DIETARY SUPPLEMENT USE AND SAFETY IN PSYCHIATRIC POPULATIONS

by

Ryanne Marie Newton

A quality improvement project submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Nursing Practice

in

Psychiatric Mental Health

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2026

©COPYRIGHT

by

Ryanne Marie Newton

2026

All Rights Reserved

DEDICATION

I am grateful to God who sees me through all the challenges of life and provided this opportunity. I want to thank my wonderful family, who have supported me throughout the ups and downs of my graduate education and life. I could not have done it without your loving encouragement and belief in me throughout this journey. I did this for you, and I am truly blessed to call you mine.

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to my chair, Dr. Melinda Truesdell, for your amazing guidance and support throughout this experience. From my clinicals to my quality improvement project, your mentorship and unwavering commitment to my success helped make all this possible. I would also like to thank Dr. Heather Brown for challenging me and having confidence in my ability. During my time with you, I saw the greatest growth and feel prepared for my future role as a provider. Finally, thank you to Dr. Annie Brown and Christine Borst for your additional contributions and support.

TABLE OF CONTENTS

1. REVIEW OF THE LITERATURE 1

Introduction 1
Background and Prevalence 2
Methods 2
Search Strategy 2
Inclusion & Exclusion 3
Results 4
Synthesis 4
Risks, Safety, & Interactions 4
Evidence of Efficacy 5
Attitudes, Education & Screening 6
Regulations, Guidelines & Policy 7
Conclusion 7

2. QUALITY IMPROVEMENT PROPOSAL 10

Introduction 10
Problem Statement 11
Organizational Microsystem Assessment 12
Quality Improvement Model 13
Purpose Statement 15
Methods 16
Summary 16
Interventions and Implementation 17
Barriers and Challenges 18
Evaluation 19
Safety and Confidentiality 21

3. QUALITY IMPROVEMENT MANUSCRIPT 22

Introduction 22
Clinical Problem 22
Review of Literature 23
Conceptual Framework 25
Project Purpose Statement 27
Methods 28
Context 28
Measures 30
Analysis 31
Results 32
Discussion 35

TABLE OF CONTENTS CONTINUED

Limitations 37
Recommendations 39
Conclusions 40

4. ADVANCED NURSING ESSENTIALS REFLECTION 41

Introduction 41
Essential Domain 4: Scholarship for Nursing Practice 41
Essential Domain 5: Quality & Safety 43
Essential Domain 6: Interprofessional Partnerships 44
Essential Domain 8: Informatics and Healthcare 46
Implications for Future Practice 48

REFERENCES CITED 50

APPENDICES 53
APPENDIX A PRISMA DIAGRAM 54
APPENDIX B ARTICLE TABLE 56
APPENDIX C SWIMLANE DIAGRAM 60
APPENDIX D WORKFLOW DIAGRAM 62
APPENDIX E PATIENT EDUCATION HANDOUT 64

LIST OF TABLES

Table Page

1. Table 1. Documentation and Education Rates Across PDSA Cycles 33

LIST OF FIGURES

Figure Page

1. Figure 1. Run Chart of Dietary Supplement Documentation Across PDSA Cycles 34

2. Figure 2. Run Chart of Patient Education Distribution Across PDSA Cycles 34

ABSTRACT

The prevalence of dietary supplement use continues to grow nationally and is found to be higher in patients with a psychiatric diagnosis. Dietary supplements may lack regulatory oversight and are not always extensively tested, which may increase the risk of adverse medication interactions when used with psychotropic medications. Improving PMHNP awareness through standardized nurse screening and documentation workflows may increase visibility of dietary supplement use and support clinical decision-making. Screening, documentation, and education on dietary supplement use within a rural outpatient health clinic were inconsistent, limiting providers' visibility into dietary supplement use and potentially contributing to patient safety risks.

A quality improvement project using the Plan-Do-Study-Act (PDSA) framework was implemented with a single psychiatric mental health nurse practitioner (PMHNP) over six weeks. Biweekly chart audits of randomly selected encounters evaluated documentation and distribution of education, reviewing 25 charts per cycle across three PDSA cycles. Baseline documentation and screening of dietary supplement use occurred 39% of the time. During the first PDSA cycle, documentation compliance declined slightly to 36%. The following consecutive cycles produced a steady increase reaching 76% by the end of the six-week period. Patient education was estimated at approximately 10% of patient encounters at baseline and increased to 72% by the end of the project.

Standardized screening, documentation, and education were associated with improvements in documentation and education processes and increased visibility of dietary supplement use within the clinical record. Further evaluation is needed to determine whether these changes translate into improvements in patient safety and clinical outcomes.

Keywords: dietary supplements, dietary supplement use, psychiatric care, patient safety, quality improvement, medication reconciliation, medication-supplement interactions

CHAPTER ONE

REVIEW OF THE LITERATURE

Introduction

The prevalence of poly-dietary supplement use among psychiatric patients indicates an upward trend in this population in recent years (Lüthold et al., 2024). In general, dietary supplement use is most often an attempt to manage physical and mental health issues (Alateeq et al., 2022; Bozzatello et al., 2024). However, the use of unregulated dietary supplements may create potential complications in treatment, as the variability in quality and unidentified drug interactions poses a risk of adverse responses. Toxicity and decreased effectiveness of psychotropic medications due to pharmacokinetic and pharmacodynamic complications should also be considered. Some dietary supplements have been shown to cause adverse interactions and are contraindicated altogether, yet patients are often unaware of the potential dangers (Le et al., 2022; Woroń & Siwek, 2018; Radics et al., 2020; Zhao et al., 2023).

Ultimately, the misuse of dietary supplements without oversight or a lack of knowledge about problematic ones may contribute to prolonged mental health symptoms (Bozzatello et al., 2024; Le et al., 2022; Sarris, 2019; Woroń & Siwek, 2018). Patient education about the safety and efficacy of dietary supplement use is a critical, yet often overlooked, step in the clinical setting. Proper awareness, documentation, and educational resources for clinical staff are crucial for capturing accurate information on dietary supplement use and reducing risk (Bozzatello et al., 2024; Guu et al., 2019; Sarris, 2019). Psychiatric nurses are well-positioned to address excessive or potentially harmful use of dietary supplements, provide patient education, and support

accurate medication reconciliation that reflects dietary supplement use, thereby facilitating timely clinical guidance (Alateeq et al., 2022).

Background and Prevalence

The use of dietary supplements in the United States continues to grow, nearly tripling from 18.9% to 49% between 2002 and 2010. The trend has continued, with over half of the population currently reporting dietary supplement usage at 57.6%. During the pandemic, a surge in the use of dietary supplements was observed alongside increased anxiety and depression (Alateeq et al., 2022). In 2022, following the pandemic, dietary supplement consumption decreased; however, the overall rate remained higher than before the pandemic (Lüthold et al., 2024).

Another study highlights the use of dietary supplements in people previously diagnosed with a mental health disorder as three times higher in comparison to the general population (Alateeq et al., 2022). Similar studies and trends are observed in several nations, including Saudi Arabia, Serbia, Japan, Mexico, Hungary, and Australia, indicating that this issue may be a global concern (Radics et al., 2020; Zhao et al., 2023). Other observed patterns include higher rates among women and increases with advancing age (Alateeq et al., 2022; Lüthold et al., 2024).

Methods

Search Strategy

In reviewing the related literature, the PRISMA guidelines for inclusion and exclusion criteria were applied to evaluate each scholarly resource. The research problem statement was developed, followed by a thorough search for relevant studies. The data were then extracted and

compiled in a summarized report. Search engines utilized included Web of Science, CATSEARCH, and PubMed, with Google Scholar and reference lists used to identify additional studies. Fifteen peer-reviewed studies were included in the final synthesis, of which thirteen were identified using formal databases (Web of Science, PubMed, CATSEARCH). Additional scholarly evidence-based articles were identified through Google Scholar and manual searches. Key search words included “psychiatric,” “dietary supplements,” “herbal supplements,” “mental health,” “supplement,” “herbaceuticals,” “nutraceuticals”, “patient education,” and “polypharmacy.” Titles and abstracts were methodically evaluated for applicability.

Inclusion & Exclusion

Eligibility criteria included peer-reviewed publications from the past 10 years that examined dietary and herbal supplement use among psychiatric populations. Articles meeting the inclusion criteria were systematic and meta-analytic reviews; articles on the prevalence of dietary supplement use among psychiatric patients; articles on relevant educational strategies or tools used in similar medical settings; research on dietary supplement documentation; and studies focusing on the safety/efficacy of dietary supplement use in psychiatric practice. Exclusion of articles included any articles older than 10 years, having a poor evidence basis, or articles presenting compromising limitations to their findings. Additionally, any studies promoting the use of dietary supplements without the caution and oversight of a medical professional were excluded.

Results

A total of 1,057 studies were identified, and 97 studies remained after applying the inclusion criteria. The remaining article abstracts were then reviewed to determine applicability. Of those, 33 studies were considered and closely evaluated for relevance and or evidence level. Fifteen studies were selected for the final review, comprising two systematic reviews, one meta-review of randomized controlled trials (RCTs), two practice guidelines, two narrative reviews, three cross-sectional quantitative studies, three clinical reviews, and one safety analysis. The research selected provides a broad range of studies to evaluate clinical implications and implementation strategies, drawing on substantial evidence and real-world perspectives.

Synthesis

Risks, Safety, & Interactions

The unsupervised use of dietary supplements in psychiatric patients taking psychotropic medications poses a safety concern. The potential risk of adverse interactions increases simply because of the unknown (Le et al., 2022; Woroń & Siwek, 2018; Zhao et al., 2023). Dietary supplements are unregulated, and the lack of standardization can create an unpredictable dynamic of active ingredients. Potential alterations in the pharmacokinetics and pharmacodynamics of pharmaceuticals due to dietary supplement use could lead to adverse events or even severe systemic complications (Le et al., 2022; Radics, 2020; Woroń & Siwek, 2018). Possible alterations include changes in absorption, distribution, metabolism, and excretion, as well as alterations in liver enzyme activity or effects on neurotransmitter systems. Specific side effects, such as sedation or serotonin syndrome, may occur from combining certain

dietary supplements with psychotropic drugs that create changes in neurotransmitter variations (Le et al., 2022; Woroń & Siwek, 2018).

Dietary supplements are commonly considered to have low to minimal risk of adverse reactions and beneficial effects in some circumstances; however, the rising prevalence of dietary supplement use overall, and the trend toward consuming multiple dietary supplements simultaneously, must be taken into consideration. Also within that population, people with a psychiatric diagnosis are three times more likely to partake in poly-dietary supplement practices, indicating a high-risk population (Alateeq et al., 2022; Lüthold et al., 2024). Dietary supplement use without medical guidance is worrisome in itself; however, many brands include additional, unvetted additives in their products. Considering all factors, the likelihood of adverse events may be increased, and adverse events may go unrecognized due to a lack of disclosure and documentation of dietary supplement use (Zhao et al., 2023; Bozzatello et al., 2024).

Evidence of Efficacy

Due to the unregulated nature of dietary supplements, fewer studies are conducted to thoroughly test the efficacy and safety of these products. Therefore, less is known about the substances used to formulate dietary additives, because no evidence is required to put them on the market (Bozzatello et al., 2024; Le et al., 2022; Zhao et al., 2023). The research that does exist related to the efficacy of dietary supplement use in psychiatric patients is somewhat contradictory. Many studies produce inconsistent results and reveal minimal clinical impact; in contrast, other evidence points to the validity of dietary supplement use to alleviate psychiatric symptoms in specific circumstances. For example, the use of specific vitamins, microbiome-enhancing agents, and omega-3 fatty acids has been associated with adjunctive benefit,

particularly in depression and anxiety (Firth et al., 2019; Guu et al., 2019). However, findings across dietary supplement types and psychiatric conditions were variable, and efficacy depended on factors such as dietary supplement type, dosage, and individual patient characteristics (Bozzatello et al., 2024; Johnstone et al., 2020).

