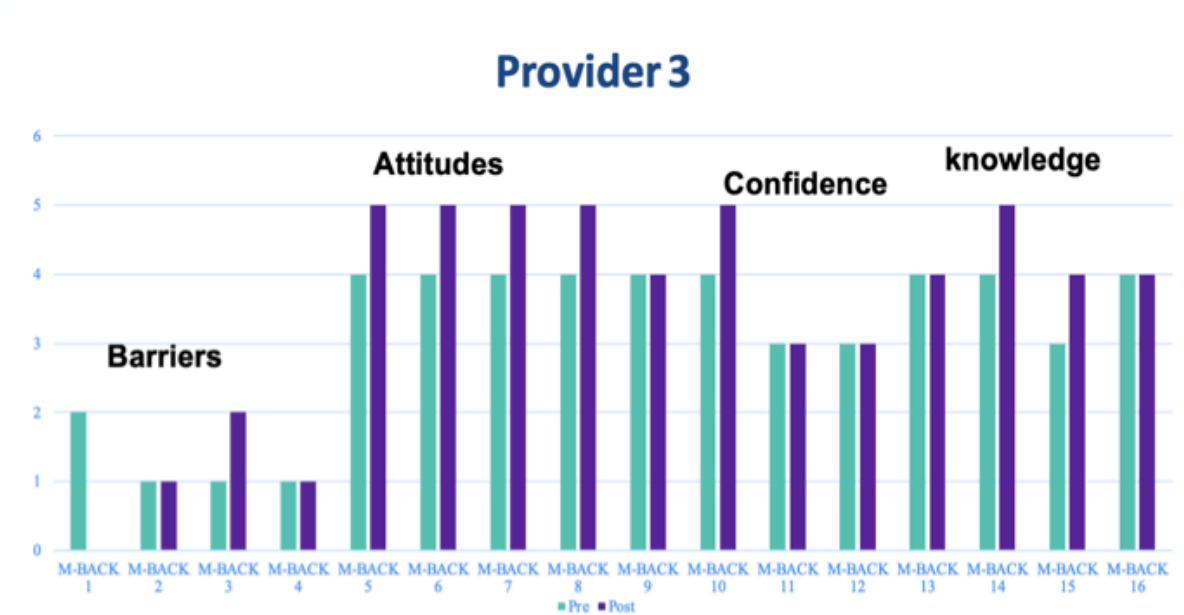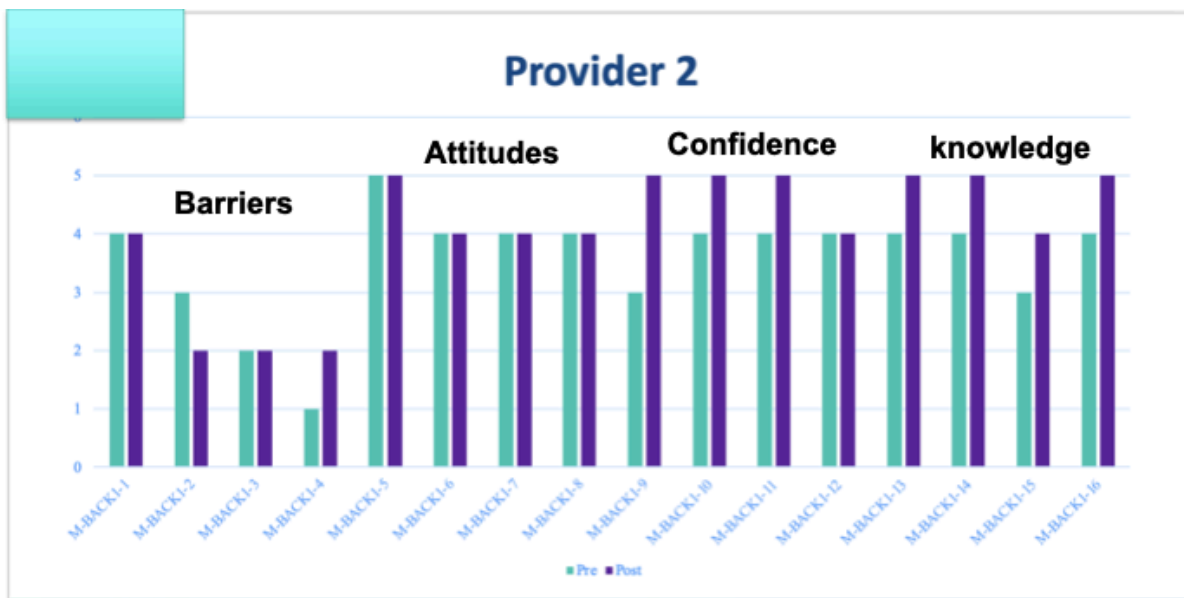