

IMPROVING CHRONIC MIGRAINE ASSESSMENT IN PRIMARY CARE: A QUALITY
IMPROVEMENT PROJECT

by

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DEDICATION

This project is lovingly dedicated to my daughter, Joey. I hope that this work contributes to a brighter and healthier future for you and for everyone seeking relief, resilience, and a better quality of life. You are my greatest joy, my constant motivation, and your light shines through every part of my journey. I love you endlessly.

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ABSTRACT

Background: Migraine is a leading cause of disability, yet standardized assessment tools are underutilized in primary care settings. The MIDAS (Migraine Disability Assessment Scale) offers a structured approach to evaluating migraine-related disability, but its integration into clinical practice remains inconsistent.

Local Problem: A small primary care clinic and urgent care in Montana lacked a standardized approach to assessing migraine impact, limiting effective treatment planning. Prior to the intervention, 0% of migraine patients had a documented disability assessment, and provider confidence in using disability-based tools was low.

Methods: Participants included primary care providers (PCPs) and adult patients diagnosed with migraines. Over a six-week quality improvement (QI) initiative, provider education and the use of the MIDAS tool were implemented. Outcomes were measured biweekly, including provider confidence in assessing migraine-related disability, the percentage of eligible patients receiving MIDAS screening, and treatment modifications based on MIDAS scores.

Intervention: Providers viewed and completed an educational session covering migraine pathophysiology, treatment options, and the role of the MIDAS tool. The screening tool was integrated into practice with patients with a chief complaint of headache or migraine. Structured guidance on interpreting results and optimizing treatment plans for chronic migraine patients was provided.

Results: Among 35 eligible patients, 43% (n=15) received MIDAS screening, a significant improvement from baseline (0%). Provider-reported confidence in using the tool increased by 100%. Of those with moderate to severe disability (MIDAS score ≥ 11), 70% (n=7) had treatment modifications, including 50% (n=5) receiving preventive therapy adjustments. Patient-reported quality of life scores improved by an average of 33% over six weeks.

Conclusion: Standardizing migraine disability assessment with the MIDAS tool improved provider confidence, guided treatment adjustments, and enhanced patient outcomes. Long-term follow-up is needed to evaluate sustained integration and impact.

Keywords: Migraine, MIDAS tool, primary care, quality improvement, disability assessment, provider education

CHAPTER ONE

LITERATURE REVIEW

Improving Chronic Migraine Management in Primary Care: A Quality Improvement Project

Chronic migraines are a debilitating condition impacting 1-2% of the world's population and the second leading cause worldwide for years lived with disability (Burch et al., 2019; Steiner et al., 2022). Migraine disability goes beyond the physical symptoms; patients face stigma and burdens that impact education, career opportunities, and personal relationships (Steiner et al., 2022). The high level of disability significantly reduces quality of life. Migraines also increase healthcare utilization, leading to repeated doctor visits, prescription refills, and emergency room visits (Steiner et al., 2022). Migraines adversely impact individuals through their suffering and affecting relationships, reducing work productivity and increasing healthcare costs (Buse et al., 2023; Harris et al., 2022).

Pathophysiology of Migraines

Chronic migraines are a neurological disorder characterized by recurrent episodes of moderate-to-severe headaches (Pescador Ruschel & De Jesus, 2024). Approximately 15% of the U.S. population suffers from chronic migraines, which are 15 or more headache days per month (Lipton et al., 2022). The disease is the sixth most prevalent neurologic condition in terms of years lost to disability (Andreou & Pereira, 2023). Migraines are the second leading cause of years lived with disability and the leading cause of disability among women aged 15–49 years (Barbanti et al., 2022; Lipton et al., 2022). The International Classification of Headache Disorders (ICHD-3) defines migraines into subgroups, including migraine without aura (criterion B1), migraine with aura (criterion B2), chronic migraine (criterion C) (15 or more headache days

per month) (Pescador Ruschel & De Jesus, 2024). Headaches must present with at least two features: a unilateral location, pulsating quality, moderate-to-severe pain intensity, or aggravation by or avoidance of routine physical activity (Andreou & Pereira, 2023).

Migraine development stems from several known causes or triggers, including stress, hormone changes, skipped meals, dehydration, sleep disturbances, weather, neck pain, and alcohol or tobacco consumption (Pescador Ruschel & De Jesus, 2024). Migraine is commonly classified into subtypes, including migraine with and without aura, chronic migraine, and probable migraine, with the most prevalent being migraine without aura, accounting for 75% of cases (Pescador Ruschel & De Jesus, 2024). The prodrome phase of migraine occurs in up to 77% of patients, particularly women (81% versus 64% in men), and can last 24 to 48 hours before the headache onset (Andreou & Pereira, 2023). Symptoms include yawning, mood changes, neck stiffness, light/sound sensitivity, and cravings (Andreou & Pereira, 2023). Auras are visual and may precede or occur with the headache in 25% of patients lasting less than 60 minutes and can include both positive (e.g., scintillating scotoma) and negative (e.g., visual field defects) symptoms (Pescador Ruschel & De Jesus, 2024). The headache phase is typically a pulsating, unilateral headache that intensifies over time and can last hours to days with symptoms of nausea, vomiting, photophobia, phonophobia, and sensitivity to movement (Pescador Ruschel & De Jesus, 2024). After the headache, patients may experience lingering pain with movement and symptoms such as exhaustion, dizziness, and difficulty concentrating (Pescador Ruschel & De Jesus, 2024). The disabling attacks can last from hours to days, significantly impacting an individual's daily activities and quality of life.

Migraine affects the hypothalamus, which helps regulate sleep, appetite, and stress (Andreou & Pereira, 2023). Dysregulation of the hypothalamus causes migraine symptoms, including fatigue, mood changes, and nausea due to (Andreou & Pereira, 2023)—unilateral pain migraine pathophysiology stemming from abnormal brain activity and blood flow. The trigeminovascular system is crucial for pain transmission and becomes overactive during migraine attacks, triggering the release of neuropeptides called calcitonin gene-related peptides (CGRP) (Andreou & Pereira, 2023; Lipton et al., 2022). CGRP and serotonin receptors mediate neurogenic inflammation and pain transmission in the trigeminal system (Pescador Ruschel & De Jesus, 2024). Activation of receptors leads to vasodilation and increased sensitivity to pain, contributing to the development and exacerbation of migraine symptoms (Pescador Ruschel & De Jesus, 2024). Peripheral sensitization in migraines results from a lowered threshold and heightened responsiveness at the peripheral ends of trigeminal nerve fibers (Andreou & Pereira, 2023). Increased sensitivity causes a release of inflammatory mediators, which amplify the pain response during a migraine attack. Sensitivity may result in light or noise sensitivity, requiring patients to be in a dark and quiet room. Migraine pain also occurs when CGRPs cause blood vessels in the brain to dilate and become inflamed (Andreou & Pereira, 2023). Neuronal and glial depolarization or cortical spreading depression causes aura or visual disturbances experienced by individuals who experience migraine (Andreou & Pereira, 2023). Migraine pain and intensity result from heightened responsiveness. Understanding the pathophysiology of migraine pain is essential to improve treatment modalities and quality of life.

Impact on Quality of Life

Besides pain, migraines can cause residual light and noise sensitivity symptoms, gastrointestinal upset, cognitive impairments, fatigue, memory issues, and emotional burdens (Blumenfeld et al., 2023). The severity of symptoms and disruption to daily activities, leading to anxiety, depression, and even social isolation, ultimately negatively impact the quality of life (Lipton et al., 2022). Those with chronic migraines are at greater risk for comorbidities and are two times as likely to have depression, anxiety, epilepsy, insomnia, asthma, and severe gastrointestinal issues (Al Ghadeer et al., 2021; Blumenfeld et al., 2023). Migraine progression and comorbidities correlation is believed to be caused by inflammation from pain and respiratory conditions or changes in neurotransmitter systems (Blumenfeld et al., 2023). Depression, anxiety, and reduced mental health directly increase risk with increased frequency of migraines, poorer health outcomes, and higher levels of disability (Al Ghadeer et al., 2021; Blumenfeld et al., 2023). Migraines also disrupt sleep and lower pain thresholds to increase pain intensity (Domitrz & Golicki, 2022). Working or school days with migraine cause a 50% reduction in productivity (Aguirrezabal et al., 2019). Although migraine patients generally maintain mobility and self-care abilities, other aspects of their lives are significantly affected, making migraines one of the most debilitating lifelong conditions (Buse et al., 2023). Chronic conditions impact productivity and overall well-being in prime working years (Domitrz & Golicki, 2022).

Risk factors for migraine include modifiable and nonmodifiable risks. Nonmodifiable factors include gender, age, and race. However, providers focus on modifiable risks or comorbid conditions like depression, stress, obesity, caffeine intake, medication overuse, and poor sleep (Blumenfeld et al., 2023). Despite the high prevalence of migraines and easily adjustable risk

factors, they remain underdiagnosed and inadequately treated (Buse et al., 2023). Individuals with episodic migraines received greater quality healthcare engagement and treatment compared to those experiencing more frequent migraine attacks (Buse et al., 2023). Additionally, healthcare and economic costs increase with mismanaged migraines due to reduced productivity at work, decreased functionality, increased medication use, and increased medical visits (Domitrz & Golicki, 2022; Harris et al., 2022). Ultimately, comorbidities, chronic migraine, and increased risk factors result in poor health-related quality of life and high levels of disability (Blumenfeld et al., 2023).

The Migraine Disability Assessment Scale (MIDAS) tool quantifies the impact of migraines on a patient's quality of life by assigning a score that reflects the degree of disability caused by migraines (Stewart et al., 2001). MIDAS scores allow healthcare providers to understand a patient's migraine-related disability and develop improved treatment management strategies (Dodick et al., 2019; Stewart et al., 2001). The tool consists of five core questions, each evaluating how migraines affect missed work or school days, reduced productivity, household work, and social impact (Dodick et al., 2019; Stewart et al., 2001). MIDAS is a cost-effective and easily implementable tool. Integrating the tool into routine assessments enables providers to quickly identify patients requiring more intensive interventions to reduce healthcare costs and ER visits (Lipton et al., 2022). Combining regular MIDAS assessments with targeted provider education may reduce disability rates and healthcare costs and significantly improve patient quality of life (Lipton et al., 2022; Stewart et al., 2001).

Migraine Treatments

Pharmacologic Interventions

Pharmacologic treatments for migraine include acute or abortive therapies and preventive or prophylactic therapies. Acute treatments alleviate the symptoms of a migraine attack at the onset and utilize medications, including a class of serotonin (5HT₁) receptor agonists medications also known as “triptans,” nonsteroidal anti-inflammatory drugs (NSAIDs), antiemetics, and combination analgesics (Blumenfeld et al., 2023; VanderPluym et al., 2021). The first-line treatments for mild to moderate migraines are acetaminophen and NSAIDs, and triptans are considered the first-line treatments for moderate to severe migraines (Mayans & Walling, 2018; VanderPluym et al., 2021). Triptans mechanism of action targets serotonin receptor agonists to constrict blood vessels and reduce inflammation (Blumenfeld et al., 2023; Mayans & Walling, 2018). More severe attacks may require multiple medications or combination therapies of acetaminophen, aspirin, or caffeine (Blumenfeld et al., 2023). Improved pain and function have been linked to the use of triptans, nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, dihydroergotamine, calcitonin gene-related peptide (CGRP) antagonists, and lasmiditan (VanderPluym et al., 2021). However, evidence supporting the effectiveness of opioids is limited (VanderPluym et al., 2021). Pharmacologic acute migraine treatment goals include providing rapid and consistent pain relief without recurrence, restoring the ability to function, minimizing the need for repeat doses or rescue medications, and reducing side effects (Blumenfeld et al., 2023).

For patients with chronic migraines, preventive pharmacologic therapies may be needed to reduce the severity, frequency, and duration of migraines. Preventative treatment includes

beta-blockers, anticonvulsants, Botox, and antidepressants (Buse et al., 2023; Ha & Gonzalez, 2019). Beta-blockers, such as propranolol and metoprolol, are commonly used to prevent migraines, particularly in patients who also have hypertension. Anticonvulsants like topiramate and valproate stabilize neural activity to help reduce migraine frequency (Blumenfeld et al., 2023; Buse et al., 2023; Lipton et al., 2022). Additionally, antidepressants, specifically tricyclic antidepressants, have shown increased efficacy in migraine prevention (Blumenfeld et al., 2023; Ha & Gonzalez, 2019). Newer treatments, such as erenumab, a calcitonin gene-related peptide (CGRP) inhibitor, block the pathways that cause inflammation and pain in the brain (Blumenfeld et al., 2023; Dodick et al., 2019; Z. Ghorbani et al., 2020). Botox inhibits the release of pain-related neurotransmitters, including inhibiting neurochemical exocytosis and modulating proinflammatory responses (Affatato et al., 2021). In individuals with chronic migraines, Botox significantly reduces the frequency of monthly migraine attacks, as well as pain intensity, medication consumption, emergency visits, and migraine-related disabilities (Affatato et al., 2021; Lanteri-Minet et al., 2022; Shaterian et al., 2022).. Botulinum toxin type A (BoNT-A) significantly reduces the frequency of attacks, pain intensity, and associated disabilities in individuals with chronic migraines, leading to improved quality of life and overall well-being (Shaterian et al., 2022). Botox is well tolerated by patients due to minimal side effects, including neck pain, paradoxical headache, or muscle tightness (Shaterian et al., 2022). Preventive treatments improve response to acute treatments and aim to reduce migraine attack frequency, severity, and disability (Blumenfeld et al., 2023).