The efficacy of dietary supplements in psychiatric treatment is conditional, depending on the type of dietary supplement, its quality, the mental health issue being addressed, and other medications taken (Johnstone et al., 2020; Bozzatello et al., 2024). Thus, measuring the therapeutic value of dietary supplement use overall is limited, as each case requires weighing benefits against risks, yet many risks remain unknown (Le et al., 2022; Woroń & Siwek, 2018). The overall recommendation is for increased professional oversight in this complex and challenging area of healthcare and continuing education (Le et al., 2022; Sarris et al., 2022; Zhao et al., 2023).

Attitudes, Education & Screening

Patient and provider attitudes about dietary supplement use in mental health treatment are a crucial consideration in providing safe and effective psychiatric care. Patients' beliefs and values regarding dietary supplements will determine both the likelihood of their use and whether they feel comfortable disclosing their dietary supplement use to their healthcare provider. Study findings indicate psychiatric patients often turn to dietary supplements to manage symptoms and will intentionally withhold that information when asked (Alateeq et al., 2022; Lüthold et al., 2024). Provider perspectives similarly influence the clinical experience, and despite best efforts to maintain a bias-free view, clinicians also hold personal beliefs and thoughts about dietary supplement use. Psychiatric providers are often influenced by limited knowledge and training, as

well as a limited understanding of dietary supplement interactions and related guidelines (Le et al., 2022; Sarris, 2019; Thomson-Casey et al., 2023).

The inadequate communication and awareness among patients and clinicians underscore the need for further education and systematic screening, allowing providers to assess risk, prevent adverse interactions, and incorporate patient-centered guidance on dietary supplement use. An intentional focus on improving attitudes, knowledge bases, and reporting practices will allow more effective collaboration to provide the best care and achieve optimal outcomes (Le et al., 2022; Thomson-Casey et al., 2023).

Regulations, Guidelines & Policy

Dietary supplement use has become a pervasive alternative to, or addition to, traditional healthcare treatment options and continues to gain widespread popularity. Therefore, integrating dietary supplements into psychiatric care practices is inevitable and requires clear boundaries. Diligent application of evidence-based guidelines and policy recommendations must be utilized going forward (Guu et al., 2019; Sarris et al., 2022; Zhao et al., 2023). Organizations such as the World Federation of Societies of Biological Psychiatry (WFSBP) and the Canadian Network for Mood and Anxiety Treatments (CANMAT) have developed frameworks specific to addressing the efficacy, safety, and clinical relevance of dietary supplements. Additionally, these types of guidelines provide important structured risk assessments, education, and monitoring practices (Guu et al., 2019; Le et al., 2022; Zhao et al., 2023).

Conclusion

Several prominent themes emerged from the scoping review of the literature. The repeated emphasis on safety risks, potential pharmacological interactions, and known adverse

drug interactions was observed (Firth et al., 2019; Le et al., 2022; Woroń & Siwek, 2018). Several studies have noted variable efficacy among dietary supplements in general medicine, as well as among those frequently used by psychiatric patients (Bozzatello et al., 2024; Zhao et al., 2023). The findings concluded that some dietary supplements produced positive outcomes in patients with psychiatric disorders. However, most improvements in mental health were minimal, conditional, or ultimately dependent on quality control (Firth et al., 2019; Le et al., 2022).

Many studies have highlighted the absence of regulation, research gaps, and undocumented adverse events as factors contributing to the unreliability of data on dietary supplement safety (Lüthold et al., 2024; Radics et al., 2020). The existing supporting policies, regulations, and guidelines emphasize the need for consistency, adherence, and quality improvement to establish evidence-based standards for dietary supplement use and mitigate risk (Sarris et al., 2022; Zhao et al., 2023). Current policies, regulations, and guidelines often lack documentation and tracking requirements, which may create an unsafe clinical environment with minimal accountability and limited monitoring (Le et al., 2022).

Another commonality across the studies was knowledge gaps among providers regarding dietary supplement use and the need for further training (Thomson-Casey et al., 2023). Patient education was subsequently found to be lacking as well. Several studies have pointed to patient and clinician attitudes as a determining factor in the likelihood of patients self-medicating with dietary supplements and then hiding their use from their provider (Alateeq et al., 2022; Lüthold et al., 2024). Two studies indicated educational interventions helped mitigate the issue by increasing understanding and decreasing risky behaviors (Johnstone et al., 2020; Sarris, 2019).

Overall, the literature supports the need for further oversight and education regarding dietary supplement use in the psychiatric population, both broadly and in clinical settings (Guu et al., 2019; Sarris et al., 2022). Standardized dietary supplement screening and documentation, combined with the provision of educational resources by a psychiatric nurse, were identified as essential strategies to improve patient safety and support evidence-based care. Failure to address the identified gap may contribute to continued inconsistency and potential safety risks.

CHAPTER TWO

QUALITY IMPROVEMENT PROPOSAL

Introduction

Use of dietary supplements, often referred to as dietary supplement or nutritional medicine, continues to increase among individuals with psychiatric disorders. Approximately 44% of the psychiatric population and 70% of geriatric patients with polypharmacy report consuming at least one dietary supplement daily (Alateeq et al., 2022; Lüthold et al., 2024). Research found that about 60-70% of patients do not report dietary supplement use to clinicians (Lüthold et al., 2024).

Prevalence continues to grow as individuals seek alternative treatment options perceived as having fewer side effects, being safer overall than modern synthetic medications, and being less costly (Alateeq et al., 2022; Lüthold et al., 2024). Additionally, research suggested potential adjunctive therapeutic benefits of some dietary supplements (vitamin D3, omega-3 fatty acids, and probiotics) for specific psychiatric disorders (Bozzatello et al., 2024; Firth et al., 2019; Guu et al., 2019; Johnstone et al., 2020; Sarris et al., 2022). However, due to a lack of regulation and oversight in the dietary supplement industry, the growing use rates raise alarming concerns about safety and efficacy (Sarris et al., 2022; Woroń & Siwek, 2018; Zhao et al., 2023).

Currently, dietary supplements are not regulated by the FDA, and due to the lack of accountability, research is limited, and quality is variable, creating discrepancies in effectiveness, correct dosage, toxicity levels, interactions with medication, and interactions with other dietary supplements (Sarris et al., 2022; Woroń & Siwek, 2018; Zhao et al., 2023). Furthermore, the combination of dietary supplements with psychotropic medication may increase the likelihood of

reduced medication effectiveness and serious adverse events. Life-threatening outcomes include serotonin syndrome, arrhythmias, bleeding risks, cognitive impairment, and hepatotoxicity (Radics et al., 2020; Woroń & Siwek, 2018). Despite these potential risks, gaps in screening, documentation, and patient education remain in clinical settings (Zhao et al., 2023; Lüthold et al., 2024).

Problem Statement

The site for the evidence-based project exhibited inadequate screening practices for dietary supplement use among psychiatric patients. The lack of consistent and accurate reconciliation and documentation of dietary supplement use may create unrecognized polypharmacy risks, lead to treatment complications, and compromise patients' overall welfare (Le et al., 2022; Radics et al., 2020; Woroń & Siwek, 2018). The limited or absent use of educational resources concerning dietary supplements can contribute to ongoing unsafe dietary supplement practices (Sarris, 2019).

Research suggests that limited provider awareness of dietary supplement use may increase the risk of interactions, treatment failure, reduced response, and an inability to perform effective safety monitoring, though direct causality has not always been established (Le et al., 2022; Radics et al., 2020; Woroń & Siwek, 2018). Providers often reported uncertainty in advising patients due to limited training and inconsistent guidelines, despite firsthand observations of the growing trend of dietary supplement use over the last decade (Kassis et al., 2020; Sarris, 2019; Sarris et al., 2022).

Organizational Microsystem Assessment

This Quality Improvement Project took place within the behavioral health unit of an outpatient federally qualified health center in northwestern Montana. The initiative was piloted with a PMHNP provider in the clinic. The majority of patients were adults, with some adolescents. The population served included individuals with diverse psychiatric conditions, and a high frequency of complex clinical presentation, including schizophrenia, bipolar, and personality disorders, often with comorbidities. Additionally, the population generally exhibited high rates of polypharmacy and poly-dietary supplement use, which increased safety concerns (Le et al., 2022; Zhao et al., 2023). The clinic's EHR is eClinicalWorks.

The primary stakeholders were the two PMHNP providers and their nurses, including one part-time primary psychiatric trained nurse and several float nurses who covered the department. The clinic's administration, primarily led by the clinic director, was responsible for reviewing, approving, and monitoring the overall success of quality improvement projects within the facility. Secondary stakeholders included behavioral health counselors and medical providers within the organization, who may also benefit from the distribution of educational information in the event of the project's expansion, as they often share the same clients.

The current practice lacked a standardized workflow for dietary supplement documentation, and dietary supplements were inconsistently included in medication reconciliation, either due to variation in nurse coverage or to the client’s omission of accurate dietary supplement use (Sarris et al., 2022; Thomson-Casey et al., 2023). The clinician lacked specialized training or certifications in dietary supplement, as well as the educational resources to provide patients with adequate safety and educational information (Guu et al., 2019; Johnstone

et al., 2020; Sarris, 2019). The clinician provided general information about dietary supplement use and warned clients about the variability in quality.

The limitations of regulatory oversight of dietary supplement manufacturing were also addressed when patients reported using dietary supplement (Alateeq et al., 2020; Le et al., 2022; Lüthold et al., 2024). The limited education and lack of consistent documentation may have increased the clinic's vulnerability to adverse events due to clients' misconceptions about the safety risks of random or unsupervised dietary supplement use, and to missed or incorrect documentation of dietary supplement use. In recognition of the identified practice gaps, leadership supports enhancing safety measures related to dietary supplement use among psychiatric patients by incorporating educational interventions and implementing standardized documentation.

Quality Improvement Model

The Plan-Do-Study-Act (PDSA) framework was selected as the guiding model due to its flexibility and suitability for small-scale testing, including ongoing evaluations (Institute for Healthcare Improvement, 2021). The framework allowed iterative refinement and incorporation of stakeholder feedback throughout the process. Furthermore, the PDSA methodology enabled continuous adjustments to the implementation plan at designated intervals, based on ongoing evaluations and measurements of compliance rates and educational outcomes, thereby facilitating the development of best practices (Sarris et al., 2022; Thomson-Casey et al., 2023). Additionally, PDSA is easy to use and can be adapted by others if the project is continued beyond the allotted time frame or is implemented with another provider.

The model facilitated a repetitive process aimed at cultivating safety and incorporating a rapid-cycle feedback loop to inform improvement efforts focused on education and the standard recording of dietary supplement use (Guu et al., 2019; Johnstone et al., 2020; Sarris, 2019). The PDSA framework was used to progressively refine educational interventions and improve consistency in documentation (Le et al., 2022; Sarris et al., 2022). Completion was defined as achieving approximately 50% of patients within six weeks and targeting 95% near-compliance in standardized screening and documentation of dietary supplement use.

An educational resource was developed for distribution to patients of the psychiatric provider within the allotted 6-week period (Bozzatello et al., 2024; Lüthold et al., 2024). Additionally, nurses were to screen for dietary supplement use at each visit and update the medication list accordingly. If the dietary supplement was not provided as an option in the medication list, it was to be included in the pre-visit review section of the EHR. The implementation consisted of a pilot of the workflow process. A compliance audit was conducted every 2 weeks to identify areas for improvement in the process, enabling adjustments to methods and achieving the desired goals (Radics et al., 2020; Zhao et al., 2023). The Project timeline allowed for nearly three PDSA cycles.

