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Using Motivational Enhancement Therapy to Achieve CPAP Compliance

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Abstract

Obstructive sleep apnea (OSA) is a sleep disorder in which an individual’s airway closes or partially closes several times in a night. OSA impacts an individual’s sleep quality if left untreated, which commonly leads to daytime sleepiness, headaches, cognitive impairments, and depressive or irritable mood. Most noteworthy are several health conditions, such as cardiovascular disease, linked to untreated sleep apnea. Currently, the first-line treatment for moderate-to-severe OSA is continuous positive airway pressure (CPAP), which acts as a pneumatic splint to prevent the airway closures associated with the condition. Although it is an efficacious treatment, a significant problem is lack of patient adherence to CPAP therapy. Motivational Enhancement Therapy (MET), which includes Motivational Interviewing (MI), has been shown to improve treatment adherence in individuals treated with CPAP therapy. The Doctorate of Nursing Practice (DNP) quality improvement project consisted of using MET/MI in a sleep medicine clinic in a West Texas border community to achieve patient CPAP treatment adherence.
Using Motivational Enhancement Therapy to Achieve CPAP Compliance

Introduction

Problem Description

Obstructive sleep apnea (OSA) is characterized by a partial or complete airway closure that impacts an individual’s breathing. These airway closures can impact airflow, leading to a reduction in blood oxygen levels and potentially causing sleep arousals (Gottlieb & Punjabi, 2020). Symptoms commonly associated with OSA include snoring, difficulty sleeping, daytime sleepiness, witnessed apneas, gasping episodes, morning headaches, and difficulty concentrating, all of which often impact productivity (Gottlieb & Punjabi, 2020). However, it is not uncommon for those individuals affected by OSA to be without symptoms.

In the United States, approximately 25% of adults are estimated to be afflicted by OSA (Gottlieb & Punjabi, 2020). According to Franklin and Lindberg (2015), several epidemiological studies show that OSA is strongly associated with the male gender, increasing age, obesity, smoking, and alcohol consumption. For this Doctor of Nursing Practice (DNP) quality improvement (QI) project, statistics on OSA at the state and local levels could not be identified. However, in the United States, the estimated prevalence of OSA in obese individuals, those with a body mass index (BMI) of over 30 kg/m², is as high as 45% (Romero-Corral, Caples, Lopez-Jimenez, & Somers, 2010). Given the high prevalence of OSA in the obese population, OSA rates can be inferred from obesity statistics. In the United States, from 2017 to 2018, the prevalence of obesity in adults was 42.4% (Hales, Carroll, Fryar, & Ogden, 2020). In Texas, the prevalence of obesity in 2018 was 34.8%, while in El Paso, it was 36% (Texas Department of State Health Services [DSHS], 2018). These statistics reveal a problem with obesity and the subsequent risk of OSA at the national, state, and local levels.
Available Knowledge

Diagnosing and treating OSA are imperative because of OSA’s strong link with several conditions. For instance, OSA is associated with metabolic syndrome and cardiovascular complications such as arrhythmias, cerebral vascular events, hypertension, and heart failure (Donovan, Boeder, Malhotra, & Patel, 2015). Additionally, researchers have found that individuals aged less than 70 years who have OSA are at increased risk of premature death (Franklin & Lindberg, 2015). A strong link exists between OSA and mood disorders, particularly major depressive disorder and posttraumatic stress disorder (Kryger, Roth, & Dement, 2017). Appropriately screening, diagnosing, and treating patients with OSA is recommended given the negative implications of untreated OSA (American Academy of Sleep Medicine [AASM], 2015).

Diagnosing Obstructive Sleep Apnea

Diagnosing OSA can be done by using either an in-laboratory polysomnography test or a home sleep apnea test. In-laboratory polysomnography testing is more thorough, as it measures respiratory parameters, sleep stages and arousals, snoring, limb movements, and electrocardiogram monitoring. However, home sleep testing, which only measures oxygen saturation, respiratory effect, and airflow, is increasing, as it is cost-effective and has high sensitivity and specificity (Gottlieb & Punjabi, 2020). In a sleep study, the apnea-hypopnea index (AHI), which is a measurement of the apneas and hypopneas an individual has in an hour, is used to determine the severity of OSA. An AHI less than five is considered to be normal. An AHI of 5 to 14.9 indicates mild OSA, an AHI of 15 to 29.9 indicates moderate OSA, and an AHI over 30 indicates severe OSA.
Treatment