Non-pharmacologic Interventions

Nonpharmacologic treatments can also include complementary therapies like acupuncture, massage, and mindfulness meditation. Acupuncture is thought to reduce the frequency of migraine attacks by stimulating specific points in the body to modulate pain receptors (Berger et al., 2021; Natbony & Zhang, 2020). Massage therapy may help reduce muscle tension and stress, which often are causative factors of migraine onset. Mindfulness and meditation practices have been shown to improve pain tolerance and emotional regulation, which may reduce migraine intensity and the emotional toll of living with chronic pain (Grazzi et al., 2023). Behavioral interventions, such as cognitive-behavioral therapy (CBT), have shown a reduction in migraine frequency and improve patients' quality of life by addressing the emotional and psychological components of chronic pain (Bae et al., 2021; Dodick et al., 2019). Biofeedback and progressive muscle relaxation techniques help reduce stress and are effective in reducing migraine attacks (Grazzi et al., 2023). Lifestyle modifications, including increased exercise, hydration, sleep, and nutrition, help improve migraine pain and frequency (Grazzi et al., 2023). Utilizing pharmacologic and nonpharmacologic strategies offers a more holistic and integrative approach to migraine intervention.

Quality of life (QoL) encompasses the broader impact of migraines on a patient's daily functioning, emotional well-being, and overall health. Traditional treatment approaches often focus primarily on alleviating headache symptoms, which can lead to a disconnect between clinical outcomes and patients' lived experiences. By integrating the MIDAS tool into care, healthcare providers can gain valuable insights into how migraines affect patients' lives and create personalized treatment plans (Stewart et al., 2001). The tool aims to involve patients in

their care and track the effectiveness of interventions (Stewart et al., 2001). Ultimately, prioritizing quality of life in migraine management fosters a holistic approach that aims to enhance both symptom relief and the overall well-being of individuals living with chronic migraines.

Scoping Review: Quality of Life Assessment Tools

A comprehensive search strategy using PRISMA (Figure 5. Appendix A) guidelines between September 4th and 14th, 2024, across databases including Cat Search, PubMed, CINAHL Complete, MEDLINE, ANA Journal, NIH, and the Cochrane Library (Page et al., 2021). Peer-reviewed articles published in English from January 1, 2019, to September 14, 2024, were prioritized; however, the search was extended to 2011 due to limited relevant studies. The search used keywords such as “chronic migraine,” “migraine disability screening tool,” “provider education,” and “MIDAS,” resulting in 638 articles. After removing duplicates and ineligible studies, 250 articles were screened, and 11 of 59 articles met the inclusion criteria. The review focused on randomized controlled trials, observational studies, meta-analyses, and cohort studies that examined chronic migraine patients using quality-of-life assessment tools, provider education, and interventions related to quality-of-life scores in primary care settings. Studies were required to compare quality of life scores with at least one migraine treatment. Studies focusing on other types of headaches, non-quality-of-life assessment tools, or unrelated treatments were excluded. Data extracted from the studies included information on study design, patient characteristics, interventions, provider adherence to quality-of-life treatments, and outcomes such as quality-of-life improvements and reductions in migraine severity or frequency.

Migraine Disability Assessment Scale

The Migraine Disability Assessment Scale (MIDAS) is a validated tool that measures the impact of migraines on daily functioning and overall quality of life (Stewart et al., 2001). The tool is a five-part questionnaire to assess disability severity, as seen in Figure 6 in Appendix A (Stewart et al., 2001). The tool allows providers to understand how migraines disrupt a patient's ability to perform routine tasks, such as work, household duties, and social activities (Stewart et al., 2001). Several studies have confirmed the reliability and validity of MIDAS, with intense internal consistency and test-retest reliability (Almarzooqi & Zidan, 2024; A. Ghorbani & Chitsaz, 2011). Validity was seen in the tool as it showed that patients with higher headache-related disability also tended to experience more frequent and severe headaches (Almarzooqi & Zidan, 2024; Zandifar et al. 2014). Prospective designs and collected longitudinal data assessed treatment effectiveness, demonstrating that the MIDAS tool is valid and reliable, particularly for tracking changes in migraine-related disability over time (Almarzooqi & Zidan, 2024; Carvalho et al., 2021). Compared to a generic health survey (SF-36), patients with episodic headaches had significantly lower MIDAS scores than those with chronic headaches (Zandifar et al., 2014). MIDAS demonstrated high reliability, with Cronbach's alpha values above 0.8, validating the tool for assessing headache-related disability and internal reliability in evaluating migraine-related disability before and after treatment (Almarzooqi & Zidan, 2024; Carvalho et al., 2021; A. Ghorbani & Chitsaz, 2011). Results showed a significant correlation between MIDAS scores and headache frequency and overall disability, supporting its effectiveness in measuring the impact of headaches on daily life (Almarzooqi & Zidan, 2024; Carvalho et al., 2021; Zandifar et al. 2014).

Reductions in MIDAS scores correlated with clinically meaningful improvements, with patients showing an increased ability to manage daily tasks and maintain productivity (Affatato et al., 2021; Carvalho et al., 2021; Steiner et al., 2022). MIDAS effectively assesses changes in disability over time to help providers evaluate treatment outcomes. Responsiveness to treatment outcomes enables healthcare providers to make informed decisions and adjust interventions based on measurable changes in disability, which validated the tool's ability to measure treatment effectiveness (Affatato et al., 2021; Almarzooqi & Zidan, 2024; Carvalho et al., 2021; Z. Ghorbani et al., 2020). Patients with adjusted treatments after MIDAS introduction achieved lower MIDAS post-scores and experienced improved outcomes in terms of work productivity and overall quality of life (Carvalho et al., 2021; Lipton et al., 2022).

Headache Impact Test

The Headache Impact Test (HIT-6) assessment tool reviews the overall impact of headaches on various aspects of a patient's life, including pain, social functioning, role functioning, cognitive function, vitality, and psychological distress (A. Ghorbani & Chitsaz, 2011; Yang et al., 2011). HIT-6 is similar to other migraine-specific tools, including MIDAS, for measuring the functional limitations and decline caused by migraines (Yang et al., 2011; Zandifar et al., 2020). HIT-6 provides a broader assessment of the overall impact of headaches and is more practical in time-constrained environments, including primary care (A. Ghorbani & Chitsaz, 2011; Lipton et al., 2022; Zandifar et al., 2020)

The reliability and validity of HIT-6 were shown with Cronbach's alpha values above 0.80 to confirm its internal consistency among patients aged 18 and older (A. Ghorbani & Chitsaz, 2011; Yang et al., 2011). HIT-6 test-retest reliability was observed in clinical and

population-based studies evaluating headache impact over time (Yang et al., 2011; Zandifar et al., 2020). Limitations of HIT-6 include decreased specificity due to its focus on the general impact of headaches rather than headache-related disability (Castro Zamparella et al., 2024; A. Ghorbani & Chitsaz, 2011). HIT-6 may have limited effectiveness for tracking specific treatment outcomes due to its broad scope and reduced focus on reducing migraine frequency and severity (Castro Zamparella et al., 2024; A. Ghorbani & Chitsaz, 2011).

Both MIDAS and HIT-6 had a strong correlation ($r = 0.94$) and similarly assessed headache-related disability to show comparable reliability and validity (A. Ghorbani & Chitsaz, 2011). No significant differences were found ($p=0.03$) in scores between episodic and chronic migraine patients when comparing HIT-6 to MIDAS, suggesting that both tools are equally effective in measuring disability across different migraine populations (Castro Zamparella et al., 2024; A. Ghorbani & Chitsaz, 2011). MIDAS results in a more specific assessment of the impact of chronic migraines due to focused disability-related outcomes (Affatato et al., 2021; A. Ghorbani & Chitsaz, 2011; Medrano Martinez et al., 2021). MIDAS tool's validated scoring system also distinguishes between episodic and chronic headaches more effectively, offering more precise insight into the severity of migraine disability, which is critical for tailored treatment planning (Affatato et al., 2021; A. Ghorbani & Chitsaz, 2011; Medrano Martinez et al., 2021). MIDAS tool can be easily implemented in the clinical workflow to improve treatment effectiveness (A. Ghorbani & Chitsaz, 2011; Stewart et al., 2001) Appropriate training in MIDAS significantly enhances primary care providers' confidence and effectiveness in diagnosing and treating migraines, which directly impacts patient care (Minen et al., 2016; Verhaak et al., 2021). MIDAS's focus on functional disability allows a more comprehensive

treatment plan to reduce migraine-related quality of life scores (Almarzooqi & Zidan, 2024; Carvalho et al., 2021; A. Ghorbani & Chitsaz, 2011). HIT-6 provides less detailed information on migraines' effect on daily life, which limits its effectiveness in tailoring treatment (Yang et al., 2011; Zandifar et al., 2020).

Scoping Review: Provider Education

Migraine Education Program

Migraine is often underdiagnosed and inadequately managed, and primary care providers often lack specific training on migraine diagnosis, treatment, and management (Minen et al., 2016; Verhaak et al., 2021). Migraine education programs implemented for primary care providers aim to explore provider knowledge and current interventional impact (Minen et al., 2016; Verhaak et al., 2021). Barriers in chronic migraine management and patient outcomes drove increased provider education (Minen et al., 2016; Verhaak et al., 2021). Providers were questioned on familiarity and confidence with migraines, including diagnosis, treatment, and medication use, using a combination of quantitative surveys and qualitative feedback modules (Minen et al., 2016; Verhaak et al., 2021). Results showed notable knowledge gaps in managing migraines and unfamiliarity with current treatment guidelines (Minen et al., 2016; Verhaak et al., 2021). Providers also did not consistently assess or manage common migraine comorbidities like depression and anxiety (Minen et al., 2016; Verhaak et al., 2021). Resources were underutilized, including non-pharmacological interventions like CBT or the ordering of preventative treatments (Minen et al., 2016; Verhaak et al., 2021). Providers desired further education on migraine prevention and treatment strategies; however, time constraints and low attendance resulted in training sessions (Minen et al., 2016; Verhaak et al., 2021).

After provider education, pre- and post-surveys identified significant knowledge deficits, particularly in epidemiology, pathophysiology, and management (Minen et al., 2016; Verhaak et al., 2021). Assessing provider's knowledge and confidence in migraine care also resulted in knowledge gaps, particularly in recognizing medication overuse headache (MOH) related to triptans and using evidence-based guidelines for preventive medications (Minen et al., 2016; Verhaak et al., 2021). Although familiar with migraine epidemiology and common comorbidities, providers expressed a need for further education (Minen et al., 2016; Verhaak et al., 2021). Both groups requested a more accessible, engaging, and integrated education program that would be more feasible to practice (Minen et al., 2016; Verhaak et al., 2021).

Continuing Medical Education

There is a gap in migraine education among medical providers, especially regarding diagnostic criteria, triggers, and management of migraines, resulting in the underdiagnosis and treatment (Choudry et al., 2022; Minen et al., 2016; Patwardhan et al., 2006). Continuing Medical Education (CME) modules implement migraine research and information into practice to improve patient management (Choudry et al., 2022; Patwardhan et al., 2006). Pre-survey scores found gaps in provider knowledge on pathophysiology and managing migraines with improved post-survey scores after CME education (Choudry et al., 2022; Patwardhan et al., 2006). However, post-intervention scores revealed gaps in understanding migraine prevalence and the history-taking process necessary for accurate diagnosis. CMEs may create biased results due to elected education rather than mandated education for providers (Choudry et al., 2022; Patwardhan et al., 2006).

Migraine Education Programs (MEP)s are usually ongoing, interactive programs with feedback loops that enable ongoing education, whereas Continuing Medical Education (CME) usually involves a one-time education (Choudry et al., 2022; Verhaak et al., 2021). They often involve training, surveys, and patient interaction, allowing providers to refine their understanding over time, while MEP and CMEs educate providers in managing migraines. MEPs aim to improve patient care, whereas CME focuses on short-term knowledge gain (Choudry et al., 2022; Verhaak et al., 2021). MEP focuses on enhancing provider education on migraine diagnosis, management, and the use of the MIDAS tool while also addressing gaps in migraine triggers and treatment interventions (Minen et al., 2016; Verhaak et al., 2021). MEP provides ongoing educational feedback to improve diagnostic accuracy and long-term patient outcomes (Minen et al., 2016; Verhaak et al., 2021). Additionally, MEP offers a more patient-centered approach by combining provider education with direct patient engagement (Minen et al., 2016; Verhaak et al., 2021). MEPs offer a more sustainable education program that focuses on improving quality of life scores rather than the focus on short-term knowledge gains found in CME programs (Choudry et al., 2022; Minen et al., 2016; Verhaak et al., 2021).

PICOT Question

Chronic migraine management in primary care settings often lacks the use of standardized tools for assessing migraine-related disability and traditionally only focuses on symptom relief. The underutilization of the MIDAS scale and the undereducation of migraines limits adequate treatment availability for patients, ultimately negatively impacting quality of life (Lipton et al., 2003). Despite the established efficacy of preventative therapies for managing chronic migraines, a lack of education among healthcare providers significantly limits their use.