The first cycle planning phase consisted of meetings with stakeholders to identify the problem and develop a plan aligned with the organization's overall goals. A thorough review of the literature was also conducted during the planning stage to identify the care gap and establish an evidence-based approach to the problem. Training nurses anticipated to work in psychiatric care was conducted through a brief review of documentation expectations and an educational handout. The quality improvement lead, PMHNP, primary nurse, and nurse management team

instructed them on where and how to document in the EHR and discussed language and approach. Attention was brought to the visual reminder sheet to note its location, and any further questions were answered at that time.

In the "Do" stage, nurses implemented most of the project interventions by adhering to documentation strategies and providing education. The PMHNP and quality improvement lead oversee the process to create accountability and provide support to the nurse. However, during the study phase, the PMHNP and quality improvement lead collected data by randomly auditing 46-50% of charts in the EHR over the two-week cycle. Feedback from the nurses and the provider was organized to categorize and assess the progress and challenges identified. The act portion was an opportunity to embrace the parts of the project that worked well, discard the parts that did not, and modify accordingly.

Purpose Statement

The purpose of this Quality Improvement Project was to provide patients with educational resources, to inform decision-making regarding dietary supplement use, and to help reduce the risk of interactions with medication and related adverse events when taking or considering dietary supplement (Johnstone et al, 2020; Radics et al.,2020; Sarris, 2019; Woroń & Siwek, 2018). Furthermore, the increase in consistency, accuracy, and visibility of dietary supplement use documentation in the designated portion of the EHR was intended to enhance the clinician's awareness, supporting clinical decision-making regarding potentially dangerous medication interactions or the potential for decreased treatment effectiveness, supporting safer prescribing practices (Sarris et al, 2022; Thomson-Casey et al., 2023).

Short-term SMART goals included distributing educational resources to 95% of established patients during scheduled appointments and to 95% of new patients by the second week of implementation. With a similar estimate of progress, 95% of patients would receive an educational sheet on dietary supplement use by week 4, and 95% of established patients would have received educational materials by week 6. By 3 months, if the clinician continued the project, 95% of existing clients would receive the educational information handout, based on the clinician's requirement for an in-person visit with the provider at least every 3 months to continue prescriptions. The aim was that if stakeholders found value in the 6-week results, staff would continue the project permanently. The related objective would be to maintain 95% distribution to new patients. Following this trend, screening for dietary supplement use and proper documentation during the pre-visit assessment should occur in 95% of cases by week 1 and be maintained throughout the 6 weeks.

Methods

Summary

This project was implemented at an outpatient clinic in northwestern Montana to introduce standardized screening for dietary supplement use and a documentation process that provided patients with education on dietary supplement use (Guu et al., 2019; Sarris, 2019; Sarris et al., 2022; Thomson-Casey et al., 2023). The stakeholders primarily included the PMHNP and the nurses on the psychiatric rotation. The focused population included adults with a mental health diagnosis, the majority being severely mentally ill, meaning they have a diagnosis, comorbidities, severity, or circumstances that create complexity to their condition. The

quality improvement project was implemented from January 27th through March 8th, spanning approximately 6 weeks.

The only anticipated costs were minimal, as the organization covered printing, and the training was brief, with a maximum duration of 15 minutes per nurse. No additional equipment or software was required. Staff time investment for training was a significant financial consideration. Based on the average clinical nurse salary in the area, at $40.00 per hour, a half hour would cost approximately $20.00. About five nurses covered the position, and the estimated cost was $100.00. The projected cost of printing would be $50.00 if the clinic were no longer to provide that service, but this was not an issue during the six-week implementation period. The project was cost-effective, particularly when compared with the long-term costs of adverse drug interactions or liability risks.

Interventions and Implementation

Interventions in this quality improvement project included distributing educational materials, standardized screening for dietary supplement use, and documentation workflow (Sarris et al., 2022; Thomson-Casey et al., 2023). The workflow required the nurse to inquire about dietary supplement use during the pre-visit assessment and document it in the medication list (Le et al., 2022; Radics et al., 2020). If the dietary supplement was not listed as an option on the medication list, the nurse entered the information in the pre-visit review section of the EHR.

To promote consistent discussion of dietary supplement use during patient encounters, a brief training session was provided to nurses and the psychiatric provider (Guu et al., 2019; Johnstone et al., 2020; Sarris, 2019). Understanding of the training was confirmed with observation of a correct demonstration. The importance of capturing dietary supplement usage in

the medication list to reinforce patient safety measures was reviewed with staff. The location and method of documenting dietary supplements were demonstrated and then reinforced with a written reference for guidance.

Dietary supplement use was a standard intake question; however, the expectation of a routine medication reconciliation to include dietary supplements at every visit was established with clients (Bozzatello et al., 2024; Lüthold et al., 2024). Furthermore, educational materials will be distributed to all existing clients and any new clients. Nursing staff were responsible for verifying and updating medication lists to include dietary supplements and for dispensing the patient education handout. A standardized process aims to build consistency and efficiency within the workflow without adding time demands. The feasibility of the added workload was assessed based on staff feedback.

The PDSA model guided the implementation of the defined interventions and facilitated the repeated refinement of the process (Institute for Healthcare Improvement, 2021). Each cycle lasted approximately 2 weeks, during which time data were evaluated to determine compliance, and any necessary adjustments were made (Radics et al., 2020; Zhao et al., 2023). The resources required for successful implementation and measurement of progress included training guides, documentation reminder visuals, educational information sheets with patient resources, access to EHR to audit data, and brief discussions with staff to gather feedback.

Barriers and Challenges

Potential barriers to successful implementation included competing time demands for nurses and clinicians, as well as the risk that questions or general discussion may carry over into the session, potentially disrupting its focus (Bozzatello et al., 2024; Firth et al., 2019). The

additional documentation and time spent addressing any questions that may arise from the educational handout might also be perceived as inconvenient to the nurse, creating staff resistance (Le et al., 2022; Thomson-Casey et al., 2023).

Training and practice in completing documentation support a streamlined process and may help mitigate this stressor (Sarris et al., 2022). Creating a comprehensive educational handout that lists resources patients can consult with further questions also saves time. Any difficulties finding the correct location in the EHR for proper documentation were addressed through a visual instruction sheet posted in the nurse's office next to the computer. Feedback was obtained through a brief check-in session at the end of each PDSA cycle to identify barriers and support efforts to address them.

Another possible barrier may be the patient's unwillingness to disclose all dietary supplement use (Lüthold et al., 2024; Sarris, 2019). By normalizing disclosure through routine screenings, using nonjudgmental language, and clearly expressing the intent to prioritize patient safety, patients may be more likely to participate in accurate disclosure of dietary supplement use (Guu et al., 2019; Johnstone et al., 2020). During training, the nurse was encouraged to clarify that dietary supplements can include vitamins, herbs, or other natural products, and that they should be asked as open-ended questions.

Evaluation

Outcome measures focused on documentation compliance and distribution of educational materials (Sarris et al., 2022; Thomson-Casey et al., 2023). The primary outcome measurement, identified by the clinician as a priority, was the percentage of patient encounters in which the dietary supplement-use fact sheet was shared, along with additional resources for the client to

investigate further on their own. Data collection tools, including eClinicalWorks, were utilized to track compliance. To determine the percentage of handouts given at visits, the nurse confirmed the distribution in the EHR by clicking the "Educational Handout Given" box and typing "Dietary supplement Use" in the comments text box, or by noting it in the pre-visit note (Le et al., 2022; Radics et al., 2020). The other measurement evaluated was the percentage of visits in which the nursing staff screened for dietary supplement use and recorded the use in the medication reconciliation, or if not listed as an option, made a note in the pre-visit review portion of the EHR.

The project outcomes were evaluated using pre- and post-implementation audits from the EHR. Every 2 weeks throughout the process, random-sample audits of patient charts were conducted to assess staff adherence to the workflow and to verify that the projected percentage goal was being met (Institute for Healthcare Improvement, 2021). Data analysis was carried out using descriptive statistics to compare pre- and post-intervention rates of educational distribution and correct documentation (Radics et al., 2020; Zhao et al., 2023). The PDSA cycles coincided with the stated timeline to inform clinical practice in an evolving format and ultimately summarized audit results. Findings were shared with primary stakeholders every two weeks, and any noncompliance was addressed through verbal reminders or additional training (Johnstone et al., 2020; Sarris, 2019).

The sustainability of the quality improvement project beyond the allotted 6 weeks was highly feasible, given the minimal costs once the nursing staff was trained and the organization provided the printing materials needed for the educational handout. The provider expressed her motivation to continue the project for 3 months to include all of her clients in the education

initiative. However, the broader long-term goal is for the organization to adopt the process and embed the dietary supplement documentation workflow into standard nursing training as an organizational policy, to be included in staff orientation and intake procedures for the psychiatric department. The project would be easily adaptable and could be standardized at the system level, which may provide an opportunity to bridge a care gap within the broader healthcare system by forming an inter-professional effort to capture dietary supplement-use information to improve patient safety.

Safety and Confidentiality

All data was securely collected, stored, and de-identified in accordance with institutional policy and HIPAA regulations (Le et al., 2022; Thomson-Casey et al., 2023). The project lead and provider maintained associated data on secure password-protected devices provided by the institution. The described quality improvement project was classified as a quality improvement activity and not human subjects research. Findings were shared periodically with clinical staff to inform timely adjustments and support patient safety (Johnstone et al., 2020; Sarris, 2019).

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

Introduction

Clinical Problem

Dietary supplement use among US adults is highly prevalent, with 57.6% reporting regular use (Alateeq et al., 2022). Dietary supplements include vitamins, minerals, herbal products, and other supplements commonly used to support health and wellness (Sarris et al., 2022). Furthermore, the use of dietary supplements is three times higher in individuals with a psychiatric diagnosis compared to the general population (Alateeq et al., 2022).

As a result, poly-dietary supplement use among psychiatric patients may complicate care, potentially increasing safety risks and affecting the clinicians' ability to provide effective treatment. The combination of the provider's failure to routinely inquire about dietary supplement use and the patient's inconsistent reporting or lack of disclosure may contribute to the underreporting of dietary supplement interactions (Lüthold et al., 2024; Thomson-Casey et al., 2023). Dietary supplement use among psychiatric patients may increase the risk of dietary supplement-medication interactions, adverse effects, and altered pharmacologic response, further complicating medication management (Lüthold et al., 2024; Zhao et al., 2023; Le et al., 2022). Despite the high prevalence of dietary supplement use and known safety risks, there remains a lack of consistent, routine screening and standardized documentation of dietary supplement use within clinical workflows, particularly in outpatient psychiatric settings (Thomson-Casey et al.; Sarris et al., 2022).

The gap is clinically relevant, as unrecognized dietary supplement-medication interactions in psychiatric settings may create safety vulnerabilities and increase the risk of adverse outcomes. Reported complications include the development of serotonin toxicity, hepatotoxicity, enhanced bleeding risk, and altered drug metabolism (Le et al., 2022; Radics et al., 2020; Woroń & Siwek, 2018). These findings suggest the need for improved clinical processes to support consistent identification and documentation of dietary supplement use in psychiatric care (Sarris et al., 2022).

Review of Literature

The existing literature recognizes the high prevalence of dietary supplement use among US adults, with particularly high use reported in psychiatric patients (Alateeq et al., 2022). Accurate documentation remains a challenge for clinical decision-making (Lüthold et al., 2024; Thomson-Casey et al., 2023). Inconsistent documentation may limit clinicians' ability to assess potential dietary supplement-medication interactions and incorporate dietary supplement use into safe and effective treatment planning.