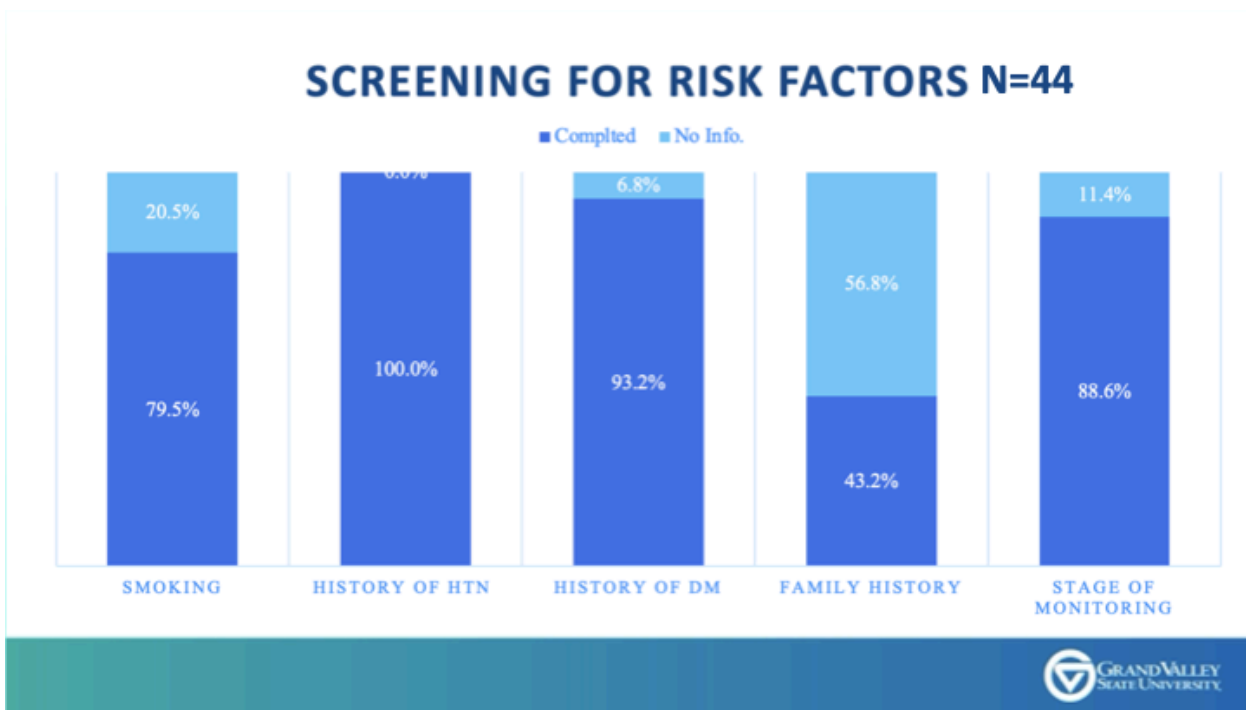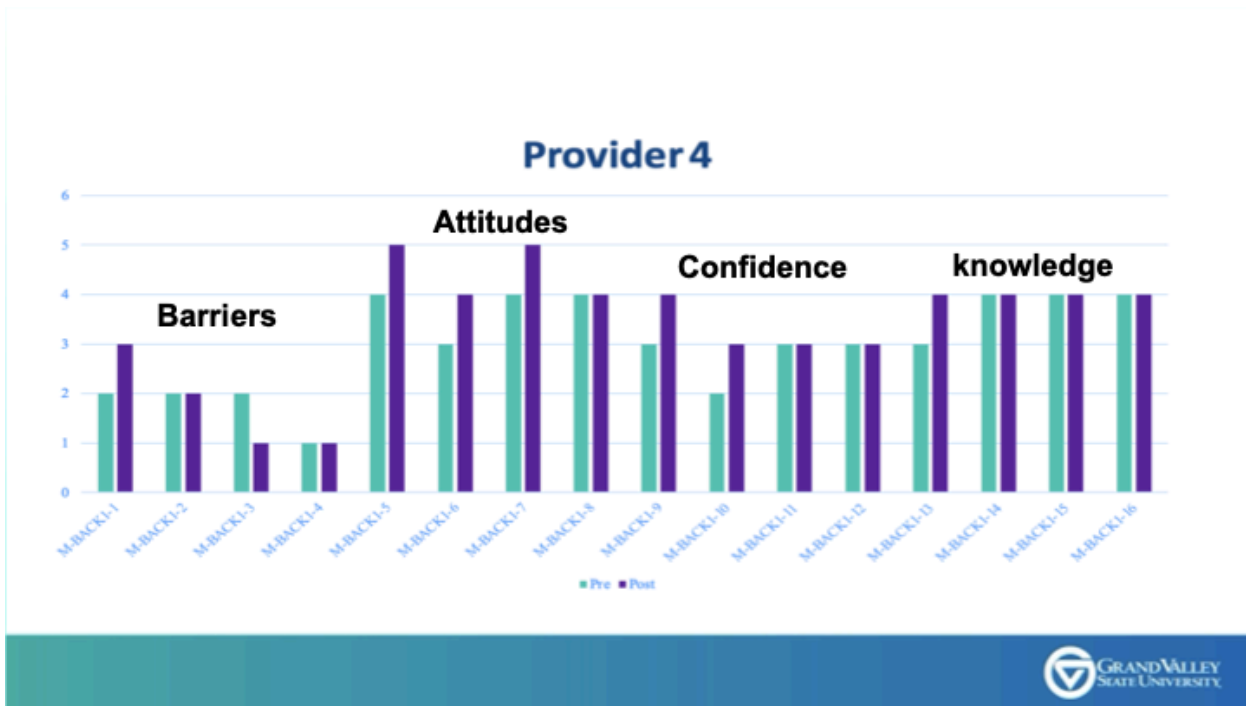