This gap in knowledge leads to inadequate recognition of appropriate treatment options, resulting in missed opportunities for patients to benefit from effective management strategies (Dodick, 2020). To reduce migraine-related disability, increased provider education and utilization of standardized MIDAS tools in practice are necessary (Affatato et al., 2021). The quality improvement project aims to answer a PICO statement. In healthcare providers managing patients with chronic migraines (P), the implementation of comprehensive migraine education for providers, including the integration of the MIDAS tool into practice, and the education on appropriate treatments (I) aim to improve treatment planning and enhance provider confidence (C). The implementation will evaluate the effectiveness of interventions based on MIDAS scores and increased use of appropriate treatments, including Botox and preventive therapies, ultimately leading to improved quality of life for patients (O). The project will evaluate treatment effectiveness and impact on quality of life (O) by assessing providers' pre- and post-testing scores on knowledge of the MIDAS tool and confidence in migraine treatment implementation. Additionally, the project aims to improve MIDAS scores in a small patient population to assess quality of life improvements after provider education (O).

CHAPTER TWO

QUALITY IMPROVEMENT PROPOSAL

Introduction

Chronic migraines are a debilitating neurological condition that affects millions worldwide and significantly impairs patients' daily lives and overall quality of life (Estave et al., 2021). The sixth leading cause of days lived with disability is migraines (Aguirrezabal et al., 2019). In the United States alone, it is estimated that migraines cost the economy over \$36 billion annually in healthcare expenses and lost productivity (Buse et al., 2018). Beyond the physical symptoms of migraine, patients also have feelings of isolation, stigma, and emotional distress, including frustration, fear, avoidance, and guilt (Buse et al., 2023; Estave et al., 2021). Improvements in diagnosing and treating migraines have been made; however, patients still have significant gaps in accessing care and receiving effective interventions (Lipton et al., 2022). Gaps in migraine care highlight the need for screening tools like MIDAS to understand disability patients face (Stewart et al., 2001)

The quality improvement project aims to improve migraine management in a small primary care clinic in Central Montana, by implementing the MIDAS assessments with targeted provider education to enhance knowledge and treatment types. Increasing provider knowledge significantly reduces the number of days lost to migraines, lessens pain intensity, and decreases medication use (Aguirrezabal et al., 2019; Dodick et al., 2019). Group interventions to providers found primary care would be a suitable setting for implementing education (Estave et al., 2021). Effective migraine treatment involves a collaborative, interprofessional healthcare approach with evidence-based planning and evaluation (Aguirrezabal et al., 2019). The project seeks to

implement the Migraine Disability Assessment tool (MIDAS) and provide targeted provider education on migraine management and Botox treatment, aiming to improve patient outcomes and reduce migraine-related disability in a small primary care clinic. Ultimately, shifting care from a symptom-based to a more holistic disability-focused approach aims to improve patient's quality of life scores and reduce migraine-related disability.

PICOT Question

Chronic migraine management in primary care settings often lacks the use of standardized tools for assessing migraine-related disability and traditionally only focuses on symptom relief. The underutilization of the Migraine Disability Assessment tool (MIDAS) and the undereducation of migraines limits adequate treatment availability for patients, ultimately negatively impacting quality of life (Lipton et al., 2003). Chronic migraines are frequently under-assessed and undertreated, leading to significant impairment in patients' quality of life and increased healthcare costs (Buse et al., 2018; Estave et al., 2021). Additionally, there is a lack of standardized processes for evaluating and documenting migraines, contributing to inconsistent and often inadequate management. National guidelines emphasize the need for structured assessment tools like the Migraine Disability Assessment (MIDAS) tool to support effective chronic migraine management and improve patient outcomes (Ailani et al., 2021; Stewart et al., 2001). Despite the established efficacy of preventative therapies for managing chronic migraines, a lack of education among healthcare providers significantly limits their use. This gap in knowledge leads to inadequate recognition of appropriate treatment options, resulting in missed opportunities for patients to benefit from effective management strategies (Dodick, 2020). To

reduce migraine-related disability, increased provider education and utilization of standardized MIDAS tools in practice are necessary (Affatato et al., 2021).

The quality improvement project aims to answer a PICO statement. In healthcare providers managing patients with chronic migraines (P), the implementation of comprehensive migraine education for providers, including the integration of the MIDAS tool into practice, and the education on appropriate treatments (I) aim to improve treatment planning and enhance provider confidence (C). The implementation will evaluate the effectiveness of interventions based on MIDAS scores and increased use of appropriate treatments, including Botox and preventive therapies, ultimately leading to improved quality of life for patients (O). The project will evaluate treatment effectiveness and impact on quality of life (O) by assessing providers' pre and post-testing scores on knowledge of the MIDAS tool and confidence in migraine treatment implementation. Additionally, the project aims to improve MIDAS scores in a small patient population to assess quality of life improvements after provider education (O).

Organizational Microsystem Assessment

A primary care clinic in Central Montana provides comprehensive primary care and offers various services, including primary care, medication-assisted treatment, cosmetic/aesthetic services, and VA disability exams. The clinic's team consists of two Nurse Practitioners (NPs), one Medical Assistant (MA), two Registered Nurses (RNs), and one receptionist. One NP owns and operates the clinic, which receives support from the RNs in clinical decision-making and operational management. The clinic contains five exam rooms, a waiting area, and two procedure rooms. The practice site accepts patients with Medicare, Medicaid, and private insurance. The clinic has 928 patients, with 48 who have a diagnosis of migraine headaches.

The second part of the project will target the educational needs of an urgent care. The urgent care consists of five physician assistants, four nurse practitioners, and two physicians. The clinic is consistently staffed with three nurses and two receptionists. The urgent care has 18 examination/procedure rooms and a waiting area with laboratory and medical imaging access. On average, the urgent care sees 30 patients a day. The clinic's medical director requested more education on migraine management in an acute setting to aid in improving migraine interventions. An average of 5 patients per week receive cosmetic Botox therapy, and two patients per week receive Botox for migraine treatment. The clinic recognizes the potential to expand Botox use as a therapeutic intervention for individuals who experience chronic debilitating migraines. The urgent care sees many acute attacks of migraines, with approximately 15 migraine patients per month. Given both clinic's large patient variance range and their role in the community, there is an opportunity to enhance migraine care.

Currently, migraine management at the clinics involves standard migraine treatment practices. National migraine management guidelines include using standardized assessment tools and exploring newer treatments like Botox (onabotulinumtoxinA) (Affatato et al., 2021; Domitrz & Golicki, 2022). The American Headache Society (AHS) recommends tools such as the Migraine Disability Assessment (MIDAS) tool and supports Botox as an effective preventive treatment for chronic migraines (Ailani et al., 2021; Stewart et al., 2001). The American Academy of Neurology (AAN) recommends Botox for chronic migraine treatment for patients who have yet to respond to other preventive therapies, emphasizing the importance of regular reassessment using standardized tools (Affatato et al., 2021). Evidence-based guidelines are followed by implementing the standardized screening tool into practice and educating providers

on migraine therapies to help promote more opportunities to identify chronic migraine patients and increase opportunities for preventative therapies like Botox.

Stakeholders

Many Key stakeholders are involved in the quality improvement project. The project leader conducts baseline and post-education knowledge assessments, leads educational sessions, facilitates the integration of the Migraine Disability Assessment tool (MIDAS), and monitors outcomes. Primary care providers use the MIDAS tool to assess migraine disability during patient visits, contribute feedback on its application, and support ongoing improvements in migraine care based on assessment outcomes. Clinic staff will aid in the practical application of the MIDAS tool by helping providers complete assessments with patients and gather and input data. Clinic administrators will coordinate, help monitor workflow impacts, and address operational challenges. Patients participate in screenings and provide insights on migraine impacts on quality of life.

Specific Aims

Specific aims for the quality improvement project focused on implementing the Migraine Disability Assessment tool (MIDAS) (see Figure 6 Appendix A) to improve chronic migraine management and expand its use for Botox therapy. The first aim of the quality improvement project is to incorporate the MIDAS tool into standard assessments within the primary care and urgent care clinics to facilitate a more comprehensive understanding of migraine burden and identify patients with chronic migraine. The second aim will develop a targeted provider education for the clinic providers. It will encompass education on the pathophysiology of migraines, the MIDAS tool and its incorporation into practice, and evidence-based treatment

options, focusing on Botox for chronic migraines to enhance provider knowledge and confidence in migraine treatment. The third is to conduct a four-week follow-up with individuals with a MIDAS score above 11 or moderate disability to reassess their scores and review any changes in therapies or new interventions. By collecting data on MIDAS scores before and after treatment, the project aims to demonstrate an improvement in quality-of-life scores and a reduction in migraine-related disability. The specific aims' outcomes goal of significant reduction in migraine-related disability and an improvement in patient quality of life, as indicated by MIDAS scores.

Methods

The project used the Institute for Healthcare Improvement (IHI) model as a guiding framework to incorporate elements for setting implementation goals, identifying measures, making changes, and utilizing the Plan-Do-Study-Act (PDSA) cycle (Institute for Healthcare Improvement, 2020). PDSA model is visually represented in Figure 7, in Appendix A. The plan phase focuses on implementing the Migraine Disability Assessment tool (MIDAS) and provider education to improve migraine management. The education involves MIDAS application, integrating MIDAS assessments into routine patient care, and collecting baseline data on migraine-related disability. The education targets providers and support staff at both clinics. It will include detailed training on the MIDAS tool, a comprehensive PowerPoint presentation on chronic migraine management covering pathophysiology, diagnostic criteria, and expanded treatment options, including Botox for chronic migraine. Pre- and post-training assessments will measure providers' knowledge, confidence, and proficiency using a Likert scale survey delivered through Qualtrics (see Figure 8 in Appendix A).

The MIDAS screening tool will be introduced as a standard procedure for assessing disability in adults diagnosed with chronic migraines. Adult patients identified with a migraine history or chief migraine complaint will complete the MIDAS assessment from the front desk staff. Providers will review MIDAS scores to guide treatment plans and document any interventions. In the Do phase, RNs, MAs, and receptionists will provide patients with MIDAS questionnaires before being seen by providers. The MIDAS tool and any adult presenting with migraines or a relevant chief complaint will be completed. The provider will review the MIDAS score, document any interventions, and ensure patients with scores indicating significant disability (>11) receive a four-week follow-up. This process change aims to create a sustainable, structured approach for assessing migraine impact and refining intervention planning. The providers will utilize and document MIDAS scores to ensure accurate data collection and effective implementation of the education. During the study phase, data analysis of pre-and post-provider education scores (see Figure 8 in Appendix A), MIDAS scores, and patient treatment will be evaluated for changes in migraine-related disability and provider confidence.

Individuals with positive MIDAS screenings will undergo a four-week follow-up to assess progress and the efficacy of interventions. Patients with positive MIDAS scores (>11) will also be scheduled for a four-week follow-up appointment, during which the provider will reassess the score and document ongoing interventions, including pharmacologic, non-pharmacologic, and referral-based treatment.

The Act phase will focus on refining the implementation of the MIDAS tool and enhancing provider education based on insights from the data analysis. The overall aim of the project is to implement the MIDAS tool as a routine part of care for all patients who experience

migraines, support ongoing assessment, and improve patient outcomes. The initial PDSA phase will involve providers from both clinics over a six-week period for a pilot approach, allowing for a focused, smaller-scale project before considering broader implementation. PDSA cycles will be used to improve the workflow and educational materials as needed. The project has the potential to be expanded to a six to 12-month period to examine further changes in MIDAS scoring and intervention changes, which falls beyond the scope of this DNP project.

Data Collection and Analysis

Data collection for the provider education aspect of this project will assess baseline knowledge, confidence, and proficiency in using the MIDAS tool for migraine management. Providers will participate in a pre-and post-survey administered via PowerPoint in Qualtrics, where they will rate their responses on a Likert scale (1 to 5, with 1 = Strongly Disagree and 5 = Strongly Agree). This will measure the providers' knowledge and confidence in migraine management, explicitly using the MIDAS tool. Changes in knowledge and confidence will be analyzed using paired t-tests to determine if the difference in pre- and post-survey scores is statistically significant, suggesting improved understanding and comfort with the tool. Additionally, a bar chart will be created to visualize the average scores for each survey question before and after the educational session, highlighting any notable changes. Providers will document MIDAS screenings on paper forms, with the reverse side of each form used to record the specific intervention applied, providing insight into the types of interventions used and helping track improvement in provider knowledge and confidence in managing migraines.

In implementing the MIDAS tool, data will be collected to track the total number of migraine patients, the frequency of MIDAS assessments, and the interventions administered.

Specifically, the number of migraine patients seen during the project will be recorded, along with the number who completed a MIDAS assessment, giving insight into the extent of tool utilization. For patients with positive MIDAS scores, data will be gathered on their initial scores, intervention types, and follow-up scores four weeks post-intervention to evaluate any changes in migraine-related disability.

Data analysis will include descriptive statistics on MIDAS scores at baseline, focusing on the extent of migraine-related disability and capturing the percentage of patients with chronic migraines. This will be visualized with a bar chart showing the total number of patients screened, along with those identified with chronic migraines, to illustrate the tool's impact on identifying migraine patients with high disability. To analyze intervention types, frequencies and percentages for each treatment type will be calculated, with a bar chart depicting the distribution of intervention types among patients. To assess the effectiveness of interventions, initial and follow-up MIDAS scores will be compared using paired t-tests to identify any statistically significant improvements. A paired line chart will visually show each patient's initial and follow-up MIDAS scores, illustrating individual responses to treatment over time. This data collection and analysis approach will ensure that provider education outcomes and patient-level impacts of the MIDAS tool are effectively captured, guiding further refinement in migraine management.