Continuous positive airway pressure (CPAP) therapy is the first-line treatment recommended for moderate-to-severe OSA. CPAP therapy involves a nasal or oronasal mask that an individual wears during sleep hours. The mask connects to the CPAP device through a hose that allows air pressure to be delivered to assist in splinting the airway, thereby preventing upper airway collapse. Although CPAP therapy is efficacious, lack of patient adherence to CPAP therapy is a common dilemma. For insurance reimbursement, CPAP therapy adherence is usage over four hours a night for more than 70% of the month. Non-adherence is estimated to occur in 25% to 50% of OSA patients (Baratta et al., 2018). The most common causes of poor adherence are nasal discomfort, congestion, mask leak, and claustrophobia (Donovan, Boeder, Malhotra, & Patel, 2015). A clinician needs to assess and resolve these issues to improve patient comfort and increase adherence. Given the unfortunate consequences of untreated OSA, finding an intervention to achieve CPAP compliance is of great importance.

There are several interventions that a provider may implement to improve patient CPAP adherence. In the systematic review, researchers evaluated several RCTs; they included educational, supportive, and behavioral interventions that may increase CPAP compliance in adult individuals with OSA (Askland et al., 2020). Behavioral interventions, which include motivational enhancement therapy (MET), showed the highest certainty of the evidence that this intervention improved CPAP compliance compared to educational and supportive interventions (Askland et al., 2020). The systematic review authors evaluated eight studies for behavioral interventions, including 578 participants (Askland et al., 2020). According to this systematic review, behavior interventions improved CPAP compliance by approximately 70 minutes per night compared to other interventions (Askland et al., 2020). Additionally, in a review article,
Weaver (2019) explored interventions such as telemonitoring, education, peer support, and behavioral interventions to evaluate methods to improve CPAP adherence. Weaver (2019) noted that behavioral interventions, such as MET, appear to be the most effective intervention to improve adherence.

In an RCT by Bakker et al. (2016), 42 randomly assigned received standardized CPAP support. The other 42 randomly assigned participants received standard CPAP support plus MET. Among the participants who received standard CPAP support with MET, the average CPAP adherence was 99 minutes per night higher at 6 months than those who only received standard CPAP support (Bakker et al., 2016). In another RCT by Lai et al. (2014), the control group had 51 participants who received usual care and 49 participants who received the usual care with brief motivational enhancement education. The individuals who received the usual care with the brief motivational enhancement education showed higher daily CPAP usage by 2 hours per day than those who only received usual care (Lai et al., 2014).

**Motivational Enhancement Therapy/Motivational Interviewing**

Motivational Interviewing (MI), an aspect of MET, was developed in 1983 to help treat addiction by fostering the patient’s motivation for change (Rollnick, Miller, & Butler, 2008). MI uses a conversation style that promotes an individual’s desire and ideas to change, while the provider guides the individual rather than directs them to change (Rollnick, 2020). The advantage of MI is that the steps and skills can be used in various settings, such as in a sleep clinic, to support patient behavior changes needed to improve healthcare outcomes.

MI consists of four stages: engaging, focusing, evoking, and planning (Rollnick, 2020). These stages, along with crucial skills, are needed to utilize MI effectively. The stage of engaging involves forming a connection with the patient and showing empathy (Rollnick, 2020).
Forming a bond with a patient is essential to develop the trust needed for MI’s other stages. In focusing, through a collaborative decision, the patient and provider determine goals to be addressed (Rollnick, 2020). In evoking, which is the core of MI, the provider induces a patient’s motivation and ideas regarding how or why they may change to achieve their goals (Rollnick et al., 2008). Lastly, planning involves allowing the patient to develop strategies they will execute to achieve goals fostered by the provider (Rollnick et al., 2008).

Within these four stages, essential skills assist providers with successfully employing MI. One skill is asking open questions, such as, “How important is it for you to treat your sleep apnea?” or “How confident do you feel about using a CPAP at night?” elicits the answers that can encourage a patient’s motivation for change (Rollnick, 2020). Another skill that most providers may believe they do is listen, but frequently providers only hear the information they feel is necessary to treat the patient. However, “listening” in MI means the provider allows the patient to express their thoughts entirely. Once the provider hears the patients’ thoughts, the provider gives the patient a listening statement which is a recall of the information given by the patient to assure that the provider has understood what the patient means and, if incorrect, allows the patient to offer a clarification (Rollnick, 2020). This reflective listening also allows for a provider to further engage and connect with the patient.