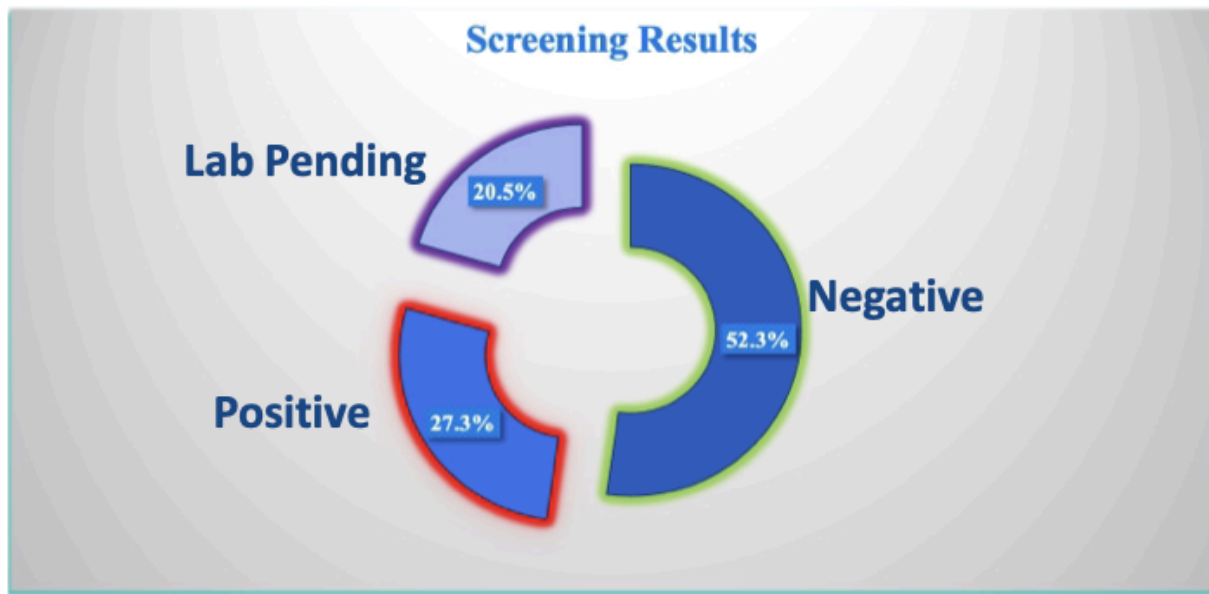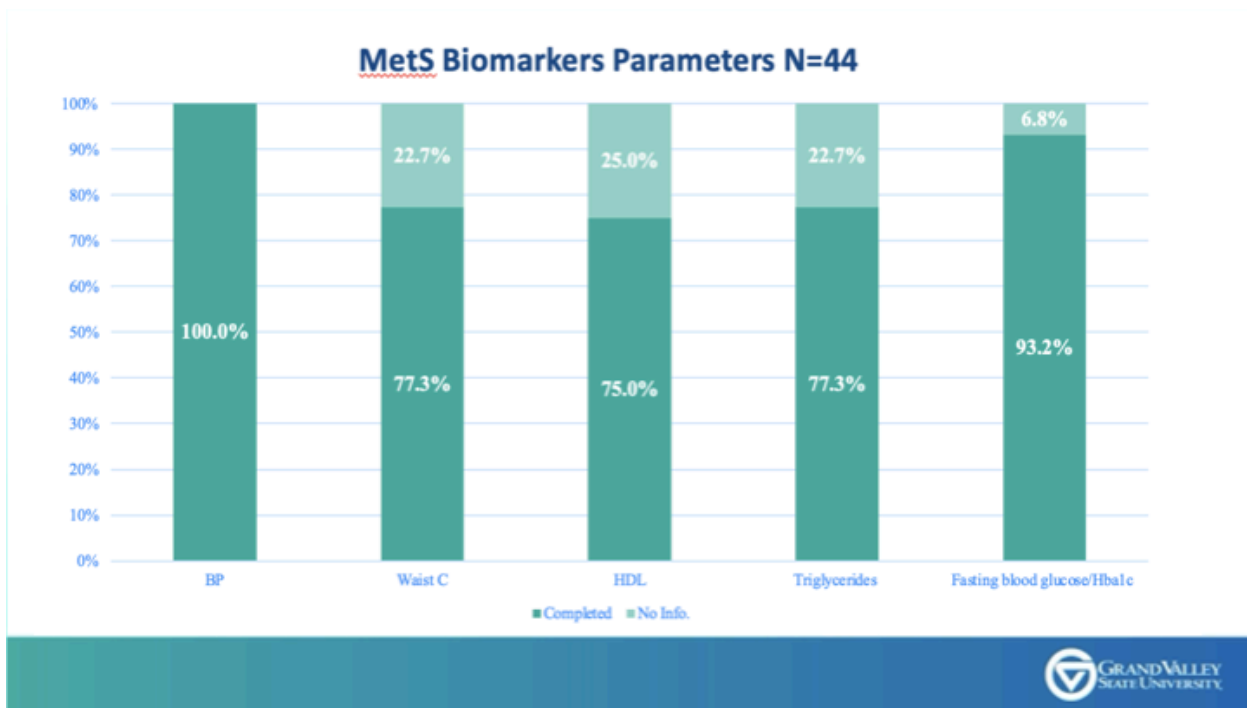
Screening Results