Implementation Timeline

The project timeline will take place over six weeks, focusing on increased use of the Migraine Disability Assessment Tool (MIDAS) and enhanced provider education on migraine disability in a small primary care clinic and urgent care setting. The visual timeline is represented in Figure 9 in Appendix A. In weeks 1 and 2, all providers will complete baseline assessments to

evaluate knowledge of migraines, use of the MIDAS tool, and familiarity with treatments for chronic migraines. An educational PowerPoint presentation on migraine assessment and management will be administered, covering areas such as migraine pathophysiology, diagnosis and management, the use of the MIDAS tool, and Botox as a treatment option for chronic migraine patients. The aim is to equip providers with knowledge and practical strategies they can implement in their practice. In weeks 3 and 4, patients diagnosed with migraines will be identified, and medical records will be searched for any previous migraine-related screenings. Providers will begin incorporating the MIDAS tool into patient assessments and also complete a post-education assessment to evaluate changes in their knowledge and confidence in using the MIDAS tool.

Any MIDAS screenings will be collected weekly in a secure encrypted Excel document, and any patient-identifying information will be removed. A four-week follow-up will be scheduled for patients who initially scored positively on the MIDAS tool to assess changes in scores and provide interventions. In Weeks 5 and 6, providers will ensure the MIDAS tool is effectively integrated into patient care. Post-test results and screening scores will be analyzed to assess improvements in provider knowledge and changes in migraine management. Ongoing long-term evaluation of positive MIDAS screened patient follow-up and analysis of interventions and improvement to MIDAS scores could be monitored for 6 months to continue the project beyond its initial 6-week implementation for sustainability in monitoring patient outcomes.

Evaluation

Doran's SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) framework focuses on enhancing and clarifying objectives (Bjerke & Renger, 2017). SMART

goals are seen in Table 1 in Appendix B. Over a six-week period, a small primary care clinic and urgent care in Central Montana will include several SMART goals. The project's SMART goals are represented in Table 1 in Appendix B; the specificity involves integrating the Migraine Disability Assessment (MIDAS) screening tool into the clinic's practice. The second goal is to train 100% of the clinic's providers within the first two weeks on the proper use of the MIDAS tool and provide education on chronic migraine management and the benefits of increasing the use of Botox. The aim is to ensure that 80% of patients diagnosed with migraines are assessed using MIDAS to understand better how migraines impact their daily lives. The effectiveness of this training will be measured by at least a 20% increase in providers' post-test scores compared to pre-test results, reflecting improved knowledge and confidence in managing migraines. The project will take place over six weeks; within the first two weeks, all providers will be trained, and data will be collected. A pre and post-MIDAS score will be collected for every patient with a positive initial MIDAS score during the four-week follow-up visit. SMART goals are relative to practice with a goal of improved diagnosis and treatment of chronic migraines, which will lead to better patient outcomes and provider satisfaction.

Barriers And Challenges

The need for standardized migraine assessments poses a barrier to integrating a disability-focused care process. Challenges of EMR access limitations in tracking MIDAS scores and survey completion. The environment of a small clinic and competing priorities may impact implementation. Additionally, the time constraints of the six-week implementation limit the opportunity for thorough provider training, data collection, and patient follow-up. The Fishbone Diagram (See Figure 10. Appendix A) identifies impacts on the project's successful

implementation. Varied provider familiarity and confidence in using the Migraine Disability Assessment tool (MIDAS) may affect engagement.

Patients may face reluctance for newer treatment plans, including preventive therapies such as Botox, which may raise concerns about side effects or costs (Dodick, 2020). MIDAS is specifically designed for headache disability, which limits its ability to capture the full impact of migraines on physical health. MIDAS fails to differentiate between specific headache types, such as episodic and chronic migraines or tension-type headaches (TTH) and fails to assess conditions like medication overuse headaches (MOH) (Zandifar et al., 2020). The MIDAS tool is effective in assessing disability and determining eligibility for preventive treatments; however, there are inconsistencies in the ability to detect changes or responses to non-pharmacological interventions, making it less reliable for tracking progress over time (Carvalho et al., 2021). The inability to blind participants may introduce bias in the MIDAS questionnaire responses, as patients' subjective experiences may be influenced (Aguirrezabal et al., 2019). Variability in insurance coverage for treatments like Botox might create access disparities that prevent patients from benefiting from costly preventative therapies (Affatato et al., 2021). Providers may resist MIDAS implementation into practice or be unfamiliar with its use (Lipton et al., 2022).

Additionally, the group dynamic of educational sessions may influence outcomes, making it challenging to determine whether improvements are due to the intervention or social interaction (Aguirrezabal et al., 2019). Providers may not consistently document MIDAS scores or interventions during visits, leading to incomplete data collection. Patients may not attend follow-up visits, especially if they are at the urgent care site. Addressing these barriers to the

project allows for improvements to enhance the overall success of interventions in improving patient outcomes.

Safety And Confidentiality

Prior to project implementation, stakeholder support and IRB approvals will be obtained. Providers will receive training on privacy regulations and the importance of safeguarding patient information. Including a secure paper Migraine Disability Assessment (MIDAS) scores sheet. Completed MIDAS score sheets will be securely stored in locked cabinets and accessed only by authorized personnel, as well as documenting and storing patient information in a secure, encrypted Excel document with no patient identifiers. Personal identifiable information will be removed from data collection on MIDAS scoring and recorded intervention. All patient data collected through the MIDAS assessments will be securely stored and collected each week by the evaluator, adhering to Health Insurance Portability and Accountability Act (HIPAA) regulations and ensuring that only authorized personnel have access. Data scoring and intervention will be recorded daily on a secure Excel document with no patient identifiers. Patient consent will be obtained before MIDAS screening, implementation of new treatments, or changes to current treatments. The project will also follow best practices for Botox administration, including proper dosing and monitoring for adverse effects to ensure patient safety (Dodick et al., 2019). Ensuring patient safety and confidentiality is essential to mitigate risk or patient harm.

Conclusion

In conclusion, this project aims to establish an Enhanced Standard of Care by implementing a standardized approach to assess migraine disability, prioritizing patient quality of life through structured use of the MIDAS tool (Medrano et al., 2021). By enhancing provider

knowledge and confidence, this initiative supports Improved Provider Confidence and Clinical Skills in managing migraines, allowing providers to more accurately recognize the disability caused by migraines and deliver targeted interventions. This development strengthens the clinic's capacity to offer high-quality, disability-centered care (Minen et al., 2016; Verhaak et al., 2021). Furthermore, by focusing on Positive Patient Outcomes and Quality of Life, this project aims to improve patients' daily experiences through more effective assessment and treatment, such as Botox for chronic migraine cases, shifting the focus from mere symptom relief to meaningful disability reduction (Al Ghadeer et al., 2021; Steiner et al., 2022). Finally, this work holds Long-Term Benefits for the Community, potentially reducing emergency visits and long-term healthcare costs and promoting sustained community health improvements (Eltrafi et al., 2023). Together, these advancements demonstrate a commitment to elevating migraine care and fostering better outcomes for both individual patients and the broader community

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

IMPROVING CHRONIC MIGRAINE ASSESSMENT IN PRIMARY CARE: A QUALITY
IMPROVEMENT PROJECT

Contribution of Authors and Co-Authors

Manuscript in Chapter 3

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Contributions: Manuscript evaluation, content refinement, structural direction, framework advising, outcome monitoring, material validations.

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Contributions: Secondary manuscript evaluation and developmental input

Manuscript Information

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Improving Chronic Migraine Assessment in Primary Care: A Quality Improvement Project

Status of Manuscript

- ☒ Prepared for submission to a peer-reviewed journal
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Abstract

Background: Migraine is a leading cause of disability, yet standardized assessment tools are underutilized in primary care settings. The MIDAS (Migraine Disability Assessment Scale) offers a structured approach to evaluating migraine-related disability, but its integration into clinical practice remains inconsistent.

Local Problem: A small primary care clinic and urgent care in Montana lacked a standardized approach to assessing migraine impact, limiting effective treatment planning. Prior to the intervention, 0% of migraine patients had a documented disability assessment, and provider confidence in using disability-based tools was low.

Methods: Participants included primary care providers (PCPs) and adult patients diagnosed with migraines. Over a six-week quality improvement (QI) initiative, provider education and the use of the MIDAS tool were implemented. Outcomes were measured biweekly, including provider confidence in assessing migraine-related disability, the percentage of eligible patients receiving MIDAS screening, and treatment modifications based on MIDAS scores.

Intervention: Providers viewed and completed an educational session covering migraine pathophysiology, treatment options, and the role of the MIDAS tool. The screening tool was integrated into practice with patients with a chief complaint of headache or migraine. Structured guidance on interpreting results and optimizing treatment plans for chronic migraine patients was provided.

Results: Among 35 eligible patients, 43% (n=15) received MIDAS screening, a significant improvement from baseline (0%). Provider-reported confidence in using the tool

increased by 100%. Of those with moderate to severe disability (MIDAS score ≥ 11), 70% (n=7) had treatment modifications, including 50% (n=5) receiving preventive therapy adjustments. Patient-reported quality of life scores improved by an average of 33% over six weeks.

Conclusion: Standardizing migraine disability assessment with the MIDAS tool improved provider confidence, guided treatment adjustments, and enhanced patient outcomes. Long-term follow-up is needed to evaluate sustained integration and impact.

Keywords: Migraine, MIDAS tool, primary care, quality improvement, disability assessment, provider education

Introduction

Chronic migraines are a debilitating neurological condition that affects millions worldwide and impacts an individual's quality of life, productivity, and overall well-being (Estave et al., 2021). Migraines affect approximately 39 million Americans, with women being disproportionately affected at a rate three times higher than men (Estave et al., 2021). Rural populations with migraine face barriers to care, including limited access to specialists and fewer healthcare resources, exacerbating the burden of migraine-related disability (Burch et al., 2019; Lipton et al., 2021). Improvements in diagnosing and treating migraines have been made; however, patients still have significant gaps in accessing care and receiving effective interventions leading to disability and reduced daily functioning (Lipton et al., 2022). Gaps in migraine care highlight the need for screening tools like MIDAS to understand disability patients face (Stewart et al., 2001). Evidence suggests that standardized screening tools, such as the Migraine Disability Assessment Scale (MIDAS), can improve provider recognition of migraine

severity and optimize treatment strategies (Steiner et al., 2020; Lipton et al., 2021). Additionally, MIDAS implementation has been shown to improve diagnosis, enhance treatment decisions, and facilitate early interventions that mitigate long-term disability (Affatato et al., 2021; Domitrz & Golicki, 2022).

To address this gap, the United States Preventive Services Task Force (USPSTF) and the American Headache Society (AHS) recommend a structured approach to migraine assessment and management, emphasizing patient-centered care and disability-focused treatment plans (AHS, 2023; USPSTF, 2023). The MIDAS tool offers a validated method for evaluating the functional impact of migraines by quantifying disability based on missed workdays, household activities, and social engagements (Steiner et al., 2020). Incorporating MIDAS into routine practice shifts migraine management from a symptom-based approach to a comprehensive, patient-centered approach that focuses on quality-of-life measures to reduce the frequency of migraines.

Problem Description

In a rural primary care clinic and urgent care in Montana, there is an inconsistent understanding of headache-related disability and a lack of standardized assessment tools for migraine management. Chronic migraines can lead to severe disability, limiting patients' abilities to engage in work, social activities, and everyday tasks. Evidence indicates that the negative consequences extend beyond physical pain, affecting mental health and well-being. (Lipton et al., 2021). Additionally, qualitative observations suggest that many providers rely solely on patient-reported pain severity rather than functional impairment, leading to underestimation of migraine burden and suboptimal treatment selection.

Primary care providers (PCPs) play a crucial role in migraine diagnosis and management, especially given the rural area of Montana and limited access to specialists. However, gaps in provider knowledge and limited use of screening cause missed opportunities for intervention. As a result, patients continue to experience high rates of disability, with inadequate access to both pharmacologic and non-pharmacologic treatment options (citation). A comprehensive approach to migraine care including evaluation of both migraine related disability and quality of life, allows providers to optimize treatment modalities.

Evidence-Based Synthesis of Recommended Practice Change

Implementing the Migraine Disability Assessment Scale (MIDAS) with provider education may significantly benefit patients who experience migraines, as shown in various studies (Minen et al., 2016; Verhaak et al., 2021). MIDAS is a validated tool that measures the impact of migraines on daily functioning and overall quality of life. Research indicates that patients with higher MIDAS scores experience more frequent and severe headaches (Almarzooqi & Zidan, 2024; Zandifar et al., 2014). The correlation of higher MIDAS scores with headaches may aid healthcare providers in identifying the level of disability to improve treatment plans and enhance migraine management.

Studies demonstrate that reductions in MIDAS scores were associated with clinically meaningful improvements in patients' ability to manage daily tasks and maintain productivity (Affatato et al., 2021; Carvalho et al., 2021; Steiner et al., 2022). The responsiveness of MIDAS scores to treatment enables healthcare providers to make informed decisions based on measurable changes in migraine-related disability. Provider education programs have proven effective in addressing knowledge gaps among primary care providers (Minen et al., 2016;

Verhaak et al., 2021). Research indicated that many providers lack familiarity with current migraine treatment guidelines (Minen et al., 2016; Verhaak et al., 2021). After undergoing educational interventions, providers exhibited significant improvements in their knowledge regarding migraine epidemiology, pathophysiology, and management strategies, including recognizing medication overuse headaches related to triptans (Minen et al., 2016; Verhaak et al., 2021).