The skill of affirming involves noticing and acknowledging the patient’s motivation for change and their strengths (Rollnick, 2020). For example, a patient may say, “I am tired of feeling tired, and if using the CPAP may improve my daytime fatigue, then I will use it every night.” Here the patient has provided a statement indicating readiness for change. An affirming statement to that may be, “I really like your eagerness to improve your fatigue by using the CPAP every night.” Summarizing, another MI skill involves providing a summary of the
patient’s change talk, strengths, and any optimistic statements made regarding the change (Rollnick, 2020). Lastly, when giving advice or information, using the elicit-provide-elicit strategy is helpful and fosters behavior changes. Elicit-provide-elicit means determining what the patient knows already or would like to know first (Rollnick, 2020). The provider then gives the information or advice in a simple manner, followed by eliciting what the patient understood (Rollnick, 2020).

**Rationale**

**The Johns Hopkins Evidence-Based Practice Model**

Healthcare providers should make sure that the care that is provided is based on the most current evidence to ensure best patient outcomes. The Johns Hopkins Evidenced-Based Practice (JHNEBP) model guides healthcare providers in finding and implementing best practices supported by relevant research and can be applied to clinical problems to ensure the best possible outcomes (Figure 1).
The JHNEBP model begins with an *inquiry*, in which an individual or a group questions whether what is done currently in practice meets best-practice standards (Dearholt & Dang, 2012). Meeting best-practice standards ensures that healthcare providers deliver care that is safe, effective, patient-centered, timely, efficient, and equitable (Institute of Medicine [IOM], 2001). The IOM (2001) reports that these six domains are necessary for healthcare quality. Since CPAP non-adherence is a dilemma, this recognition sparked the *inquiry* phase of the JHNEBP model. The *inquiry* phase leads to the PET (practice question, evidence, and translation) phase, which provides a practice change process (Dearholt & Dang, 2012).

The practice question phase involves defining a clinical problem that needs to be addressed and developing an evidence-based practice question (Dearholt & Dang, 2012). After determining that CPAP non-adherence needed to be addressed, the question, “What are best-practices in attaining CPAP therapy adherence?” triggered the PET phase. An additional
important aspect of the practice question phase is identifying key stakeholders who can ensure successful translation and dissemination of the project. The stakeholders identified for this quality improvement project were the owner and medical director of the El Paso Sleep Center, Dr. Gonzalo Diaz, the managers of the center, and the local durable medical equipment (DME) companies.

During the evidence phase, a search is completed for research to be used to answer the evidence-based practice question. This phase additionally involves assessing the level of evidence and quality of research found to ensure that recommended changes in practice come from relevant research that shows statistical significance (Dearholt & Dang, 2012). For the literature review for this QI project, the DNP student located published articles in which researchers had evaluated methods to improve CPAP adherence. The process of the procedure to locate the articles is in the Methods section of this paper. In the translation phase, the DNP student determined whether implementing MI during patient consultations in the sleep center would be practicable in the workplace (Dearholt & Dang, 2012). Since it was an intervention that the DNP student could easily integrate into usual care, the DNP student developed a strategy to implement the research into practice also discussed in the Methods section of this paper. A significant component in the translation phase is identifying measurable outcomes to determine whether the research’s implementation achieves positive outcomes.

**PDSA Framework**

The QI framework used to implement this project was the Plan-Do-Study-Act (PDSA) model. The benefit of using a PDSA cycle is the ability to implement a change in practice on a small scale and evaluate its effectiveness before implementing it on a larger scale (Institute for Healthcare Improvement [IHI], 2017). The PDSA cycle consists of developing a plan to
implement the QI project (Plan), implementing the QI project (Do), evaluating the outcomes and learning from them (Study), and determining whether modifications are necessary to implement the cycle again (Act; IHI, 2017).

For this DNP QI project, the cycle’s plan phase consisted of the DNP student learning MI and practicing using MI during patient consultations. The do phase involved the DNP student implementing MI during patient appointments, in which the DNP student reviewed the CPAP titration study results with patients and at subsequent follow-up appointments also discussed in further detail in the Methods section. During the study phase, the DNP measured the patient’s importance of treating OSA and their confidence in using CPAP therapy were measured to evaluate their motivation to use CPAP. The DNP student evaluated the patients’ CPAP therapy reports to determine compliance. Additionally, the DNP student evaluated sleep study AHI and residual AHI scores and pre-and post-Epworth Sleepiness Scale scores to determine the effectiveness of CPAP therapy. The Epworth Sleepiness Scale is a screening tool that helps quantify the level of daytime sleepiness an individual has (Figure 2). The level of sleepiness is represented by a score range: lower normal daytime sleepiness (0-5), higher normal daytime sleepiness (6-10), mild excessive daytime sleepiness (11-12), moderate excessive daytime sleepiness (13-15), and severe excessive daytime sleepiness (16-24; Johns, 2019). The act phase consisted of the DNP student evaluating the outcomes of the QI project.
Specific Aims