In addition to prevalence and documentation challenges, several studies have found that specific dietary supplements may have clinical utility as adjunctive interventions for certain mental health disorders (Bozzatello et al., 2024; Firth et al., 2019; Johnstone et al., 2020; Sarris et al., 2022). However, this body of literature also identifies important concerns related to product variability, inconsistent regulation, and the potential for adverse interactions with prescribed medications (Le et al., 2022; Zhao et al., 2023).

Additionally, research shows that a lack of structured screening, coupled with high nondisclosure rates, can create a visibility gap for providers regarding patient dietary supplement

use, contributing to safety vulnerabilities and compromising comprehensive care (Lüthold et al., 2024; Zhao et al., 2023). A primary care polypharmacy study found clinicians were unaware of more than half of patients' dietary supplement use (Lüthold et al., 2024). The adverse events highlighted include the development of serious bleeding complications, serotonin syndrome, arrhythmias, hepatotoxicity, and severe sedation due to pharmacokinetic and pharmacodynamic alterations or interactions with other psychotropic medications (Woroń & Siwek, 2018; Zhao et al., 2023).

The literature highlights the importance of including dietary supplements in complete medication lists and the need to routinely inquire about dietary supplement use during clinical assessment (Lüthold et al., 2024; Zhao et al., 2023). Several studies suggest a need for increased oversight and monitoring of dietary supplement use among patients, particularly given the limited regulation of the dietary supplement industry (Le et al., 2022; Zhao et al., 2023; Sarris et al., 2022). Furthermore, guidelines related to dietary supplement use have been proposed to support patient safety, standardize assessment practices, and promote informed decision-making (Sarris et al., 2022; Bozzatello et al., 2024).

Evidence suggests that normalizing routine screening and discussion of dietary supplement use may help address identified clinical gaps (Thomson-Casey et al., 2023; Zhao et al., 2023). Workflows and interventions designed to accurately screen for and capture dietary supplement use within the medication list may improve clinician awareness of patients' dietary supplement use and reduce the risk of unrecognized interactions (Lüthold et al., 2024; Zhao et al., 2023). Patient education and the normalization of screening encourage patients to disclose dietary supplement use more consistently, supporting safer medication management and more

informed treatment planning (Johnstone et al., 2020; Guu et al., 2019; Sarris et al., 2022). This may also support patient engagement in care, potentially reducing the risk of adverse outcomes (Sarris et al., 2022; Bozzatello et al., 2024).

Conceptual Framework

The Plan-Do-Study-Act (PDSA) model is an improvement framework that guides implementation by testing and refining interventions through iterative cycles. The quality improvement project utilized the PDSA framework to direct implementation and iterative refinement (Institute for Healthcare Improvement, 2021). The framework provided a flexible structure for monitoring the intervention, testing changes on a small scale, and then adjusting processes to improve overall integration. The PDSA framework also supported the incorporation of stakeholder feedback in real time, facilitating workflow adaptation, organizational ownership, and participation (Institute for Healthcare Improvement, 2021).

The Plan phase included revising the nursing workflow, clarifying documentation expectations, developing patient education materials, and distribution methods. The development of a standardized process for the nurse to screen at each patient encounter, the identification of the optimal location for documentation within the EHR, and the creation of the education handout, complete with code-accessible resources, were included in the Plan phase of the PDSA cycle. Staff training was conducted during a structured one-on-one session and reinforced with written instructions posted in the nurses' office.

After planning, the interventions were implemented over six weeks, initiating the Do phase of the PDSA cycle. During the first two-week period, the nursing staff began screening for dietary supplement use and documenting that use by reconciling the medication list or noting it

in the pre-visit note. Additionally, the nurse provided education and documented the encounter. The primary nurse, who had been working with the PMHNP for several years, covered fewer than half of the patient encounters during that period, and float nurses covered the remaining visits. The change in nurse coverage contributed to variability in implementation fidelity and documentation consistency during the initial phase of the PDSA cycle.

In the Study phase, small-scale testing and rapid-cycle evaluation were conducted through biweekly chart audits to determine compliance (Institute for Healthcare Improvement, 2021). An initial decline in documentation was observed in the first PDSA cycle. Feedback from nursing staff revealed that nurses were experiencing barriers to accessing the documentation template and to determining whether dietary supplement use should be recorded in the medication list, the pre-visit note, or both. Stakeholder feedback was considered alongside compliance rates to identify necessary adjustments to improve usability and implementation success. One suggestion was to post the education to give patients multiple ways to receive the information, depending on their preferences.

The Act phase included initiating modifications, clarifying documentation expectations, simplifying documentation location to the pre-visit note, and eliminating the template. The education was framed and posted in the assessment room. A new plan was implemented to address the identified issues, and the next PDSA cycle was initiated. During the second PDSA cycle, the revised workflow was applied, and documentation and education rates increased significantly above baseline. The improvement reflected greater staff familiarity with the process and suggested that initial barriers had been reduced following workflow adjustments. However, inconsistencies within pre-visit notes were identified, making interpretation of charted

documentation during audits difficult. The following PDSA cycle Act phase focused on maintaining the simplified workflow, reinforcing protocols, and promoting standardized phrasing.

By the third PDSA cycle, all measures improved again. Most nurses working within the PMHNP's service had participated in the workflow during the four weeks preceding the project timeline. Through repetition, the workflow became more routine. Feedback indicated the interventions were no longer increasing the nurse's workload, and the final refinements were effective. The PDSA framework provided a structured approach for evaluation and systematic refinement of screening, documentation, and education interventions in the clinical setting.

Project Purpose Statement

The quality improvement project aimed to improve the consistency, accuracy, and visibility of dietary supplement use within the health record for the care team in a psychiatric patient population by standardizing nursing workflows and patient education over a six-week implementation period. At baseline, dietary supplement documentation was present in 39% of patient encounters, and education regarding dietary supplement use occurred in approximately 10% of visits, suggesting an important gap in consistent screening, documentation, and patient awareness.

The project goal was to increase documentation of dietary supplement use in the medication reconciliation record or pre-visit note to 95% of patient encounters and to provide patient education in at least 95% of visits. Standardization of workflows and documentation was intended to support consistent screening practices among nursing staff, improve information accessibility for providers, and promote safe and effective care. Providing education to 95% of

patients during the six-week implementation period was intended to improve patient awareness of potential dietary supplement-medication interactions and associated risks, given the variability and limited regulation of dietary supplement compounds (Le et al., 2022; Woroń & Siwek, 2018; Zhao et al., 2023).

Methods

The intervention included the distribution of dietary supplement education and the standardization of workflow to accurately document dietary supplement use among psychiatric patients over a six-week implementation period, utilizing PDSA cycles (Institute for Healthcare Improvement, 2021). The project was conducted as a pilot with a single PMHNP within the behavioral health unit of an outpatient federally qualified health center in northwestern Montana. The clinic operates on the eClinicalWorks EHR platform and primarily serves adult psychiatric patients receiving medication management services.

Context

The clinic serves a population characterized by complex psychiatric diagnoses, high rates of polypharmacy, and frequent comorbidities. Additionally, patients commonly report high rates of poly-dietary supplement use. At baseline, the existing workflow included a general inquiry about dietary supplement use at intake and during nursing assessment; however, medication reconciliation, including documentation of dietary supplement use, was performed inconsistently. The inconsistencies limited providers' ability to reliably identify dietary supplement use and assess potential dietary supplement-medication interactions.

Due to staffing shortages, the psychiatric department experienced variability in nursing coverage, contributing to inconsistencies in training and standardized documentation practices.

The organization’s leadership recognized the need to improve patient safety related to dietary supplement use and supported integration of a standardized workflow, with the potential for broader system adoption if successful. Furthermore, the project's feasibility and minimal financial burden were considered acceptable within the organizational setting.

Interventions

The implementation of a standardized screening for dietary supplement use began with a review of the patient’s chart and intake paperwork to identify any prior indication of or previously reported dietary supplement use. Further, the interventions included a nurse inquiry at every visit to emphasize the importance of disclosing dietary supplement use and to facilitate an opportunity for discussion or questions. Open-ended language was used, and the process was guided by a normalization approach, in which dietary supplement use was presented as a routine and expected part of clinical assessment to encourage patient disclosure and reduce stigma.

Additionally, a patient education sheet was distributed to all patients during the nurse’s assessment portion of the visit, providing basic information in a simplified, patient-friendly format about the potential risks of using dietary supplements. Evidence-based resources were also provided on the sheet as QR codes to encourage further investigation and self-education. Documentation of handout distribution was initially attempted to be recorded in a custom template added to the nurse’s “favorites” to improve accessibility and increase the likelihood of recording; however, use of the template was limited for float nursing staff. As a result, documentation practices were later adapted to utilize the pre-visit note for consistency across staff.

Structured documentation involved entering dietary supplements into the medication list by selecting the generated options. If a dietary supplement was not available for selection in the medication list, it was then detailed in the nurse's pre-visit notes, which the provider reviewed prior to each visit. A comprehensive instruction sheet outlining the documentation process was posted in the nurse's office, next to the computer, for easy reference. Instructions to contact the project lead with questions or feedback were also included.

Staff training included a 30-minute session and hands-on instruction from the primary nurse, who had recently retired but continued to work part-time with the PMHNP. At the end of the session, the primary nurse demonstrated the standardized documentation process and, when available, instructed other float nurses accordingly. The head nurse manager for the clinic and the clinic staff manager disseminated the project's overall objectives and workflow to all other nurses during a staff meeting. Relevant instructional materials were given at that time for reference.

The PDSA cycle structure guided iterative implementation and refinement of the intervention across cycles. Compliance was assessed through biweekly chart audits. Feedback from nurses, the PMHNP, and nursing administration was collected and incorporated into subsequent workflow adjustments. This structured approach supported consistent implementation of screening, documentation, and education processes across clinical encounters during the intervention period.

Measures

The primary outcome measures of the quality improvement project included the percentage of patient encounters with documented dietary supplement use and the percentage of

patient encounters in which educational handouts were distributed. Process measures included staff adherence to the standardized screening and documentation workflow, including completion of dietary supplement screening and documentation in the designated EHR location. Data were collected through biweekly chart audits assessing documentation of dietary supplement use and distribution of educational handouts. The short-term SMART goals included distributing patient education in 95% of patient encounters for both existing and new patients. A second SMART goal was to achieve 95% compliance with documentation in the designated EHR location by week 2 and maintain that level for the remainder of the project.

Analysis

The PMHNP has a client base of approximately 300 patients and sees 25-30 patients per week. A random sample of 25 patient encounters was collected in each two-week interval, with encounters selected using simple random sampling from all eligible visits during that interval. A randomization generator was used, along with a numbered patient list, within the desired time frame. A total of 75 charts were analyzed. Data were analyzed using descriptive statistics to summarize compliance rates at baseline and during each PDSA cycle (Cycle 1, Cycle 2, and Cycle 3), enabling comparisons across time points and assessing trends in documentation and education practices. No inferential statistical testing was performed due to the quality improvement design and sample size.

Ethical Considerations

The intervention was reviewed by the institutional review board (IRB) and approved as a quality improvement/quality assurance (QI/QA) project that does not constitute human subjects research under federal regulations. All project activities focused on established clinical procedures and data management practices within the quality improvement context. Data

collected for the project were in accordance with institutional guidelines and HIPAA regulations. Data were de-identified and stored securely on organizational computers that remained within the clinical campus.