Studies indicate that patients whose providers received education about migraines achieved lower MIDAS post-scores and demonstrated notable improvements in work productivity and overall quality of life (Carvalho et al., 2021; Lipton et al., 2022). In summary, implementing MIDAS screening and enhancing provider education may lead to improved assessment and management of migraines which ultimately benefits patients through better treatment outcomes and enhanced quality of life (Carvalho et al., 2021; Lipton et al., 2022; Minen et al., 2016; Verhaak et al., 2021).

Transitional Framework

Utilizing the Institute for Healthcare Improvement's (IHI) Quality Improvement Essentials Toolkit and the Plan-Do-Study-Act (PDSA) cycle, the project will employ a structured approach to quality improvement. A fishbone diagram analysis and microsystem assessment will inform a tailored intervention to standardize MIDAS administration and documentation, including staff education and EHR modifications. Over a six-week period, two-week PDSA cycles will facilitate rapid assessment of intervention outcomes, with frequent evaluation by the primary investigator and site representative leading to iterative adjustments. Data collection and

analysis will track MIDAS rates and patient outcomes. Ultimately, the project seeks to enhance migraine management and potentially expand successful strategies to other clinic areas.

Specific Aims

The quality improvement project aimed to improve chronic migraine management in a primary care and urgent care setting by standardizing the use of the MIDAS tool and enhancing provider knowledge and confidence. The educational intervention planned to integrate MIDAS into routine assessments to improve documentation and treatment planning. Additionally, the quality improvement project intended to increase the administration of MIDAS screenings to eligible patients, with follow-up assessments conducted to monitor changes in migraine-related disability. A further aim was to enhance clinic workflow efficiency by integrating MIDAS documentation into existing processes. Ultimately, this initiative aims to shift migraine care toward a more structured, disability-focused approach to care to enhance patient quality of life.

Methods

Context

This Quality Improvement Project in a primary care clinic and urgent care located in Montana, focused on enhancing the management of chronic migraines through the integration of the Migraine Disability Assessment Tool (MIDAS). Both clinics combined consist of thirteen providers including two physicians, four nurse practitioners (NPs), five physician assistants (PA), 12 nurses, and seven medical assistants (MAs). The clinics provide comprehensive primary care services to a diverse patient population.

If a patient had a chief complaint of migraine or headache, they were deemed eligible for MIDAS screening. Medical assistants and nurses were responsible for providing MIDAS

screening to patients identified with migraine or headache chief complaints. After rooming a patient and completing an intake related to their migraine history, nurses and MAs communicated pertinent information and any existing MIDAS data to the providers. Following the completion of the MIDAS tool, results were documented on physical MIDAS screenings with any interventions written on the backside. Scores were stored in a folder in a locked cabinet. Declined MIDAS assessments were recorded.

Intervention

In response to the specific needs of the clinic identified during the initial site assessment and literature review, a targeted educational intervention was developed. This intervention included a comprehensive educational material bundle that encompassed an overview of the MIDAS tool, instructions on how to integrate it into routine practice, and a detailed guide on the expected documentation processes. Prior to the initiation of the QIP, the project objectives, educational materials were disseminated via email to all staff involved in patient care. Physical copies of the MIDAS screening tool were also distributed to each individual site.

The implementation phase for this six-week initiative began on January 14th, 2025, following a two-week period during which staff had the opportunity to familiarize themselves with the materials. During the implementation, the staff were instructed to utilize their newly acquired knowledge and the MIDAS screening to evaluate any adult patient presenting with migraine symptoms.

Key process changes were informed to site representatives to streamline the MIDAS assessment and follow-up. These process changes included administering the MIDAS questionnaire to all eligible patients presenting with migraine or headache chief complaints,

nursing that provides consistently reviewed MIDAS scores during appointments to guide treatment decisions and document necessary interventions and scheduling a follow-up appointment for identified patients with severe disability if able.

The Principal Investigator maintained active engagement throughout the implementation period, conducting initial on-site visits during the first week and bi-weekly thereafter. These visits provided opportunities for guidance, support, and the proactive identification and mitigation of implementation barriers. Clinic staff were provided with the PI's contact information and encouraged to communicate feedback and report challenges as they arose. A mid-implementation check-in, via email, was conducted at the three-week mark to disseminate project progress updates, reinforce documentation requirements, and solicit further feedback.

Concurrent with on-site support, bi-weekly meetings with key stakeholders facilitated a formal review of project developments, assessment of intervention outcomes, and collaborative troubleshooting of identified barriers. The project's Plan-Do-Study-Act (PDSA) cycle is illustrated in Figure 7, demonstrating the systematic process refining and optimizing the quality of migraine care. The primary anticipated outcome is an increase in MIDAS assessment completion rates, with the subsequent effect of improved patient management strategies for individuals with chronic migraine.

Measures

The project used the Institute for Healthcare Improvement (IHI) model as a guiding framework to incorporate elements for setting implementation goals, identifying measures, making changes, and utilizing the Plan-Do-Study-Act (PDSA) cycle (Institute for Healthcare Improvement, 2020). PDSA model is visually represented in Figure 7, in Appendix A. The plan

phase focused on implementing the Migraine Disability Assessment tool (MIDAS) and provider education to improve migraine management. The education involved MIDAS application, integrating MIDAS assessments into routine patient care, and collecting baseline data on migraine-related disability. The education targeted providers and support staff at both clinics. The education included detailed training on the MIDAS tool, a comprehensive PowerPoint presentation on chronic migraine management covering pathophysiology, diagnostic criteria, and expanded treatment options, including Botox for chronic migraine. Pre- and post-training assessments measured providers' knowledge, confidence, and proficiency using a Likert scale survey delivered through Qualtrics (see Figure 8 in Appendix A).

The MIDAS screening tool was introduced as a standard procedure for assessing disability in adults diagnosed with chronic migraines. In the Do phase, RNs, MAs, and receptionists provided patients with MIDAS questionnaires before being seen by providers. Adult patients identified with a migraine history or chief migraine complaint completed the MIDAS assessment from nursing staff. Providers reviewed MIDAS scores to guide treatment plans and document any interventions. Providers used MIDAS scores to inform care, document interventions and ensure appropriate follow-up (within four weeks) for patients with scores indicative of significant disability (≥ 11). This process change was designed to establish a sustainable and structured approach to migraine impact assessment and intervention planning. Providers utilized and documented MIDAS scores to ensure accurate data collection and effective implementation of the education. During the study phase, data analysis of pre-and post-provider education scores (see Figure 8 in Appendix A), MIDAS scores, and patient treatment were evaluated for changes in migraine-related disability and provider confidence. Patients with

positive MIDAS scores (>11) were scheduled for a four-week follow-up appointment, during which the provider will reassess the score and document ongoing interventions, including pharmacologic, non-pharmacologic, and referral-based treatment.

The Act phase focused on refining the implementation of the MIDAS tool and enhancing provider education based on insights from the data analysis. The overall aim of the project is to implement the MIDAS tool as a routine part of care for all patients who experience migraines, support ongoing assessment, and improve patient outcomes. The initial PDSA phase involved providers from both clinics over a six-week period for a pilot approach, allowing for a focused, smaller-scale project before considering broader implementation. Additional PDSA cycles could be used to improve the workflow and educational materials as needed. The project has the potential to be expanded to a six to 12-month period to examine further changes in MIDAS scoring and intervention changes, which falls beyond the scope of this DNP project.

Data Collection

Provider knowledge and confidence regarding migraine management and MIDAS administration were assessed using a pre- and post-intervention survey administered via Qualtrics. For each patient presenting with migraine symptoms, providers documented the patient's MIDAS score, and the corresponding intervention applied on secure paper forms. Data were subsequently transferred to an encrypted Excel spreadsheet for analysis. Patient follow-up MIDAS scores were collected four weeks after the initial screening to evaluate intervention effectiveness.

Data Analysis

Provider survey data, assessing knowledge and confidence regarding migraine management and MIDAS, were summarized using descriptive statistics. To evaluate the impact of the intervention on provider understanding and comfort with MIDAS, paired t-tests were conducted to determine the statistical significance of differences between pre- and post-intervention survey scores. Bar charts visualized average scores for each survey question before and after the educational intervention. Descriptive statistics were used to describe the patient population presenting with migraine symptoms and their baseline MIDAS scores. Paired t-tests were used to compare initial and follow-up MIDAS scores, assessing the impact of the interventions on migraine-related disability. Line graphs illustrated individual patient progress over time, while bar charts depicted the frequency of various interventions used in migraine management.

Ethical Considerations

This quality improvement project was reviewed by the Institutional Review Board (IRB) at Montana State University and is not considered human subject's research. Provider and patient privacy was maintained by removing personal identifiers from all data collection tools. Secure storage procedures were followed, with physical copies of MIDAS scores kept in locked cabinets and electronic data stored in an encrypted, password-protected Excel file. HIPAA regulations were strictly followed to protect patient confidentiality. Interventions, including Botox, and MIDAS screening were administered according to established best practices (Dodick et al., 2019). Only numerical data was extracted for analysis to maintain confidentiality. After the six-week initiative, the data collection tool was shredded. Continuous monitoring throughout the

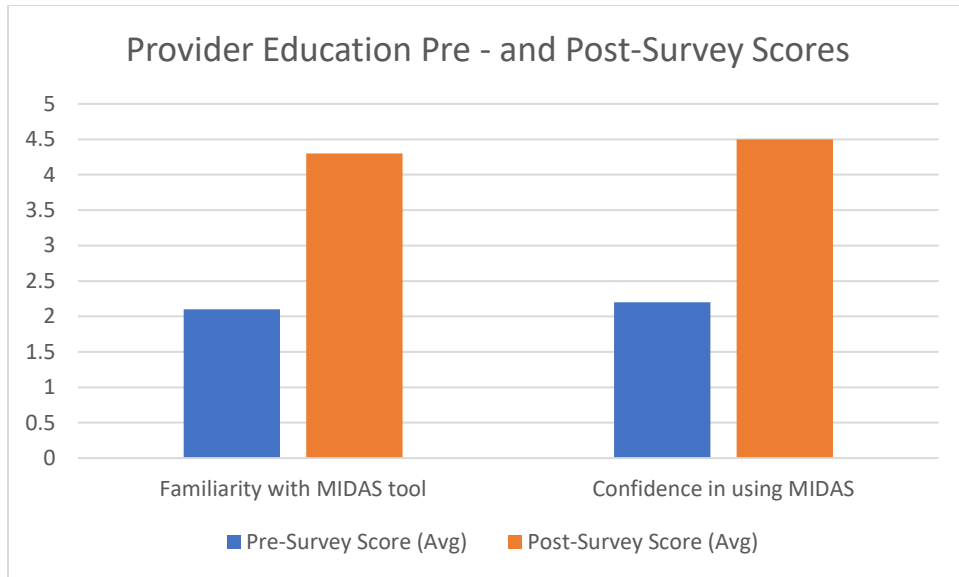
project ensured patient safety, minimized potential risks, and maintained ethical standards. Since the quality improvement project focused on provider education and implementation of a standardized assessment tool, no anticipated patient harm was identified.

Results

A total of 35 patients with a documented migraine diagnosis participated in the initiative, with 15 (43%) completing a MIDAS (Migraine Disability Assessment Scale) assessment. Before implementation, provider familiarity with the MIDAS tool was low, with only 15% (n=2) of providers reporting prior use. Post-intervention, provider confidence in utilizing MIDAS increased, with 85% (n=11) of providers reporting improved understanding and integration into practice based on the post-survey results.

The provider education component of the project included a pre- and post-survey administered via Qualtrics, where providers rated their knowledge, confidence, and proficiency using the MIDAS tool on a Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The average pre-survey score across all questions was 2.1, indicating low familiarity with the tool. Post-education, the average score increased to 4.3, reflecting a statistically significant improvement in knowledge and confidence. A paired t-test was conducted to analyze the pre- and post-survey results, yielding a t-statistic of $t \approx 9.01$ and a p-value of ($p < 0.01$), confirming a significant increase in provider confidence and proficiency in using the MIDAS tool. A bar chart will visually represent the mean Likert scores for each survey question pre- and post-education, highlighting notable gains in provider proficiency.