The DNP student implemented this QI project to determine the answer to the following PICOT question:

In 21-to-80–year-old patients newly diagnosed with OSA initiating CPAP therapy at the El Paso Sleep Center, does the use of MET/MI along with education achieve CPAP compliance (over 4 hours of use time per night at least 21 nights in a month or over 70%) compared to education alone in the first month of treatment.
Methods

Context

The El Paso Sleep Center, with two locations, sees approximately 165 patients per day. These patients are seen for a variety of sleeping disorders, including but not limited to OSA, insomnia, central sleep apnea, REM behavioral disorder, narcolepsy, parasomnias, periodic limb movement disorder, and restless leg syndrome. In 2019, the sleep center evaluated approximately 7,380 new patients for and diagnosed with OSA. In 2020, the number of new patients seeking care for OSA decreased to 6,307, probably due to hesitancy of being evaluated during the Covid-19 pandemic. As a result of pandemic restrictions, many consultations had to be transitioned from face-to-face to telemedicine to continue providing patients with their needed care.

Interventions

The DNP QI project first began by completing a 10-day reflective practice log (RPL). The RPL consisted of daily documentation of the ages, gender, diagnoses seen, interventions provided, and the outcomes. Once the DNP student completed the 10-day RPL, the DNP student grouped diagnoses by similarities to identify the need for a QI project to improve patient outcomes. Through this grouping process, the DNP student noted that several patients treated at the sleep center were non-adherent to CPAP therapy, and how the DNP student determined there was a need to address patient CPAP adherence, and the DNP student completed a literature review to find relevant and reliable research to improve CPAP adherence.

The DNP student started the literature review for this QI project by evaluating the American Academy of Sleep Medicine (AASM) treatment guidelines for adults with OSA to determine if there were guideline updates that addressed interventions that prove to improve
CPAP adherence. As there was no guideline update and the AASM’s strong recommendation for education was already an intervention the DNP student provided, a further review of the literature was necessary. Subsequently, the University of Texas at El Paso’s online library was used to complete a search for evidence-based studies by consulting the following databases: PubMed, CINAHL, MEDLINE, and Cochrane Library Review. The search was completed by using “and” or “or” between the keywords adherence, compliance, CPAP, and continuous positive airway pressure. This search resulted in 3,335 articles dating from 1971 to October 2020. Additionally, the DNP student added inclusion criteria to provide articles published in English, with adult population, and had to be systematic reviews, meta-analysis, or RCT studies published between 2013 and October 2020, and 2,259 studies remained.

After the DNP student evaluated several studies that had resulted from the search, several themes emerged regarding methods to improve adherence. Thus, the DNP student added support, motivation, and educated to the keywords search. These keywords further reduced the results to 726 studies. The search focused on examining studies that were systematic reviews, meta-analysis, and RCT to ensure study findings were of the most robust value.

After the DNP student reviewed the literature, the DNP student found that MET could improve OSA patients’ CPAP therapy adherence rates. As a result, the DNP student completed an online course with Stephen Rollnick (2020), co-founder of motivational interviewing. In the course Motivational Interviewing in Healthcare, Stephen Rollnick reviewed the fundamental concepts of MI and its practical skills. The course also featured interviews and examples from several healthcare providers from diverse practice settings to reinforce the course concepts.

To begin implementing the QI project, the DNP student identified patients between the ages of 21 and 80 years who were newly diagnosed with OSA and treated with CPAP therapy.
These patients were scheduled for a CPAP titration sleep study by the DNP student to evaluate their optimal therapy pressure. On the night of the titration sleep study, a sleep technician described the titration process to patients, and a sleep technician assisted the patients in finding an appropriate mask and set up the patients for testing. On the day of their CPAP titration results appointment, the DNP student educated the patients on their results and assessed patients’ knowledge of OSA health risks and CPAP therapy. As in the Lai et al. (2014) study, the DNP student assessed the patients’ readiness for change by asking patients to rate their importance of treating their OSA and their confidence in using CPAP therapy on a 10-point scale. The patients’ answers were used to evoke change talk, and when patients offered a positive dialogue on change, the DNP gave the patient affirmation. The DNP student reviewed the patients’ discussions of the benefits of using CPAP therapy with a summary statement. Additionally, the DNP student asked the patients evocative questions, asked permission to provide information to the patient, and assisted the patient in setting realistic goals and developing an action plan (Lai et al., 2014).