Results

A total of 75 patient encounters were included across the three PDSA cycles, with 25 encounters reviewed per cycle. Chart audits conducted prior to implementation revealed a baseline capture rate of approximately 39% of patient encounters documenting dietary supplement use. Education regarding dietary supplement use was not previously tracked at baseline and was estimated to occur about 10% of patient visits, based on reports from the PMHNP and the lead nurse. For consistency with reported data, baseline education distribution was recorded as 10% for comparison across time points. Education typically consisted of a brief warning about potentially dangerous interactions associated with unregulated substances and was provided only when patients independently disclosed use of dietary supplements. Percentages were calculated based on the number of audited patient encounters within each two-week interval.

Following the implementation of standardized screening, documentation, and education distribution, documentation rates initially declined. In subsequent PDSA cycles, documentation rates increased progressively. During the initial two-week PDSA cycle, documentation declined to 36% of patient encounters. In comparison, education improved to 48% of encounters through the distribution of an educational handout or verbal review by nursing staff, including access to QR code resources.

In the second PDSA cycle, documentation compliance improved to 68% of patient encounters, defined as dietary supplements being reconciled in the medication list, documented in the pre-visit note, or recorded as absent. The education intervention followed a similar trend, increasing to 64%. By the final PDSA cycle, documentation reached 76% of patient encounters, and education increased to 72%.

Table 1. Documentation and Education Rates Across PDSA Cycles

Time Point	**Documentation (%)**	**Education Distribution (%)**
Baseline	39%	10% (estimated)
PDSA Cycle 1	36%	48%
PDSA Cycle 2	68%	64%
PDSA Cycle 3	76%	72%

Across the six weeks of implementation, dietary supplement documentation improved by 37 percentage points from baseline, while education distribution similarly increased by approximately 62 percentage points. Documentation of dietary supplement education varied during the initial PDSA cycle. Documentation rates increased beginning in the second PDSA cycle. Trends in dietary supplement documentation across PDSA cycles are illustrated in Figure 1, and education distribution trends are shown in Figure 2. Run chart analysis showed increasing trends in documentation and education rates across sequential PDSA cycles.

Figure 1. Run Chart of Dietary Supplement Documentation Across PDSA Cycles

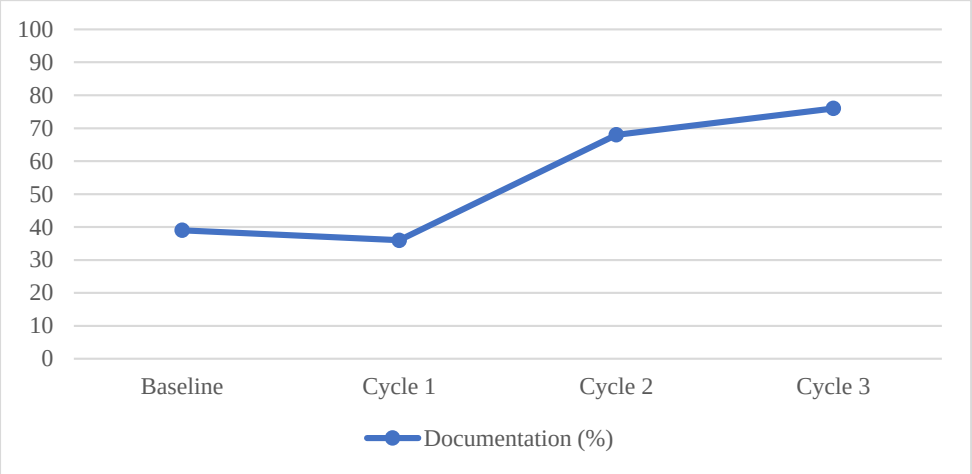
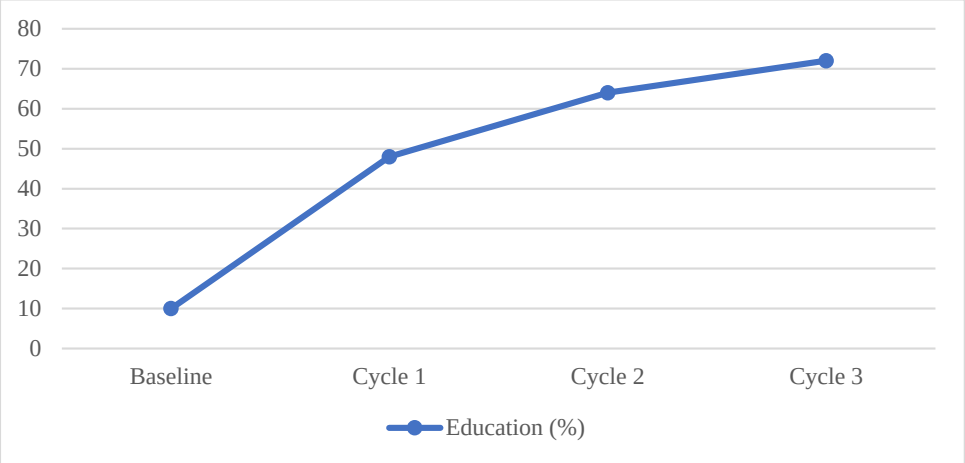


Figure 2. Run Chart of Patient Education Distribution Across PDSA Cycles



Overall, feedback from nursing staff indicated that, after initial training, the process became routine and did not increase the clinical workload. Documentation and education rates increased across PDSA cycles and were sustained following the initial implementation period. These findings reflect consistent increases in both documentation and the distribution of education over the six-week intervention period.

Discussion

Improvements in dietary supplement documentation and education observed during the quality improvement project suggest that the designated interventions may provide a practicable approach to increasing the visibility of dietary supplement use in the clinical record. Dietary supplement documentation increased from 39% to 76% by the final PDSA cycle, and education distribution increased from an estimated 10% at baseline to 72% of patient encounters. Underreporting and knowledge deficits are key risk factors that may be addressed through approaches such as workflow standardization, patient education, and the normalization of dietary supplement disclosure. Initially, documentation rates declined, but they increased across subsequent PDSA cycles, suggesting improved workflow integration over time.

Prior to the implementation of the quality improvement project, documentation of dietary supplement use relied on spontaneous patient reporting, resulting in inconsistent and incomplete medication reconciliation. Establishing routine screening practices may help establish opportunities for patient disclosure, and the current use is regularly assessed. Incorporating documentation directives may improve access to pertinent clinical information, supporting more comprehensive clinical decision-making and potentially reducing risks associated with medication-dietary supplement interactions. Additionally, introducing educational materials may support patients' engagement in care and encourage discussion of dietary supplement use, fostering a clinical environment that promotes patient disclosure.

Findings from the quality improvement project are consistent with the existing literature, highlighting the widespread underreporting of dietary supplement use in clinical settings (Le et al., 2022; Zhao et al., 2023; Lüthold et al., 2024). Current studies suggest that underreporting or

lack of documentation of dietary supplement use may contribute to increased safety risks, including potential medication-dietary supplement interactions or reduced treatment effectiveness (Le et al., 2022; Woroń & Siwek, 2018; Zhao et al., 2023). Research supports routine screening and reconciliation of dietary supplements within the medication list to increase provider awareness, which may represent a feasible strategy to address this gap in care (Thomson-Casey et al., 2023; Zhao et al., 2023).

Furthermore, patient education may support patients in evaluating dietary supplement use and encourage active participation in care, including asking questions and disclosing dietary supplement use to providers (Johnstone et al., 2020; Sarris et al., 2022). The results of this project are consistent with the literature, suggesting that structured screening and education interventions may improve documentation practices and potentially support meaningful clinical impact in psychiatric care settings. Given the tendency for high rates of polypharmacy and complicated medication profiles, psychiatric populations may prove particularly vulnerable to dietary supplement-medication interactions (Le et al., 2022; Radics et al., 2020; Woroń & Siwek, 2018).

Several insights emerged as the project unfolded during implementation across PDSA cycles. In the first PDSA cycle, screening and documentation declined amid changes in nursing coverage and workflow adaptations. Additionally, staff adaptation to a new workflow and initial difficulties accessing documentation templates coincided with lower documentation rates during early implementation. Adaptation of documentation workflows due to template accessibility highlights the importance of system-wide EHR integration to support consistent implementation across staff. As workflow adjustments were introduced and processes became more familiar,

documentation and education rates increased in subsequent cycles. Variation in documentation language within nursing notes created challenges in the interpretation of charted documentation during data collection, suggesting that standardized phrasing may improve measurement accuracy in future applications. These observations highlight the importance of iterative refinement and stakeholder engagement during implementation.

The results obtained within a six-week period suggest that structured screening practices and patient education may improve clinician awareness of dietary supplement use among psychiatric patients. The findings of the quality improvement project indicate that integrating standardized screening, documentation, and education may enhance the visibility of dietary supplement use within the clinical record. Implications include the potential to expand the intervention beyond the pilot provider and to extend standardized workflows across additional providers and departments. Furthermore, the feasibility and sustainability of the intervention within rural FQHC settings appear promising.

Limitations

Limitations of the quality improvement project include implementation with a single provider and the relatively short six-week intervention period. The implementation period concluded two days earlier than anticipated due to the PMHNP's unexpected transition, slightly shortening the data collection window for the final PDSA cycle. Additional limitations involved variability in nursing staff due to organizational turnover. The PMHNP often worked with different nursing staff each day, except when the primary nurse was available in a part-time capacity. On occasion, the nurse assigned to the psychiatric service changed midday, further

contributing to inconsistency. The variability in staffing may have influenced consistency in training exposure, documentation practices, and adherence to the intervention workflow.

Additionally, dietary supplement reporting continued to rely on patient disclosure, leaving an opportunity for under- or incomplete reporting of dietary supplement use. A small number of telehealth encounters were also not fully captured within the intervention workflow, as abbreviated nursing assessments during these visits did not consistently include dietary supplement screening or education. This may have contributed to the underestimation of documentation and education rates. Another implementation limitation involved restricted access to a documentation template designed to streamline recording practices. The template was added to the primary nurse's "favorites" tab to improve visibility and efficacy; however, it was not accessible to float nursing staff. As a result, documentation practices were adapted, and dietary supplement screening and education were consistently recorded in the pre-visit note, with dietary supplements added to the medication list when applicable. This variation in documentation approach may have influenced consistency across encounters.

An additional limitation was the ambiguity in how patient education delivery was documented, particularly when education was provided verbally without a handout. The EHR template specified "education handout given," which did not clearly capture instances of verbal education alone. Incorporating stakeholder feedback, the educational handout was posted in the assessment room to allow easy patient access. Nurses then had the option, based on patient preference, to either provide the physical handout or review the information verbally while encouraging patients to scan the QR code on the posted sheet. The verbal education option was implemented to accommodate patients with cognitive impairments or severe mental illness who

may otherwise have difficulty processing written materials. However, the modification to the education distribution introduced documentation ambiguity, as the EHR template stated "education handout given," which did not clearly capture instances when education was delivered verbally without a handout. When education was delivered verbally without a handout, documentation was instead recorded in the pre-visit note as a temporary workaround, which may have affected measurement consistency.

Recommendations

Recommendations include incorporating standardized screening and documentation practices for dietary supplement use into staff training and orientation, with a focus on nursing staff. Embedding structured, system-wide EHR screening tools within the eClinicalWorks platform for both primary and float nursing staff may provide a more accessible and consistent method for capturing dietary supplement use during patient encounters. Expanding the initiative to additional providers represents a logical progression of the project, supported by interdisciplinary collaboration with pharmacists and other healthcare professionals.

Ultimately, the project's findings suggest the potential value of developing organizational policies focused on medication safety monitoring and dietary supplement tracking. Future adaptations of the workflow should also address telehealth encounters to support consistent screening and education across all visit types. Ongoing evaluation of adherence to screening practices and patient outcomes is recommended to assess sustainability and potential clinical impact over time.