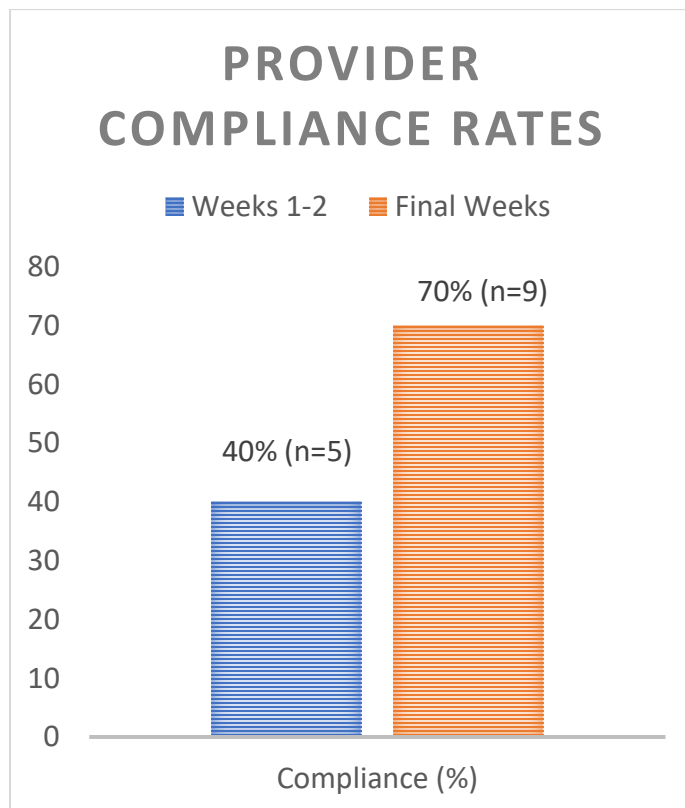
Figure 1. Provider Education Scores



The project aimed for 100% documentation of MIDAS scores, but initial compliance was 40% (n=5) during weeks one and two. By the end of the initiative, documentation compliance

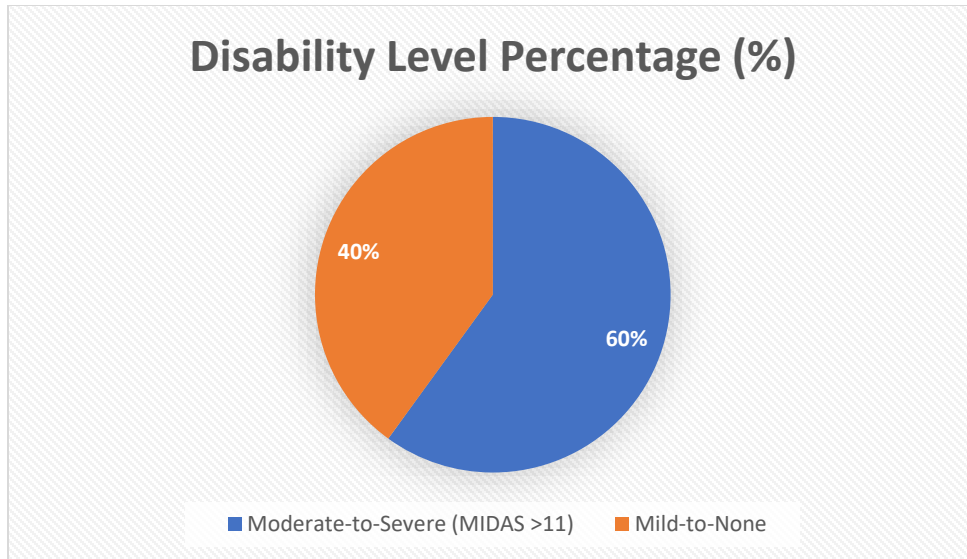
improved to 70% (n=9), as providers became more comfortable integrating the tool into clinical workflows.

Figure 2. Provider Compliance



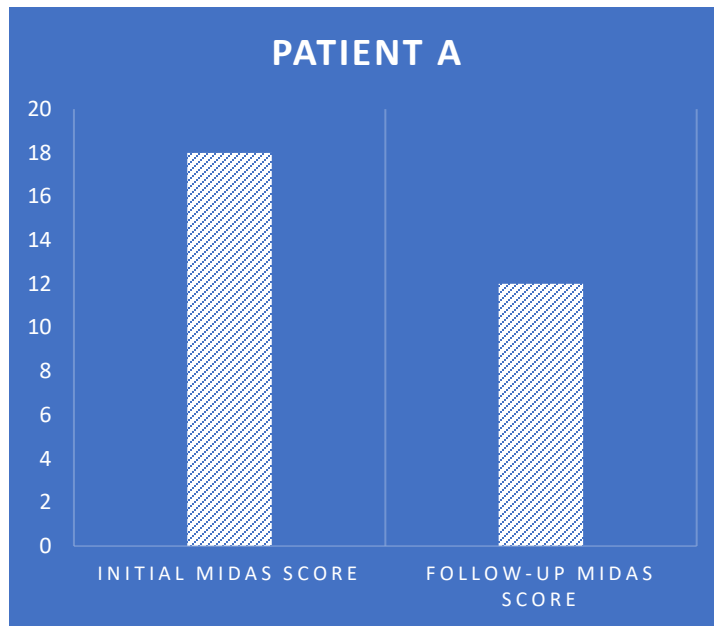
Baseline MIDAS scores indicated that 60% (n=9) of patients assessed had moderate-to-severe disability (MIDAS score >11). Following implementation, 67% (n=6) of these patients had treatment plans adjusted based on MIDAS results, including medication optimization and referrals. The percentage of patients receiving preventive therapy increased from 30% (n=3) pre-intervention to 50% (n=5) post-intervention.

Figure 3. Disability Percentage



Follow-up MIDAS data was limited, with only one patient completing a second MIDAS assessment within the project timeframe. This patient's score showed a reduction from score of 21 to 14 at follow-up, suggesting an improvement in migraine-related disability after intervention. However, due to a small sample size, there is no determination of significant evidence.

Figure 4. Follow-up Patient MIDAS Score



Future steps include further integration of the MIDAS tool into electronic medical records (EMR), ongoing provider education to improve follow-up compliance, and expanding data collection to assess long-term trends in migraine management.

Discussion

Implementation and Provider Engagement

Before implementing the quality improvement project, migraine disability was not routinely assessed. The six-week implementation of the MIDAS tool addressed the gap in the lack of screening to aim to enhance provider engagement and use of screening to better understand migraine disability. By the end of the project, the MIDAS tool had been incorporated into patient encounters, supporting structured disability assessment. Baseline provider knowledge and confidence in using the MIDAS tool were limited, but post-intervention

assessments suggested improvement, aligning with previous studies on structured assessment tools in chronic disease management (Blumenfeld et al., 2018; Affatato et al., 2021).

Provider education, delivered in Week 2 and reinforced throughout the intervention period, played a critical role in supporting the adoption of the MIDAS tool. Initially, documentation rates were low, particularly during Weeks 3 and 4, when feedback indicated uncertainty regarding tool interpretation and scoring. Additional education via follow-up emails were provided to ensure education and MIDAS implementation were being completed along with an understanding of migraine intervention. By Weeks 5 and 6, education rates improved, suggesting that continued education and reinforcement strategies were key to provider engagement. Research suggests that provider education and support enhance compliance with new clinical assessment tools (Lipton et al., 2022).

Impact on Migraine Management

Consistent with the literature, implementing a structured migraine disability assessment improved the identification of patients experiencing significant impairment (Blumenfeld et al., 2018). Results showed notable knowledge gaps in managing migraines and unfamiliarity with current treatment guidelines (Minen et al., 2016; Verhaak et al., 2021). Providers also did not consistently assess or manage common migraine comorbidities like depression and anxiety (Minen et al., 2016; Verhaak et al., 2021). Providers desired further education on migraine prevention and treatment strategies. After provider education, pre- and post-surveys identified significant knowledge deficits, particularly in epidemiology, pathophysiology, and management (Minen et al., 2016; Verhaak et al., 2021).

Limitations

Several factors impacted the outcomes of this project. Due to internal email security limitations, the principal investigator's voiceover had to be removed from the PowerPoint education module. Providers were required to review the slides without audio narration, potentially impacting their understanding and participation in the provided education. Future projects should explore alternative methods for delivering educational content, such as live training sessions, webinars, or troubleshooting IT security barriers in advance. Prior research highlights the importance of interactive education in improving provider knowledge and retention (Dodick, 2020).

The six-week intervention period also limited the ability to assess long-term changes in provider behavior and patient outcomes. While initial improvements in MIDAS tool utilization were observed, sustained adoption requires ongoing reinforcement beyond the project timeline. Additionally, the reliance on self-reported provider knowledge and confidence scores may have introduced response bias. Objective measures, such as direct observation of clinical practice changes or patient-reported outcomes over time, could strengthen future assessments (Zandifar et al., 2020).

Provider engagement varied, with documentation compliance fluctuating during the PDSA cycles. Appropriate training in MIDAS enhanced primary care providers' confidence and effectiveness in diagnosing and treating migraines to impact patient care directly (Minen et al., 2016; Verhaak et al., 2021). Reminders and education improved adherence, but initial declines highlight the need for continued reinforcement of new processes for the quality improvement process change. Additional challenges, including EMR limitations, competing clinical priorities,

and inconsistent provider buy-in, may have influenced implementation success (Lipton et al., 2022).

MIDAS itself has limitations by not effectively differentiating between headache types (e.g., episodic vs. chronic migraine, tension-type headaches) or tracking responses to non-pharmacologic treatments (Zandifar et al., 2020; Carvalho et al., 2021). Additionally, bias in patient-reported MIDAS scores and the potential influence of group dynamics during provider education may have impacted results (Aguirrezabal et al., 2019). Addressing barriers for future implementations or further PDSA cycles could enhance migraine management and disability assessment in primary care.

Implications for Practice

Integrating a standardized tool like MIDAS can enhance provider awareness of migraine-related disability to facilitate improved treatment planning (Affatato et al., 2021; Carvalho et al., 2021; Steiner et al., 2022). Targeted provider education and reinforcement strategies improved engagement over time among providers. Integrating the MIDAS tool into EMRs rather than physical paper copies could further support its use and functionality in primary care.

Expanding provider education beyond primary care to include specialists, such as neurologists and pain management providers, could enhance multidisciplinary migraine care. Given the increasing recognition of Botox as an effective treatment for chronic migraine, further education on its indications, efficacy, and administration may support broader utilization (Affatato et al., 2021).

Future Implications for Quality Improvement

Future quality improvement projects for MIDAS use should focus on the impacts of patient outcomes over time. improved management effectiveness may be monitored by longitudinal studies tracking MIDAS scores and treatment interventions over time.

Understanding patients' perspectives on disability assessment may also provide incentive to the implementation of the MIDAS tool. Incorporating patient education, such as informational handouts or videos on migraine pathophysiology and treatment options, may further enhance patient-provider discussions and treatment adherence (Dodick, 2020).

Additionally, future projects should investigate whether standardized disability assessment influences treatment decisions and long-term outcomes. MIDAS's focus on functional disability allows a more comprehensive treatment plan to reduce migraine-related quality of life scores (Almarzooqi & Zidan, 2024; Carvalho et al., 2021; A. Ghorbani & Chitsaz, 2011). Examining the relationship between MIDAS scores and treatment response could help optimize migraine management strategies.

Conclusion

This project successfully implemented the MIDAS tool in a small primary care and urgent care setting, demonstrating feasibility in assessing migraine-related disability in aiming to improve patient outcomes. Despite initial challenges with provider acceptance and documentation, targeted education and reinforcement strategies improved compliance. The findings suggest that structured assessment tools enhance migraine management by shifting care from symptom-focused treatment to a more comprehensive, disability-centered approach.

Future efforts should focus on sustaining MIDAS tool utilization, integrating it into EMRs, and expanding provider and patient education to optimize migraine care and improve the quality of life for affected individuals.

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No external funding was received. The PI provided funding for printing educational materials and MIDAS assessment forms.

Conflict of Interest

There are no conflicts of interest to disclose.

CHAPTER FOUR

DOCTOR OF NURSING PRACTICE ESSENTIALS REFLECTION

Introduction

The American Academy of Colleges of Nursing has eight Doctor of Nursing Practice (DNP) essentials which outline the core competencies and curricular elements necessary for preparing advanced nursing practice specialist (AACN, 2006). The DNP degree at Montana State University (MSU) has equipped me with the essential knowledge and skills embedded in the eight curricular essentials and provided foundational knowledge and skills to excel in various advanced nursing roles and contribute to improving healthcare outcomes. The reflection of AACN essential focuses on DNP essential use in quality improvement project focus and individual coursework, highlighting how my experiences in the DNP program have prepared me for future nursing practice. This final chapter reflects on how these Essentials were integrated into my education, clinical practice, and my quality improvement (QI) project on migraine management and the MIDAS tool.

Essential I: Scientific Underpinnings for Practice

Essential I emphasizes the integration of nursing science including biophysical, psychosocial, analytical, and organizational science to advance nursing practice (AACN, 2006). Incorporating screening tools, like the MIDAS screening utilize analytical and science integration into nursing project, as seen in my quality improvement project. Essential I was also demonstrated in my literature review of evidence-based practices for my quality improvement project on migraine management. The essential also utilized PICOT questions to evaluate interventions for chronic migraines, demonstrating my understanding of biophysical and

analytical sciences. Additionally, in NRS 602, Advanced Pathophysiology/Pharmacology, essential I was utilized by understanding the biophysical process of migraines including neurological function, genetic predisposition, and role of neurotransmitters. Analytical sciences, including N606 Statistical Applications, was used to evaluate research studies on migraine treatments including non-pharmacological and pharmacological and best interventions. By synthesizing current research on migraines, I was able to critically assess evidence supporting the MIDAS tool as an effective assessment measure for migraine-related disability. Analytical sciences were also utilized to determine statistical analysis of provider knowledge and confidence scores. I will use my knowledge of scientific principles to assess the quality and relevance of research studies, ensuring that my practice is based on the best available evidence. I will also use essential I in my future career to develop and implement protocols that are grounded in research and tailored to the specific needs of my patients and advocate for policies and practices that improve patient outcomes and reduce disparities in care.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Essential III focuses on the importance of clinical scholarship and the use of analytical methods to translate evidence into practice (AACN, 2006). In Montana State University's evidence base practice N604 and N605 courses, essential III was researched in topics of healthcare technology including electronic health records, clinical databases. Research methods utilized within coursework that align with essential III also include data collection, statistical analyses, and critical appraisals of research literature seen in informatics N610. Essential III was displayed in my quality improvement project through data collection of patient outcomes, MIDAS scores, and provider confidence and knowledge. Additionally, my project used data

analysis to analysis differences in MIDAS scores, provider confidence, and types of migraine interventions used. Evidence based practice was employed by implementing a screening protocol into primary care. Outcome evaluation seen in essential III and my project was observed in improved MIDAS scoring and provider confidence.