Results: Patient Outcomes

- High-ranking risk: Olanzapine and Clozapine collectively contribute to 25% of positive screenings.
- Moderate-ranking risk: Paliperidone and Quetiapine account for 50% of positive screenings, indicating notable potential for metabolic adverse effects.
- Low-ranking risk: Ziprasidone and Aripiprazole constitute the remaining 25% of positive screenings, suggesting a comparatively lower likelihood of metabolic side effects.

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PDSA Cycle guided by the Theory of Planned Behavior

- **Plan**: Improve risk factor screening.
- **Attitudes**: cultivate a positive attitude toward risk factor screening during meetings.
- **Subjective Norms**: Encourage discussions to establish norms risk factor screening, fostering peer support and accountability.
- **Perceived Behavioral Control**: Empower providers with toolkit guidelines and increasing perceived control over the behavior.

Do: Education
Study: Evaluate changes effectiveness.
Act: Adjust interventions

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Project Outcomes

- Successful implementation of standardized screening workflow for MetS among adults taking SGAs.
- Improved access to MetS screening guidelines and protocols.
- Enhanced provider knowledge and confidence in MetS surveillance.
- Strengthened collaboration and communication – ALL POSITIVE SCREEING REFFERED TO PCP

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Implications for Practice

- Integration of Screening into EHR Systems
- Promotion of Communication and Interprofessional Collaboration
- Ongoing Training and Support for Providers

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Sustainability Plan

- Identification of Champions for Implementation
- Embed metabolic syndrome screening protocols into electronic health record systems to streamline the process and ensure sustainability
- Foster collaboration between different healthcare disciplines to promote ongoing adherence to metabolic monitoring guidelines and protocols.
- Implement regular performance monitoring and feedback mechanisms to identify areas for improvement and ensure sustainability of the metabolic syndrome surveillance program.

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Limitations

- Small sample size comprising only four participating providers, potentially limiting the generalizability of findings.
- Current referral workflow effective within the organization, replicating it with PCPs external to the organization may poses challenges.
- Variability in the fidelity with which the interventions are implemented across different settings may impact the external validity of the project's results.
- Time constraints due to immediate implementation following EHR downtime prevented the completion of a comprehensive PDSA cycle.

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Dissemination Plan

Site
Project outcomes will be shared with the team on site meeting.

Scholars
Project outcomes will be disseminated to scholars through publications to Research in Nursing & Health

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Enactment of DNP Essentials

- Essential II :Organizational and Systems Leadership for Quality Improvement and Systems Thinking.
- Essential VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes
- Essential VII Clinical Prevention and Population Health for Improving the Nation's Health
- Essential VIII Advanced Nursing Practice

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