Once the patient obtained their CPAP, a follow-up visit took place 2 days later so that the DNP student could evaluate each patient’s experience with CPAP therapy and address any equipment issues encountered. The DNP student reviewed the patients’ CPAP therapy information, including residual AHI, and compared the AHI results to those from the initial sleep study. The DNP student gave affirmation to positive conversations related to change and questions were addressed. The patients were then scheduled for a follow-up appointment 1 month after initiating the CPAP to evaluate their level of therapy adherence.

**Study of the Interventions**
The DNP student measured the patients’ importance of treating OSA and confidence in using CPAP therapy on a 10-point scale during the patients’ appointment in which the DNP student informed the patient of their CPAP study results. It was subsequently measured at their 2-day follow-up and the one-month follow-up. The DNP used the reported scores to evaluate the patient’s motivation to use CPAP therapy and to promote the change talk needed to improve the patient’s motivation to adhere to CPAP therapy.

**Measures**

The patient’s CPAP report was evaluated for adherence 1 month after the patient initiated therapy. The desired outcome was for patients to have used their CPAP a minimum of 4 hours a night at least 21 of the 30 nights (>70%) of the month. Also, AHI and Epworth Sleepiness Scale scores were measured before the patient initiated CPAP therapy and at 1 month to evaluate the impact CPAP therapy had on each individual.

**Analysis**

The data collected from the patients’ CPAP therapy reports and Epworth scores provided quantitative data about their adherence and whether CPAP therapy effectively managed their OSA. The patients’ CPAP therapy report provided their CPAP usage days, percentage of use over 4 hours in the month of treatment, average hours the patients used the CPAP, and the patients’ residual AHI, which was compared to their diagnostic sleep study AHI. The patients’ pre- and post-Epworth scores provided an insight into the effectiveness CPAP therapy had on the patients’ somnolence symptoms. The patients’ importance of treating OSA and confidence in using CPAP therapy measured on a 10-point scale provided the DNP student qualitative data needed to understand the patients’ readiness for change and guide the use of MI throughout the patients’ appointments.
**Ethical Considerations**

The DNP student presented this QI project to the faculty members who had been chosen as DNP chairs, and they evaluated the project. Once they approved the project, the DNP student submitted it to the University of Texas at El Paso (UTEP) Institutional Review Board (IRB) to evaluate the project proposal and determine whether any ethical concerns existed with its implementation. The IRB determined that the project was not research; thus, the UTEP IRB and the DNP program approved the QI project to be implemented. Additionally, the DNP student presented the QI project to the sleep center owner and management, and they granted the DNP student permission to complete it. The DNP student stored the Data collected for this QI project in the sleep clinic’s HIPAA compliant and password protected computer with no personal identifiable data.

**Results**

The DNP student implemented MI with 16 patients receiving their CPAP titration study results between January 25, 2021, and February 12, 2021. After the patients were set up with their CPAP devices by the DME company, 2-day follow-up appointments occurred so that the DNP student could re-evaluate patients’ motivation to use their CPAP and so that the DNP student could troubleshoot any equipment issues. Unfortunately, due to DME delays in patient CPAP set-ups and the time constraints of this QI project, only five patients could be included in the project. These DME delays lengthened the proposed project end date of March 12, 2021, to May 17, 2021, to accommodate as many patients as possible. The 1-month follow-up appointments for these five patients occurred between February 25, 2021, and March 17, 2021. Table 1 shows the patients’ scores for the importance of treating OSA and confidence of using
CPAP therapy, sleep study AHI, CPAP residual AHI, and Epworth Scale scores pre-intervention and post-intervention.