Conclusions

Standardization of workflow for dietary supplement documentation improved documentation consistency and increased the visibility of dietary supplement use within the clinical record during the project period. Accurately capturing dietary supplement use in the EHR may represent a feasible and scalable approach to improving provider awareness and visibility of dietary supplement use. Education may support patient awareness and encourage disclosure of dietary supplement use during clinical encounters. The quality improvement project showed improvements in documentation and education processes within the clinical setting.

These findings suggest that structured screening, documentation, and education workflows may enhance clinical processes. However, further evaluation is needed to determine whether these changes translate into improvements in medication safety, patient outcomes, and system-level practices. Integrating dietary supplement screening into routine psychiatric care represents a foundational step toward improving the safe and comprehensive management of complex medication regimens.

CHAPTER FOUR

ADVANCED NURSING ESSENTIALS REFLECTION

Introduction

The American Association of Colleges of Nursing (AACN) Essentials (2021) outlines the competencies expected of advanced nursing practitioners. Through the Montana State University (MSU) Doctor of Nursing Practice (DNP) program, the AACN Essentials provide a foundational transition to advanced clinical reasoning, therapeutic alliance development, and professional identity formation. The MSU DNP program facilitated the achievement of the AACN Essentials through didactic courses, clinical experiences, and quality-improvement projects. By emphasizing the AACN Essentials throughout the academic program, students successfully integrate leadership, ethical evaluation, evidence-based practice, quality improvement opportunities, and clinical decision-making into advanced nursing practice. The following sections highlight the AACN Essentials domains 4, 5, 6, and 8, which encompass scholarship, quality and safety, inter-professional partnership, and informatics and healthcare technologies, achieved within the MSU DNP program.

Essential Domain 4: Scholarship for Nursing Practice

The AACN Essential Domain 4, scholarship in the nursing discipline, focuses on applying nursing knowledge to advance and transform health care through discovery, application, integration, teaching, and research (AACN, 2021). Throughout the MSU DNP program, coursework required careful, critical appraisal of evidence-based research to determine clinical relevance in the healthcare setting. For example, in advanced evidence-based practice courses, I completed literature reviews and syntheses for critical appraisal assignments. Several

assignments required evaluation of study design, levels of evidence, and applicability to clinical practice, improving my ability to translate research into practice. Developing evidence tables and analyzing statistical metrics allowed me to organize ideas into actionable insights. In the clinical setting, I applied evidence-based concepts and skills in real-time decision-making experiences as I prepared treatment plans, made medication decisions, and provided patient education.

Furthermore, in the final year of the MSU DNP program, a required quality-improvement project provides an opportunity to apply scholarly skills in a clinical setting. The development and implementation of the quality improvement project reflect the DNP role in translating evidence into clinical practice to improve clinical decision–making, patient safety, patient outcomes, and healthcare systems.

I have demonstrated this domain through my ability not only to understand and identify advanced knowledge principles and potential applications, but also to successfully relate the implications of the synthesized literature to the implementation of appropriate interventions in a clinical setting. I identified a clinical safety gap in an outpatient psychiatric practice: a lack of visibility into dietary supplement use in the provider's electronic health record (EHR). Based on a comprehensive review of existing studies, I implemented practice changes, including standardized screening and documentation workflows and patient education, to improve the current healthcare system.

I collaborated with the PMHNP, nursing staff, and the outpatient organization's administrative team, providing educational training to address inconsistencies with evidence-based best practices and implement necessary changes. In light of the project’s results and evidence of improvement from chart audits and statistical analyses across three PDSA cycles, the

clinic plans to modify nursing practices to incorporate the new evidence at the system level. Further dissemination of the project's results and application will be shared with a diverse audience during the oral presentation.

Essential Domain 5: Quality & Safety

The ability to influence healthcare standards and establish evolving quality and safety measures is central to advanced nursing practice. Minimizing risk and continuously seeking improvement in the delivery of care are core principles of the AACN Essential 5 (AACN, 2021). Throughout my undergraduate program, a commitment to the standard of care emphasizing quality and safety was foundational to my education. However, in the DNP program, the approach shifted, and I became responsible not only for maintaining the standard but also for enhancing quality and safety at the individual and system levels. The goal shifted toward effecting change through practice, guidelines, policies, and improvement initiatives. Throughout the DNP program, I have approached assignments, clinical experiences, and the quality improvement project with immense consideration for safety and the advancement of quality of care, particularly in fostering a supportive safety culture and environment.

During this time, I developed an advanced understanding of quality and safety, progressing from simply maintaining standards of care to actively identifying issues and addressing system-level risks. In the academic portion of the MSU program, I was challenged to conduct Root Cause Analysis, use process improvement tools, and employ various frameworks in systems-thinking assignments to address safety issues and cultivate a safer environment and culture. In clinical experiences, I constantly monitored side effects, suicide risk, and polypharmacy as I actively participated in preventing drug interactions and adverse events.

Essential domain 5 is demonstrated at the system level in my quality improvement initiative, which focuses on enhancing patient safety and quality of care by mitigating risks associated with medication-dietary supplement interactions. After observations and evaluation of clinical practice, a safety concern was identified in an outpatient clinic. The inconsistent and incomplete documentation of patient dietary supplement use limited providers' awareness, thereby increasing the risk of adverse events or ineffective treatment.

Due to the complexity of psychiatric medication regimens that commonly involve polypharmacy and poly-dietary supplement use, the potential for severe medical complications such as serotonin toxicity, hepatotoxicity, and bleeding risks was of great concern. A structured workflow was implemented based on routine nurse screening, standardized documentation, and patient education, using PDSA cycles with evaluation conducted through biweekly chart audits. Over the six-week implementation period, improvements in screening and documentation were observed, with accurate reporting of dietary supplement use rising from 39% to 76%, while patient education was provided in 72% of patient encounters.

Through the intervention, improvements in documentation and reporting of dietary supplement use may have supported more informed clinical decision-making by the PMHNP. The project findings suggest that quality improvement initiatives may contribute to medication safety practices by increasing provider awareness of dietary supplement use and potential medication-dietary supplement interactions.

Essential Domain 6: Interprofessional Partnerships

AACN defines Essential Domain 6 as intentional collaboration across professions in partnership with patients, their families, and communities (AACN, 2021). Essential Domain 6

outlines the advanced nurse's role as a collaborative team member who contributes to shared efforts to provide quality care and improved patient outcomes by utilizing distinctive nursing expertise. Throughout my academic program, I developed and strengthened the skills necessary to be successful in this competency by cultivating core professional values associated with the advanced nursing role through coursework, case study analysis, and mentorship.

During the DNP program, I matured in my ability to clarify clinical roles, participate in team-based care, and communicate across professions. The DNP coursework prepared me for interprofessional partnerships by developing relevant skills, including giving presentations to multidisciplinary groups, emphasizing care coordination within case study deliberations, and engaging in discussions that often emphasized the use of interprofessional teams to best provide services in patient treatment and management.

I deepened my understanding of how to function as a team-based provider in a healthcare setting by observing my preceptors use the therapeutic alliance as a primary means of partnering with patients. I was then allowed to practice developing my own therapeutic alliance within the clinical setting as I conducted interviews with patients and often their families. Consultations with medical professionals were a common occurrence in my clinical experiences, as was coordination of care with case managers to connect patients with community entities. I observed my preceptor's role as an expert in mental health, where she shared her expertise with medical providers at the clinic to help them better understand appropriate psychotropic medication use in family practice during staff meetings. In reflecting on my future role, I am prepared to contribute to an interprofessional healthcare team as an advanced practice nurse, aiding in comprehensive treatment planning.

Additionally, I demonstrated Essential 6 by evaluating interprofessional communication tools in an outpatient clinic and identifying inconsistencies in EHR documentation regarding dietary supplement use. During the implementation of the quality improvement project, I led interprofessional training and informational sessions with the PMHNP, nursing staff, and administrative stakeholders to facilitate collaboration on workflow changes to improve EHR documentation, enhance the visibility of patient information, and establish a shared responsibility for patient safety. The project focused on encouraging healthcare teamwork, communication, and shared decision-making, thereby enabling more comprehensive care coordination and minimizing potential interactions between medications and dietary supplements.

Essential Domain 8: Informatics and Healthcare

The use of technology in the modern healthcare system is continually expanding. Essential Domain 8 addresses the use of informatics and technologies in the advanced nursing role, as described by the AACN, which emphasizes information systems, communication technologies, and informatics to support high-quality, efficient, and safe patient care (AACN, 2021). Informatics processes and technologies often inform care management by gathering data and expanding practice knowledge to drive clinical decision-making.

In academic coursework in the MSU DNP program, I was required to learn and use various EHR systems and telehealth platforms to communicate with patients and access patient information. These systems have enabled me to share, gather, and analyze patient and clinic information through documentation, clinical data, and patient safety monitoring throughout the DNP program. Telehealth visits comprised approximately half of my clinical experiences. The use of telehealth in Montana is invaluable, allowing populations in otherwise unreachable

regions to access mental health services. Data tracking, clinical metrics, and technology evaluation were required in advanced statistical analysis coursework and associated assignments for data interpretation. As a student, I planned quality-improvement projects and developed papers that translated data into comprehensive reports. I used electronic technologies to create presentations and visual tools and to conduct statistical analyses for budgeting and program planning.

In my graduate experience, I have advanced my understanding of clinical documentation workflows, as demonstrated by my quality improvement initiative that redesigned nursing workflows in an outpatient clinic for screening, documentation, and patient education regarding dietary supplement use. These workflow changes increased provider visibility of dietary supplement use within the EHR and reinforced medication safety practices. Furthermore, the use of QR code technology on the educational handouts provided a convenient means to direct patients to evidence-based resources.

The integration of healthcare technologies and informatics systems has significantly impacted my clinical experiences and outlook on future practice. The experiences I have had during my time in the DNP program, integrating these tools into patient care, have strengthened my ability to evaluate clinical technologies and implement informatics-driven workflow changes that enhance patient safety and care coordination. Advancements in healthcare technologies and digital applications are continuously transforming patient care, creating exciting opportunities to expand knowledge and access to safe, evidence-based mental health care in rural communities. I am excited to be part of this technological era and to contribute to advancing these innovations in practice.

The AACN Essentials framework provides a guide for developing advanced nursing competencies. The Essentials create an underlying foundation throughout the MSU DNP program. The Domains 4, 5,6, and 8 facilitated skills in scholarly inquiry, quality improvement leadership, interprofessional collaboration, and informatics efficiency. As a student engaging in didactic coursework, clinical experiences, and the implementation of a quality improvement project, I had the opportunity to directly translate evidence into practice, strengthen patient safety initiatives, and enhance collaboration among healthcare teams to improve clinical outcomes. As I assume the new role of an advanced practice nurse, the competencies I have developed throughout the DNP program will continue to influence my practice and expand as my knowledge and abilities evolve through experience.

Implications for Future Practice

The MSU DNP program and the integration of the AACN Essentials transformed my clinical thought process from task-based to a systems-based approach, enabling me to evaluate patient care within the broader context of health care systems, population health, and interprofessional collaboration. The clinical rotations during my academic experience enabled me to observe a diverse patient set with a wide spectrum of mental health disorders across the lifespan. With oversight, I was given the liberty to fully practice interviews and conduct initial evaluations, ultimately facilitating the integration of didactic coursework knowledge, informed by comprehensive assignments, into real-life capability. As I was immersed in various health systems, facilities, and organizations, I began to recognize the importance of not only competently providing individual patient care but also approaching practice problems with a

leadership-focused perspective to identify practice gaps, optimize care delivery processes, and enhance patient safety.