In my future career, essential III will be implemented to practice by utilizing evidence-based care to treat and diagnose patients. Additionally, quality improvement assessments will be made to identify gaps in care and promote change to better patient outcomes. Data driven decisions will be made based of interpretation from patient data to refine treatment plans.

Essential IV: Information Systems/Technology and Patient Care Technology for Improvement and Transformation of Healthcare

Essential IV highlights the integration of information systems and technology to enhance patient care, improve healthcare delivery, and transform clinical practice (AACN, 2006).

Throughout Montana State University (MSU) DNP program essential IV was utilized, but especially in the course NRS610, Healthcare Informatics. The healthcare informatics course emphasized the use of electronic health records, shared decision making, PDSA cycles, changes to workflow including fishbone diagrams, and the use of telemedicine. Clinical rotations also utilized this essential with EHR documentation and results review.

My quality improvement project showed the use of essential IV through gathering patient data from electronic health records to allow providers to assess and document migraine related disability. Data collection and analysis were utilized with Qualtrics survey gathering pre- and post-intervention data from providers regarding use of the MIDAS tool and confidence in migraine interventions. Additionally, the provider education used multiple forms of information

technology to provide education, collect scores, and communicate with providers via email, PowerPoints, and Microsoft Forms platforms. Information technology aided my project in provider adherence to migraine assessment guidelines, and enhanced clinical decision-making

In my future career, I will continue to use health information technology to improve patient care. Electronic health records will be used to efficiently track patient data, document, identify data trends, and implement data-driven interventions. Telehealth may be used in my future career to provide access to rural patients or underserved populations. Staying informed and up to date on healthcare technology and informatics promises a safe, effective, and evidence-based healthcare delivery.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health

Outcomes

Essential VI focuses on the importance of working effectively across different disciplines in healthcare (AACN, 2006). The entirety of my education of Doctor of Nursing Practice at Montana State University utilized essential VI with focus on effective communication and collaborative skills within intensives, coursework, simulations, group projects, and team dynamics. Essential VI was implemented throughout my quality improvement project by developing practice recommendations for migraine management required me to collaborate with various stakeholders, including patients, physicians, nurses, medical assistants, secretaries, and other healthcare providers. Communicating complex medical information and education of treatment interventions to different audiences demanded collaboration and coordination skills to aid in the success of quality improvement. This was done by coordinating the efforts of various team members, managing timelines, and ensuring that team members were working towards a

common goal. in my future practice, I plan to continue to utilize collaboration and interprofessionalism to improve the health of patients. Utilizing collaboration and shared decision making to tailor interventions for not only migraine patients, but all patients provide more patient-centered care by involving all members of the healthcare team.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

Essential VII highlights the role of clinical prevention and population health in improving patient outcomes (AACN, 2006). Montana State University's (MSU) DNP program's courses employed the use population health and clinical prevention. N606 Statistical Applications provided tools to analyze population health and data to identify trends and evaluate health outcomes. N608 Design of Healthcare Delivery Systems explored healthcare models, social determinants of health (SDOH), and system-level approaches to improving population health. N614 focused on culturally competent care, health disparities, and strategies to improve health outcomes in underserved populations. Multiple courses and clinical coursework reinforcing population-based care approaches via preventative screenings, chronic disease management, and patient education.

The Migraine Disability Assessment Tool quality improvement project used essential VII by integrating clinical prevention and population health strategies into migraine management. The project promoted early intervention with screening to help identify migraine related disability for improved treatment planning. The quality improvement project also enhanced preventative care education to providers. Additionally, the project addressed health disparities by aiming to achieve reduced disparities in diagnosis and treatment, particularly for patients who may have been underdiagnosed or undertreated.

Future application of essential VII in my career as a Family Nurse Practitioner will focus on Implementing preventative screenings and health promotion initiatives tailored to my patient population. My future career will use essential VII to also address social determinants of health to improve access to preventative care, utilize data-driven approaches to evaluate patient outcomes to optimize population health, and advocate for policies that enhance access to preventative care and improve healthcare equity.

Conclusion

Throughout my Doctor of Nursing Practice (DNP) education at Montana State University, the integration of the AACN Essentials has provided a strong foundation for advanced nursing practice, quality improvement, and evidence-based care (AACN, 2006). The essentials provided me with a strong foundation to navigate the complexities of healthcare delivery. As I transition into my career as a family nurse practitioner, I am committed to applying these principles to enhance patient care and contribute to ongoing quality improvement initiatives in clinical practice. I aim to advocate for high-quality, patient-centered care, drive healthcare innovation, and contribute to improving population health outcomes in practice as a Family Nurse Practitioner.

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APPENDICES

APPENDIX A

FIGURES

Figure 5. PRISMA 2009 Flow diagram

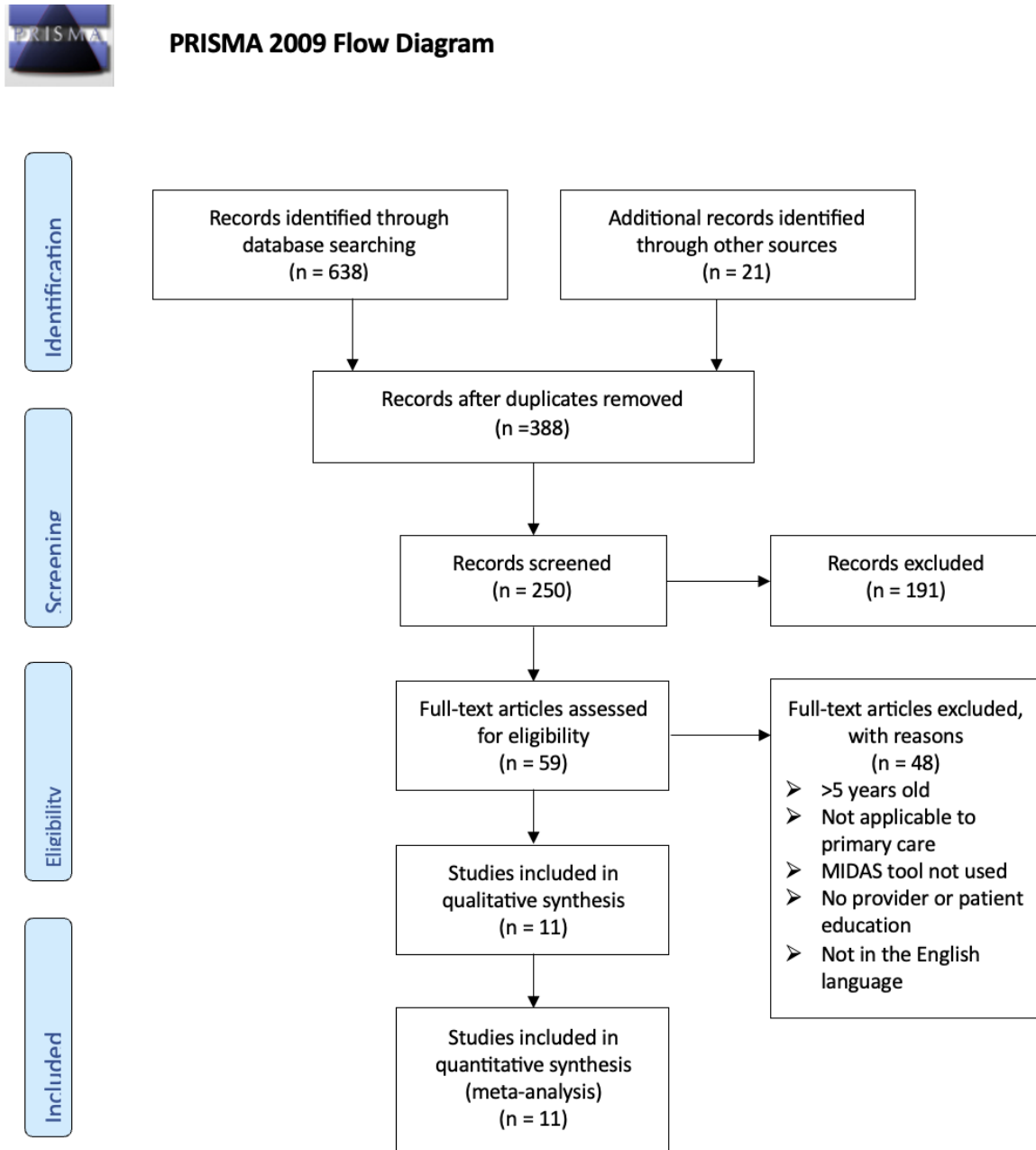


Figure 6. MIDAS Tool

The Migraine Disability Assessment Test

The **MIDAS** (Migraine Disability Assessment) questionnaire was put together to help you measure the impact your headaches have on your life. The information on this questionnaire is also helpful for your primary care provider to determine the level of pain and disability caused by your headaches and to find the best treatment for you.

INSTRUCTIONS

Please answer the following questions about ALL of the headaches you have had over the last 3 months. Select your answer in the box next to each question. Select zero if you did not have the activity in the last 3 months. Please take the completed form to your healthcare professional.

- _____ 1. On how many days in the last 3 months did you miss work or school because of your headaches?
- _____ 2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school.)
- _____ 3. On how many days in the last 3 months did you not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches?
- _____ 4. How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.)
- _____ 5. On how many days in the last 3 months did you miss family, social or leisure activities because of your headaches?
- _____ Total (Questions 1-5)

What your Physician will need to know about your headache:

- _____ A. On how many days in the last 3 months did you have a headache? (If a headache lasted more than 1 day, count each day.)
- _____ B. On a scale of 0 - 10, on average how painful were these headaches? (where 0=no pain at all, and 10=pain as bad as it can be.)

Scoring: After you have filled out this questionnaire, add the total number of days from questions 1-5 (ignore A and B).

MIDAS Grade	Definition	MIDAS Score
I	Little or No Disability	0-5
II	Mild Disability	6-10
III	Moderate Disability	11-20
IV	Severe Disability	21+

If Your MIDAS Score is 6 or more, please discuss this with your doctor.

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Figure 7. PDSA -Planned Intervention of MIDAS

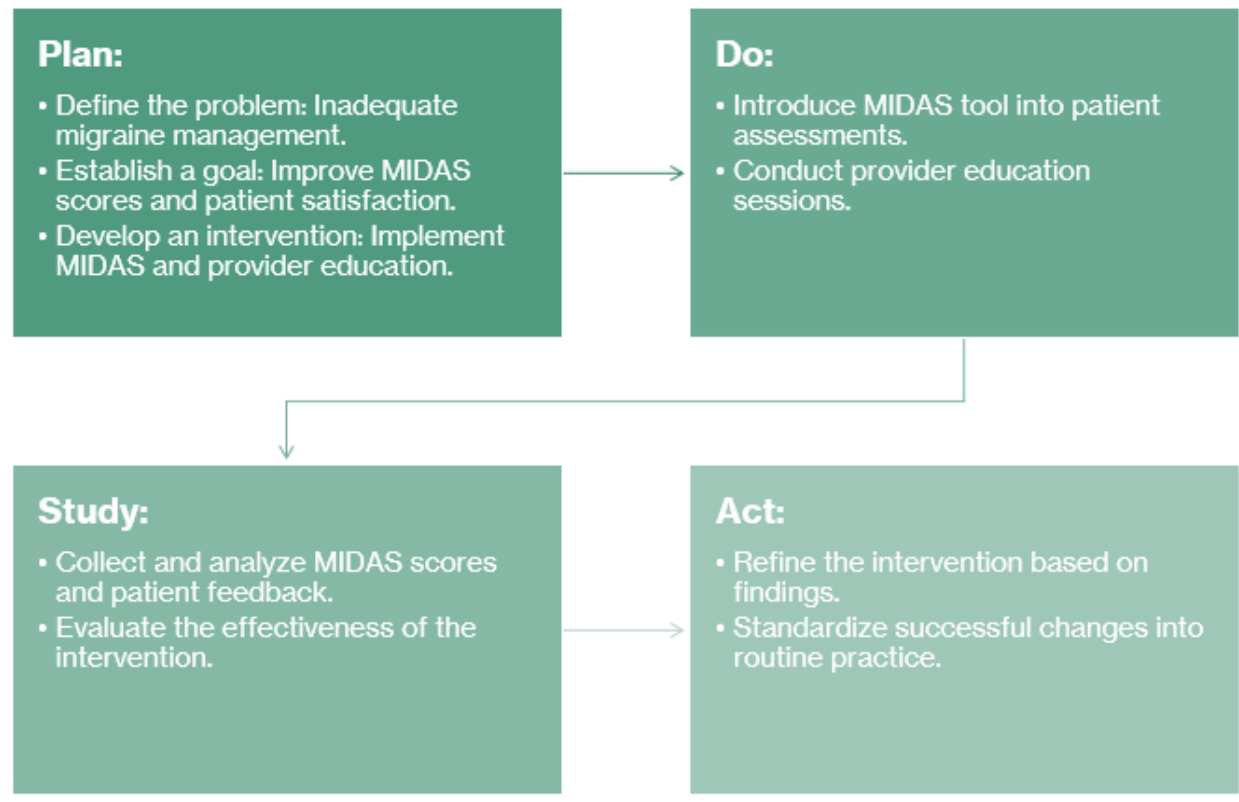


Figure 8. Provider Knowledge and Confidence Assessment

Instructions: Each provider will complete this survey before and after the training session

Likert Scale Questions (5):

Provider Education

Provider Education Post-Quiz

* Required

- "I am confident in diagnosing migraines based on patient symptoms and history" * 