As I transition into practice, I will use evidence-based data and resources to inform my clinical decision-making and continuously analyze care processes. I will utilize evidence-based literature, clinical data, and quality-improvement methodologies, such as the PDSA cycle, to evaluate outcomes and implement sustainable, system-level changes in the rural Montana care setting where I will be working. Additionally, I will lead and collaborate with interprofessional teams to address practice gaps, integrating healthcare technologies and informatics as appropriate, to provide comprehensive and accessible care. Data tracking, telehealth, and the EHR are essential tools I feel confident using to improve care effectiveness, enhance documentation accuracy, and support care coordination going forward. The MSU DNP program has prepared me to lead as a provider, collaborator, and innovator in quality improvement, system-level change, and the advancement of patient-centered healthcare.

REFERENCES CITED

Alateeq, D., Alsubaie, M. A., Alsafi, F. A., Alsulaiman, S. H., & Korayem, G. B. (2022). The use of dietary supplements for mental health among the Saudi population: A cross-sectional survey. *Saudi pharmaceutical journal : SPJ : the official publication of the Saudi Pharmaceutical Society*, *30*(6), 742–749. https://doi.org/10.1016/j.jsps.2022.03.017

Bozzatello, P., Novelli, R., Montemagni, C., Rocca, P., & Bellino, S. (2024). Dietary supplement in Psychiatric Disorders: A Systematic Review. *International journal of molecular sciences*, *25*(9), 4824. https://doi.org/10.3390/ijms25094824

Firth, J., Teasdale, S. B., Allott, K., Siskind, D., Marx, W., Cotter, J., Veronese, N., Schuch, F., Smith, L., Solmi, M., Carvalho, A. F., Vancampfort, D., Berk, M., Stubbs, B., & Sarris, J. (2019). The efficacy and safety of nutrient dietary supplements in the treatment of mental disorders: a meta-review of meta-analyses of randomized controlled trials. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, *18*(3), 308–324. https://doi.org/10.1002/wps.20672

Guu, T. W., Mischoulon, D., Sarris, J., Hibbeln, J., McNamara, R. K., Hamazaki, K., ... & Su, K. P. (2019). International society for nutritional psychiatry research practice guidelines for omega-3 fatty acids in the treatment of major depressive disorder. *Psychotherapy and psychosomatics*, *88*(5), 263-273.

Institute for Healthcare Improvement. (2021). *Science of improvement: How to improve.* Model for Improvement | Institute for Healthcare Improvement

Johnstone, J. M., Hughes, A., Goldenberg, J. Z., Romijn, A. R., & Rucklidge, J. J. (2020). Multinutrients for the Treatment of Psychiatric Symptoms in Clinical Samples: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Nutrients*, *12*(11), 3394. https://doi.org/10.3390/nu12113394

Kassis, A., & Papps, F. A. (2020). Integrating complementary and alternative therapies into professional psychological practice: An exploration of practitioners' perceptions of benefits and barriers. *Complementary therapies in clinical practice*, *41*, 101238. https://doi.org/10.1016/j.ctcp.2020.101238

Le, T. T., McGrath, S. R., & Fasinu, P. S. (2022). Herb-drug Interactions in Neuropsychiatric Pharmacotherapy - A Review of Clinically Relevant Findings. *Current neuropharmacology*, *20*(9), 1736–1751. https://doi.org/10.2174/1570159X19666210809100357

Lüthold, R. V., Rozsnyai, Z., Weir, K. R., Streit, S., & Jungo, K. T. (2024). Exploring GP and patient attitudes towards the use and deprescribing of dietary supplements: a survey study in Switzerland. *BMC primary care*, *25*(1), 359. https://doi.org/10.1186/s12875-024-02605-z

Radics, J., Rozsavolgyi, E., & Kovacs, G. (2020). A táplálkozás pszichofarmakológiai vonatkozásai [Psychopharmacological aspects of nutrition]. *Neuropsychopharmacologia Hungarica : a Magyar Pszichofarmakologiai Egyesulet lapja = official journal of the Hungarian Association of Psychopharmacology*, *22*(2), 56–59.

Sarris J. (2019). Nutritional Psychiatry: From Concept to the Clinic. *Drugs*, *79*(9), 929–934. https://doi.org/10.1007/s40265-019-01134-9

Sarris, J., Ravindran, A., Yatham, L. N., Marx, W., Rucklidge, J. J., McIntyre, R. S., Akhondzadeh, S., Benedetti, F., Caneo, C., Cramer, H., Cribb, L., de Manincor, M., Dean, O., Deslandes, A. C., Freeman, M. P., Gangadhar, B., Harvey, B. H., Kasper, S., Lake, J., Lopresti, A., … Berk, M. (2022). Clinician guidelines for the treatment of psychiatric disorders with dietary supplement and phytoceuticals: The World Federation of Societies of Biological Psychiatry (WFSBP) and Canadian Network for Mood and Anxiety Treatments (CANMAT) Taskforce. *The world journal of biological psychiatry : the official journal of the World Federation of Societies of Biological Psychiatry*, *23*(6), 424–455. https://doi.org/10.1080/15622975.2021.2013041

Thomson-Casey, C., McIntyre, E., Rogers, K., & Adams, J. (2023). The relationship between psychology practice and complementary medicine in Australia: Psychologists' demographics and practice characteristics regarding type of engagement across a range of complementary medicine modalities. *PloS one*, *18*(5), e0285050.

Woroń, J., & Siwek, M. (2018). Unwanted effects of psychotropic drug interactions with medicinal products and diet dietary supplements containing plant extracts. Niepożądane efekty interakcji leków psychotropowych z produktami leczniczymi i suplementami diety zawierającymi wyciągi roślinne. *Psychiatria polska*, *52*(6), 983–996. https://doi.org/10.12740/PP/OnlineFirst/80998

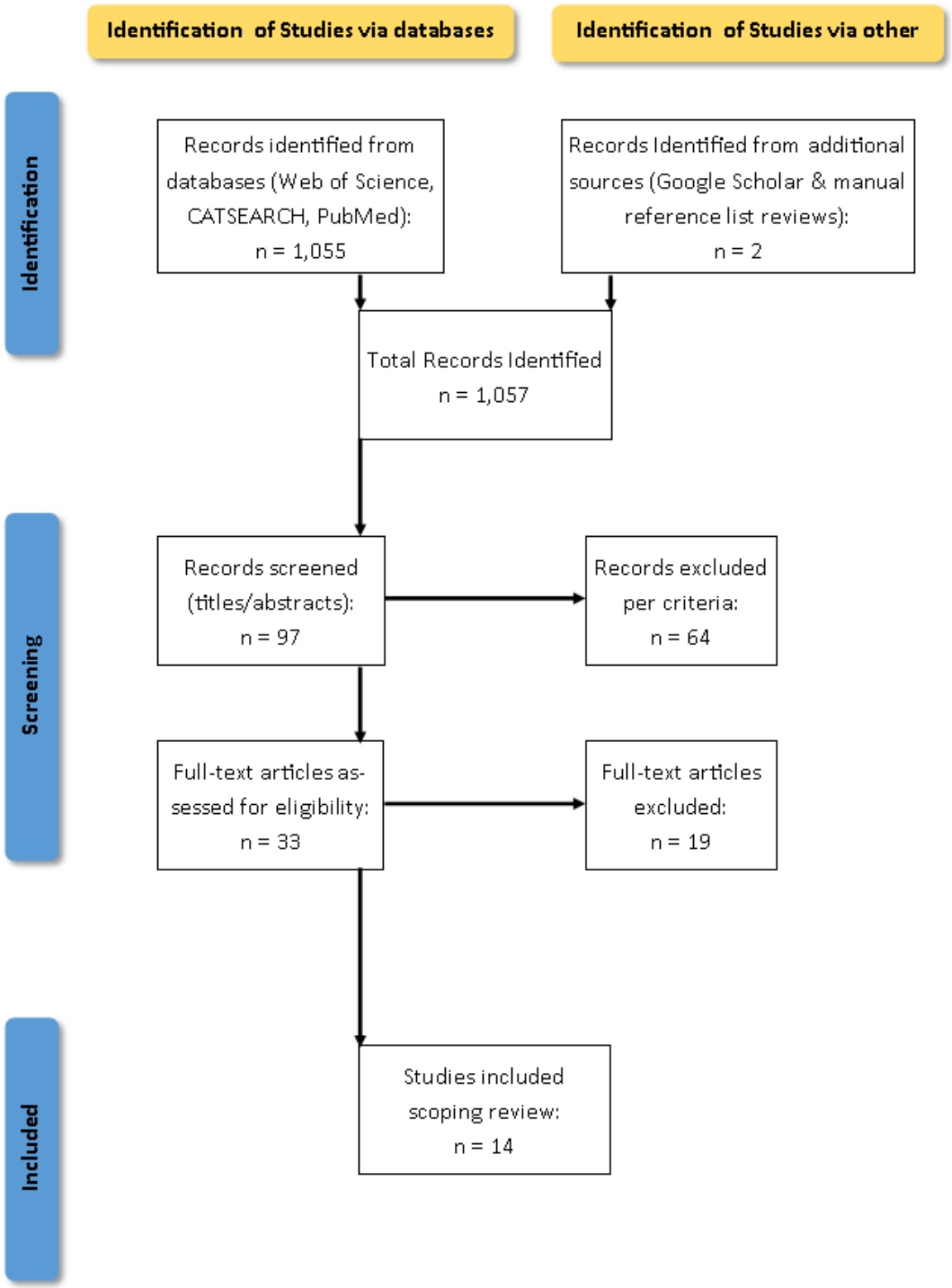
Zhao, F. Y., Kennedy, G. A., Xu, P., Conduit, R., Wang, Y. M., Zhang, W. J., Wang, H. R., Yue, L. P., Huang, Y. L., Wang, Y., Xu, Y., Fu, Q. Q., & Zheng, Z. (2023). Identifying complementary and alternative medicine recommendations for anxiety treatment and care: a systematic review and critical assessment of comprehensive clinical practice guidelines. *Frontiers in psychiatry*, *14*, 1290580. https://doi.org/10.3389/fpsyt.2023.1290580

APPENDICES

APPENDIX A

PRISMA DIAGRAM

PRISMA DIAGRAM



APPENDIX B

ARTICLE TABLE

ARTICLE TABLE

Citation	Study Type / Design	Population / Setting	Supplements / Focus	Main Findings / Efficacy	Risks / Safety	Education / Oversight Notes	Limitations	Relevance to QI Project
Alateeq et al., 2022	Cross-sectional survey (n = 443)	General Saudi population (18 +, mixed regions)	Vitamin D (64%), melatonin (45%), B12, omega-3, magnesium, zinc, chamomile, folate, St John's wort, ashwagandha, curcumin etc.	44 % used supplements for mental health; those with insomnia or psychiatric diagnosis were 2–3× more likely to use. Melatonin & vitamin D most common.	16 % reported mild AEs; no serious events.	Calls for clinician education and public awareness of unverified claims; advocates evidence-based guidance and EHR screening.	Self-report bias; female-heavy sample; cross-sectional limits causality.	Establishes need for systematic supplement screening and education intervention in psychiatric settings.
Bozzatello et al., 2024	Systematic review (narrative focus)	Mixed psychiatric diagnoses (SZ, ASD, MDD, BD, PD)	Omega-3, probiotics, vitamins, fiber/pre/pro/synbiotics	Omega-3 and probiotics show benefit across domains; evidence uneven by diagnosis.	Generally safe; variable quality and dosing.	Highlights need for standardized screening and documentation of supplement use.	Heterogeneous designs; narrative synthesis.	Supports QI goal to improve screening and documentation of common nutraceuti-
Firth et al. 2019	Meta-review of meta-analyses	RCT meta-analyses across MDD, SZ, ADHD etc.	EPA omega-3, methylfolate, NAC, vitamin D, zinc, probiotics	EPA omega-3 adjunct → best evidence for depression; some support for methylfolate and NAC.	Overall safe; few serious AEs.	Clarifies which supplements have strong evidence vs. weak; guides provider education.	Variable quality of included meta-analyses.	Framework for "evidence-based supplements" section of QI education materials.
Guu et al., 2019	Consensus guideline	Adults with MDD	Omega-3 (EPA ≥ 1–2 g/day; EPA:DHA > 2:1)	Recommends EPA-dominant omega-3 as adjunct for MDD.	Safe; monitor GI or dermatologic effects.	Provides precise dosing and quality counseling parameters.	Limited to MDD; consensus not systematic.	Informs clinician handouts and EHR smart phrases for omega-3 education.
Johnstone et al., 2020	Systematic review + meta-analysis	ADHD, autism, depression, post-disaster stress samples	Broad multinutrient formulas (≥ 4 ingredients)	ADHD benefits in functioning and clinician ratings; mixed results elsewhere.	Generally safe; composition varies.	Encourage realistic expectations; document brands used.	Heterogeneous formulas; reporting inconsistencies.	Guidance for counseling patients using commercial multi-nutrient packs.