☆ ☆ ☆ ☆ ☆
- "I feel equipped to assess the quality of life for patients with migraines." * 

☆ ☆ ☆ ☆ ☆
- "I am comfortable with discussing treatment option for chronic migraines with patients" * 

☆ ☆ ☆ ☆ ☆
- "I am confident with using the MIDAS tool to assess migraine impact" * 

☆ ☆ ☆ ☆ ☆
- "I am confident in recommending non-pharmacological options for migraine management" * 

☆ ☆ ☆ ☆ ☆

Multiple Choice Questions (5):

6. Which neurotransmitter is primarily implicated in migraine pathophysiology? *

- ☐ Dopamine
- ☒ Serotonin ✓
- ☐ GABA
- ☐ Acetylcholine

7. "Which of the following is NOT a first-line treatment for acute migraine management?" *

- ☐ Triptans
- ☐ NSAIDs
- ☒ Opioids ✓
- ☐ Anti-emetics

8. "Botox alleviates chronic migraines by targeting which pathway?" *

- ☐ Vascular dilation
- ☐ Muscle relaxation
- ☒ Inhibiting neurotransmitter release ✓
- ☐ Reducing serotonin uptake

9. "After how many months do most patients typically require repeat Botox injections for chronic migraine management?" *

- ☐ 1-2 months
- ☒ 3-4 months ✓
- ☐ 6 months
- ☐ 1 year

10. "Botox is indicated for chronic migraine patients who experience headaches on at least how many days per month?" *

- ☐ 4 days
- ☐ 8 days
- ☒ 15 days ✓
- ☐ 20 days

Figure 9. Timeline

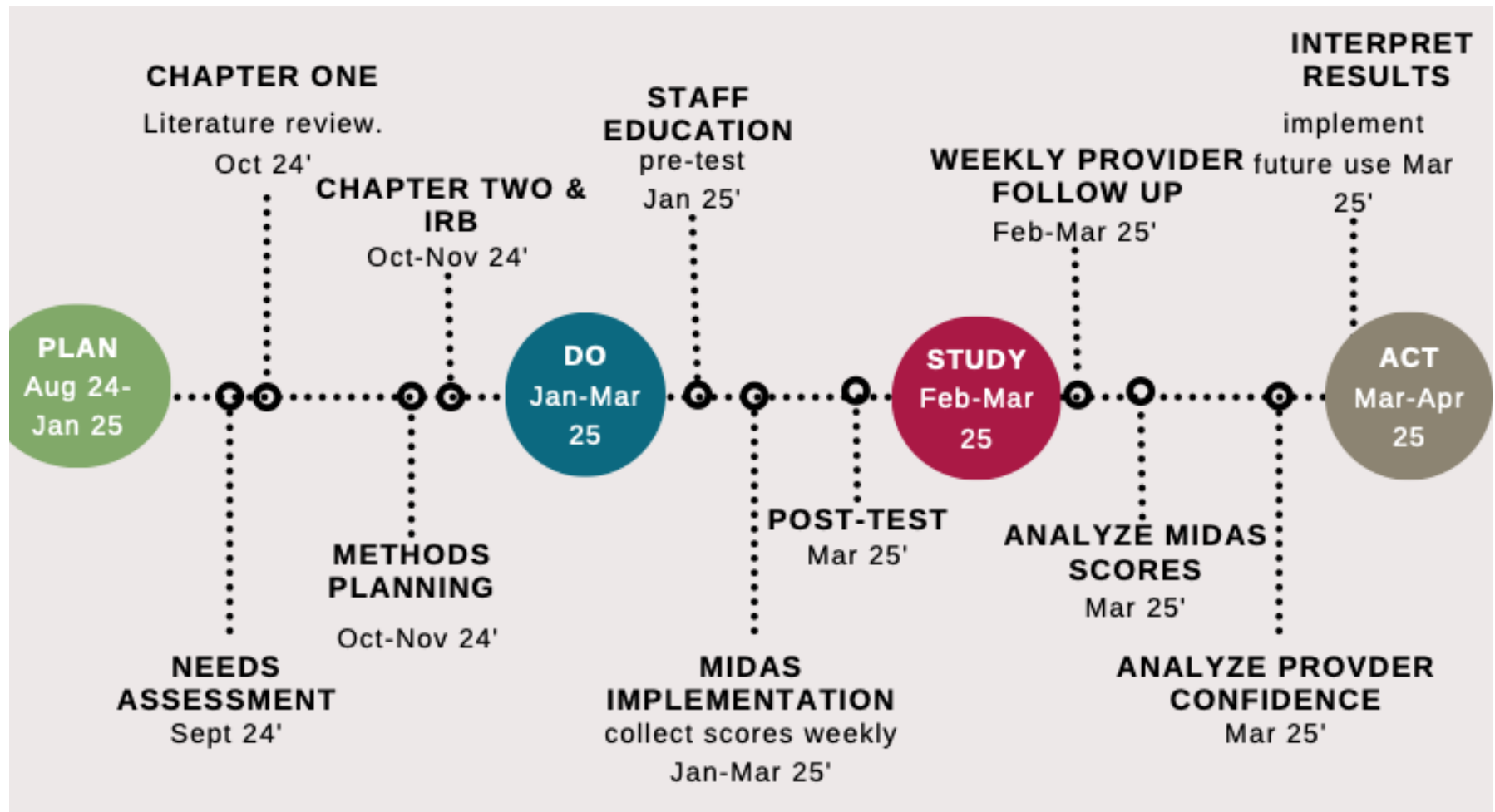
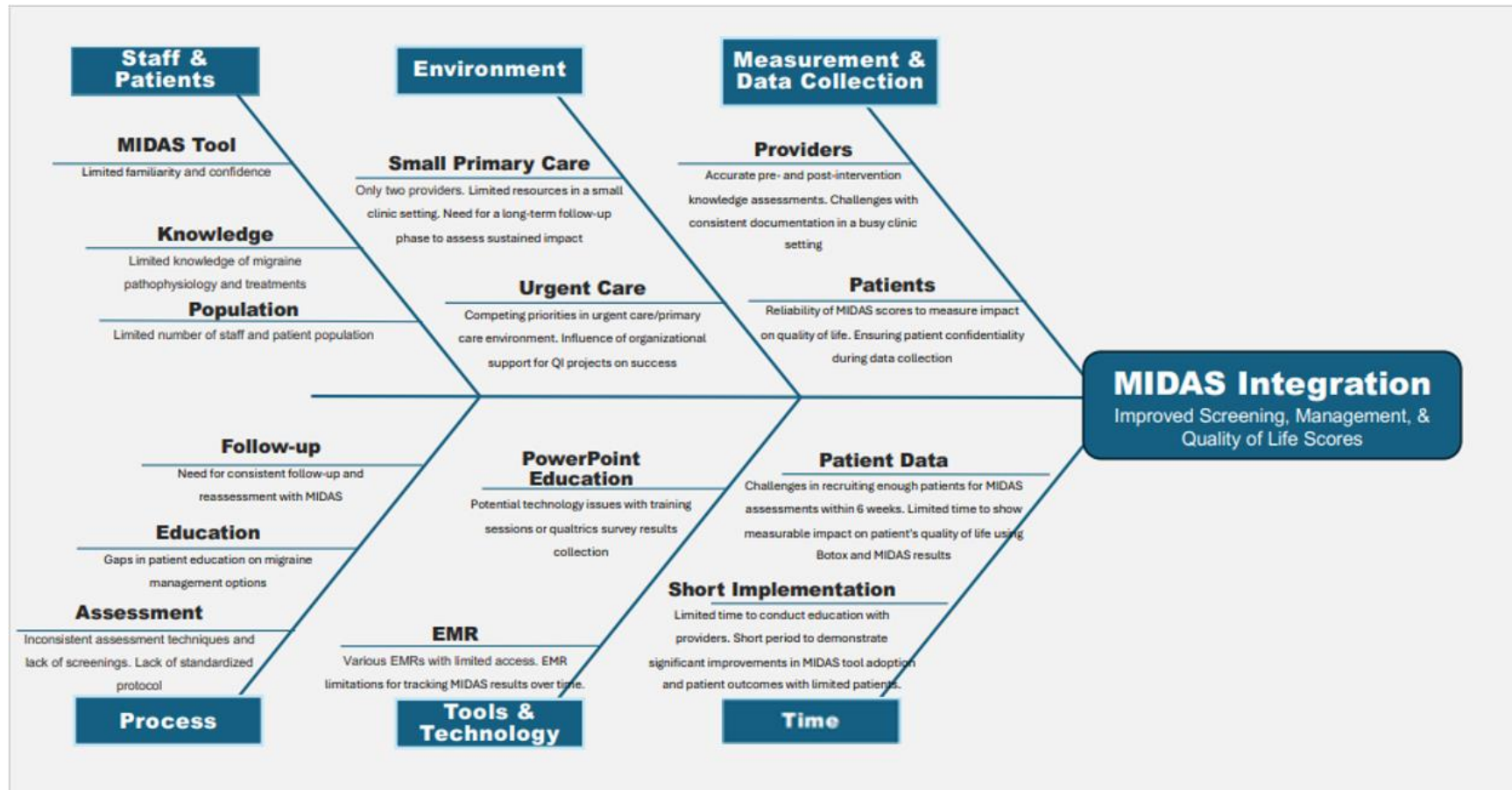


Figure 10. Fishbone Diagram



APPENDIX B

TABLES

Table 1. Smart Goals

SMART GOAL #1: Provider Education By January 17th, 2025, to ensure effective project implementation, 100% of clinic staff will engage with the provided educational materials, which include: • A comprehensive introduction to the QI initiative and its specific aims. • Clear and concise guidelines for the accurate utilization of the MIDAS tool. • An informative PowerPoint presentation covering chronic migraine education and the pre-test requirements.		
Strategies and Resources: • The Principal Investigator will be responsible for developing the comprehensive educational materials. • A targeted PowerPoint presentation will be delivered to providers, focusing on documentation processes and the practical application of the MIDAS tool..		
Data Collection	Method of Collection	Planned Data Analysis
Numerator: Number of staff who completed educational material. Denominator: Total number of staff. Pretest scores tracked	Pre-test completion records with staff names and scores	Percentage of staff who successfully completed the pre-test and demonstrated a verbal understanding of the project implementation. Track individual pre-test scores to establish a baseline of knowledge
SMART GOAL #2: MIDAS Implementation By February 10th, 2025, to facilitate accurate and consistent migraine assessment, all staff will be trained on: • The precise application of the MIDAS tool for evaluating migraine-related disability. • Standardized documentation procedures and user-friendly screening guidelines. • Available treatment options for chronic migraines, including Botox therapy.		
Strategies and Resources: • All providers will receive comprehensive educational materials, including detailed guidelines for the MIDAS tool and information on acute and chronic migraine treatments, including Botox. • Staff will be assessed for any questions or uncertainties after reviewing the educational material, and clarifications will be provided as needed.		
Data Collection	Method of Collection	Planned data analysis
Numerator: Number of staff who completed the education with post-test scores and confidence scores. Denominator: Total number of staff. Post scores tracked.	Post-test completion records with staff names and scores	Percentage of staff who successfully completed the education. Track post-test scores to confirm knowledge acquisition and engagement.

Table 1. Continued

SMART Goal #3: MIDAS Scores By March 2nd, 2025, to ensure comprehensive migraine assessment, 100% of patients identified as having chronic migraines will have documentation of at least one of the following: • Completion of a MIDAS assessment. • Any intervention provided. • Documentation of treatment refusal, if applicable.		
Strategies and Resources: • Printed copies of the MIDAS tool will be readily available for use. • A standardized process for documenting each intervention (e.g., treatment administered, referral made, refusal noted) will be implemented. • A secure Excel document will be utilized for collecting and storing MIDAS scores, ensuring patient confidentiality by excluding identifiable information.		
Data Collection	Method of Collection	Planned data analysis
Numerator: Number of migraine patients with a documented MIDAS assessment. Denominator: Total number of patients assessed for migraines. Identify the baseline percentage of patients with moderate-to-severe migraine disability based on MIDAS scores.	Providers will administer the MIDAS tool to patients presenting with migraines using standardized paper forms. Providers will document the initial MIDAS score and any interventions directly on the form during the patient visit The primary investigator will collect scores weekly via excel.	Percentage of patients with migraine who completed MIDAS screening. Any interventions recorded.
SMART Goal #4: Positive MIDAS follow-up Starting March 2nd, 2025, patients who score positively on the MIDAS tool will have a scheduled follow-up within four weeks, and their treatment plans will be reviewed to potentially increase the number of patients receiving preventative therapies based on their MIDAS score.		
Strategies and Resources: • Printed copies of the MIDAS tool will be available for both initial and follow-up visits. • An alert system will be implemented to notify providers when a patient with a positive MIDAS score is due for a four-week follow-up. • Documentation of each interaction and decision (e.g., treatment initiation, adjustment, continuation, or refusal) will be maintained.		
Data Collection	Method of Collection	Planned data analysis

Table 1. Continued

Numerator: Number of patients with positive initial MIDAS who returned for follow-up and had a second MIDAS score. Denominator: Total number of patients with a positive MIDAS score	Follow-up MIDAS score post intervention. Documentation of intervention type and treatment decisions.	Average reduction in MIDAS scores from the initial assessment to the four-week follow-up. Conduct paired t-tests to compare initial and follow-up MIDAS scores to assess for statistically significant improvement. Track the number of patients with positive initial MIDAS scores who received preventative therapies at follow-up.
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