Continued: ARTICLE TABLE								
Kassis et al., 2020	Qualitative (thematic analysis)	6 psych practitioners trained in CATs	CAM/CAT integration in practice	Identified benefits (relational, specialization) and barriers (stigma, regulation).	Concern over governance and standards.	Need for clinic policies and educational guidelines on CAT discussion.	Small sample; psych discipline only.	Directly informs staff training on neutral CAM screening language.
Le et al., 2022	Systematic review	Psychiatric patients using herbal products with Rx drugs	13 herbs (St John's wort, ginkgo, ginseng, kava, valerian etc.)	Multiple clinically relevant PK/PD interactions; some serious.	CYP induction/ inhibition, additive CNS effects.	Strong need for routine documentation of herbal use and interaction counseling.	Variable quality evidence sources.	Key evidence base for risk mitigation portion of QI plan.
Lüthold et al., 2024	Cross-sectional survey (GP–patient dyads)	Older adults with polypharmacy in Swiss primary care	All dietary supplements	70 % used ≥ 1 supplement; 60 % undisclosed to GP; low deprescribing activity.	Polypharmacy and interaction risk.	Highlights need for routine disclosure prompts and deprescribing workflow.	Self-report; single country.	Validates your QI problem statement (underdocumentation and risk).
Radics et al., 2020	Narrative overview	Clinical conceptual analysis	Nutrient deficiency and supplement interaction	Deficiencies impair psychotropic response; supplement interactions possible.	Potential drug-nutrient interactions.	Reinforces importance of screening for deficiencies and co-use.	Short narrative; regional focus.	Justifies educating patients why providers ask about supplement use.
Sarris, J. 2019	Perspective review	Broad psychiatric field	Diet quality; omega-3, B-vitamins, zinc, Mg, Vit D, SAMe	Personalized, biomarker-guided use preferred; avoid non-targeted poly-use.	Generally safe if judicious.	Counsel patients on targeted evidence-based use only.	Narrative opinion.	Frames QI education messaging on evidence-based vs fad supplements.
Sarris et al., 2022	International clinical guideline	MDD, BD, SZ, ADHD, anxiety disorders	Omega-3, Vit D, methylfolate, NAC, zinc, probiotics, herbs (SJW, saffron etc.)	Adjunct EPA (+++ MDD); methylfolate/ NAC helpful in SZ; others limited.	Acceptable safety; quality standardization needed.	Offers clear recommendations for handouts & provider quick refs.	Heterogeneity of source RCTs.	Core to your "evidence hierarchy" matrix and provider training tools.
Thomson-Casey et al., 2023	National survey	Practicing psychologists (Australia)	CAM recommendations and referrals	Frequent referrals to mind-body practices and naturopaths.	Safety and cultural sensitivity issues.	Inform staff training to approach CAM neutrally and respectfully.	Self-selection bias.	Guides QI stakeholder communication and staff scripts.

Continued: ARTICLE TABLE								
Woroń, & Siwek, 2018	Case series / pharmacovigilance review	Psych patients on psychotropics + herbals (n = 147 reports)	Ginkgo + SSRIs (bleeding), ginseng (serotonin syndrome, arrhythmia), milk thistle (pancreatitis)	Multiple clinically significant HDIs identified.	Real-world interaction harms.	Strong justification for EHR alerts and patient counseling protocols.	Reporting bias; observational.	Concrete examples for staff education and patient safety materials.
Zhao et al., 2023	Systematic review of CPGs (PRISMA 2020)	Clinical practice guidelines for anxiety disorders	CAM modalities (applied relaxation, herbs, mindfulness, light therapy etc.)	Sparse and inconsistent CAM recommendations; many "uncertain" or "not recommended."	Caution due to low-quality evidence and potential interactions.	Reinforces evidence-based communication; discourage unsupported therapies.	Limited CAM data; English/ Chinese only guidelines included.	Justifies education to avoid over-promising CAM benefits for anxiety.

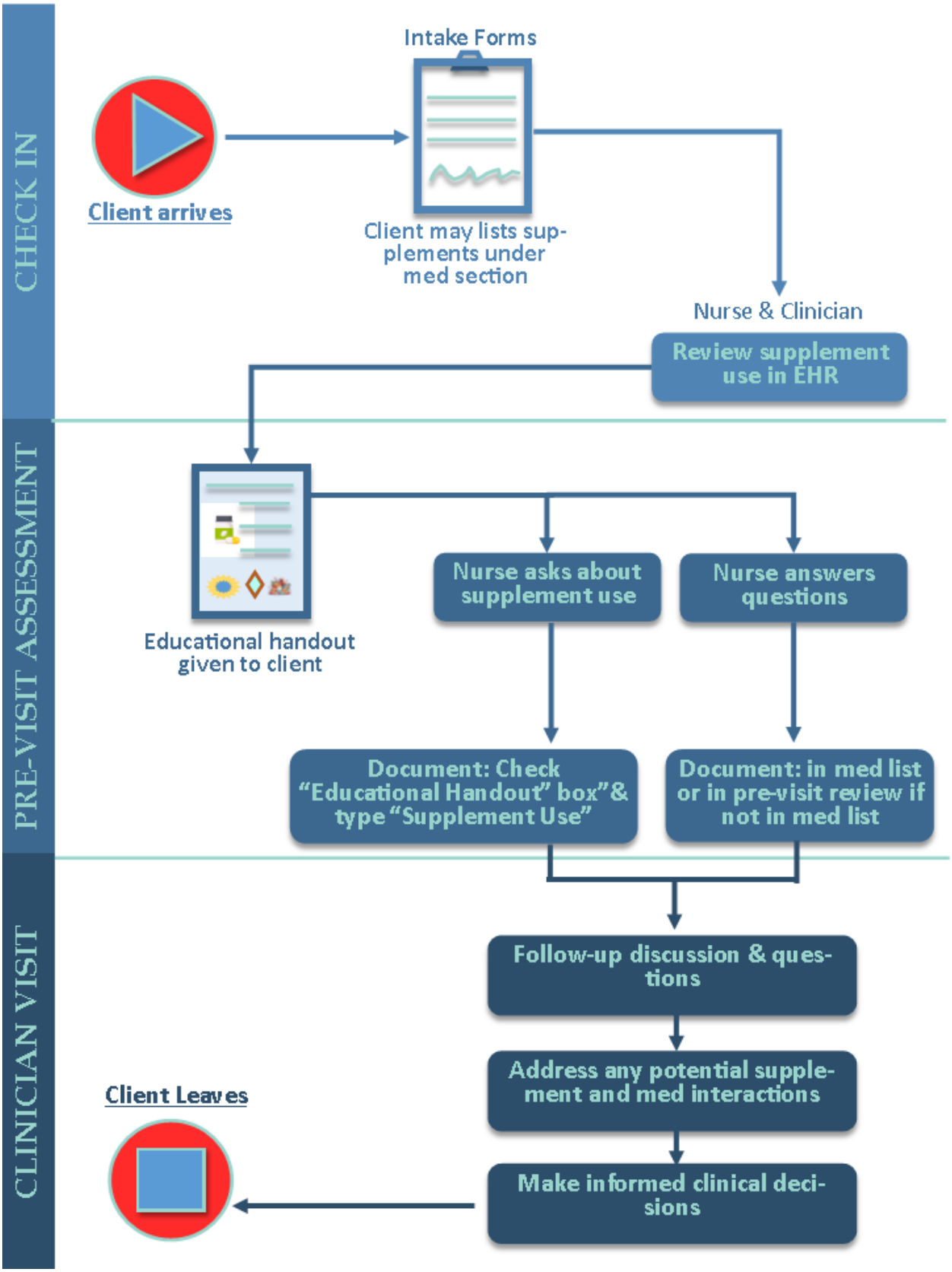
APPENDIX C

SWIMLANE DIAGRAM

	CLIENT	NURSE	CLINICIAN	EHR
CHECK IN	Completes list of medications and supplements on intake forms	Reviews patient chart noting current supplements listed in EHR	Reviews patient chart noting current supplements listed in EHR	Previous list of supplements available for review
PRE-VISIT ASSESSMENT	• Receives educational handout • Review of supplement use with nurse to ensure accurate and complete list • Asks questions	• Distributes educational handout • Ask about supplements at every visit • Reconciles medication list to include current supplements • Documents unlisted supplements in the pre-visit review in EHR	• Note any new, concerning or overuse of supplements • Check for medication interactions	• Check box for "educational handout given" • Manually type "Supplement use" to designate type of handout • Click all supplements listed in the med list • If not in the med list type in pre-visit review
CLINICIAN VISIT	• Able to discuss supplement use further if needed with provider		• Ask follow-up about supplement details • Address any potential supplement interactions with meds • Reinforces education • Makes informed clinical decisions based on supplement use	• Updated list of supplements available for review

APPENDIX D

WORKFLOW DIAGRAM


CHECK IN
PRE-VISIT ASSESSMENT
CLINICIAN VISIT
Intake Forms
Client arrives
Client may lists supplements under med section
Nurse & Clinician
Review supplement use in EHR
Educational handout given to client
Nurse asks about supplement use
Nurse answers questions
Document: Check "Educational Handout" box"& type "Supplement Use"
Document: in med list or in pre-visit review if not in med list
Follow-up discussion & questions
Address any potential supplement and med interactions
Make informed clinical decisions
Client Leaves

APPENDIX E

PATIENT EDUCATION HANDOUT

SUPPLEMENT USE & SAFETY



WHY WE CARE:

Interactions can make

- ⇒ Medicine too strong
- ⇒ Medicine too weak
- ⇒ Harmful side effects

Some supplements can be toxic or cause harmful reactions when mixed with medications or other supplements.

Supplements are not tested for safety like other prescription medications. Some brands may have poor quality, added ingredients, or dosing issues.

High Risk Supplements

Some that can cause serious problems listed here

- **St. Johns wart:** Serotonin syndrome
- **Kratom:** Serotonin Syndrome & addictive
- **Kava:** Heavy sedation & liver risk
- **Velerian:** Sedation
- **CBD / THC:** Worsens anxiety & mood
- **Ginkgo Biloba:** Bleeding complications

It is **IMPORTANT** to have all the information so please bring in bottles, packages, pictures or a list of supplements you are currently taking.

PLEASE TELL THE NURSE OR YOUR PROVIDER ABOUT SUPPLEMENTS YOU ARE TAKING OR PLANNING TO TAKE

FOR MORE INFORMATION

Scan the QR Codes below to visit helpful websites

Use your phone camera or QR scanner to access websites