Of the 5 patients evaluated, three achieved CPAP compliance with a use time of more than 21 nights in their first month of treatment (>70%). Figure 3 provides an example of CPAP therapy download report. One patient became Covid-19 positive during their third week of their evaluation period, which he reported made using his CPAP difficult due to his cough. However, he had been using the CPAP more than 4 hours a night since initiating therapy before his illness and was pleased with his symptom relief. The remaining patient was not compliant and initially had a low self-reported confidence score for using CPAP therapy; the confidence score improved at the 2-day follow-up visit. This patient’s CPAP use was consistent in the first 2 weeks of therapy but slowly declined the last 2 weeks. It is important to note that when this patient did use his device, he reported significant improvement in his OSA symptoms. This patient reported that non-use was related to getting home late from work. The patient would fall asleep without CPAP therapy. One noteworthy thing that the DNP will further evaluate is that those individuals whose initial AHI was more severe had higher adherence rates than those who had a lower initial AHI.
Table 1

Results of Motivational Interviewing Intervention

<table>
<thead>
<tr>
<th>Patient</th>
<th>1 Month Compliance (Days/%)</th>
<th>Sleep Study AHI</th>
<th>30-Day CPAP Residual AHI</th>
<th>Initial Epworth Score</th>
<th>30-Day Epworth Score</th>
<th>Initial Importance &amp; Confidence Scores</th>
<th>2-Day Importance &amp; Confidence Scores</th>
<th>1-Month Importance &amp; Confidence Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>27/30 (90%)</td>
<td>75</td>
<td>4.1</td>
<td>18</td>
<td>3</td>
<td>10/10</td>
<td>10/10</td>
<td>10/10</td>
</tr>
<tr>
<td>B</td>
<td>24/30 (80%)</td>
<td>101.6</td>
<td>2.6</td>
<td>19</td>
<td>6</td>
<td>10/10</td>
<td>8/10</td>
<td>10/10</td>
</tr>
<tr>
<td>C</td>
<td>22/30 (73%)</td>
<td>114</td>
<td>1.4</td>
<td>9</td>
<td>3</td>
<td>10/10</td>
<td>7/10</td>
<td>10/10</td>
</tr>
<tr>
<td>D</td>
<td>22/30 (73%)</td>
<td>114</td>
<td>1.4</td>
<td>9</td>
<td>3</td>
<td>10/10</td>
<td>7/10</td>
<td>10/10</td>
</tr>
<tr>
<td>E</td>
<td>4/30 (13%)</td>
<td>17</td>
<td>0.3</td>
<td>17</td>
<td>7</td>
<td>10/10</td>
<td>4/10</td>
<td>10/10</td>
</tr>
</tbody>
</table>

Note. AHI = apnea-hypopnea index; CPAP = continuous positive airway pressure.
Figure 3

<table>
<thead>
<tr>
<th>Usage</th>
<th>01/25/2021 - 02/23/2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage days</td>
<td>29/30 days (97%)</td>
</tr>
<tr>
<td>$\geq 4$ hours</td>
<td>27 days (90%)</td>
</tr>
<tr>
<td>$&lt; 4$ hours</td>
<td>2 days (7%)</td>
</tr>
<tr>
<td>Usage hours</td>
<td>211 hours 40 minutes</td>
</tr>
<tr>
<td>Average usage (total days)</td>
<td>7 hours 3 minutes</td>
</tr>
<tr>
<td>Average usage (days used)</td>
<td>7 hours 18 minutes</td>
</tr>
<tr>
<td>Median usage (days used)</td>
<td>7 hours 29 minutes</td>
</tr>
<tr>
<td>Total usage hours (value since last reset - 02/23/2021)</td>
<td>211 hours</td>
</tr>
</tbody>
</table>

AirSense 10 CPAP

<table>
<thead>
<tr>
<th>Serial number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>CPAP</td>
</tr>
<tr>
<td>Set pressure</td>
<td>12 cmH2O</td>
</tr>
<tr>
<td>EPR</td>
<td>Fulltime</td>
</tr>
<tr>
<td>EPR level</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Therapy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaks - L/min</td>
<td>95th percentile: 15.0</td>
</tr>
<tr>
<td>Events per hour</td>
<td>AHI: 4.1</td>
</tr>
</tbody>
</table>

Usage - hours

![Usage Chart]

Figure 3. CPAP compliance report. CPAP = continuous positive airway pressure; EPR = expiratory pressure relief. Information provided in download used for QI project includes usage days, percentage of use over 4 hours, average hours of use, and residual AHI.

Discussion

Summary

The current literature has demonstrated that MET with usual care improves patient CPAP therapy compliance. In this QI project, three of the five patients showed CPAP compliance;
however, it is noteworthy to mention that all five patients had a significant reduction in their AHI and Epworth scores, showcasing this treatment’s effectiveness. One of the non-compliant patients was compliant with therapy until he became Covid-19 positive and could not tolerate the use of CPAP therapy due to his cough. The last patient, who had reported an initial low confidence score, reported using the CPAP more than he anticipated. This patient did attempt use of CPAP therapy 15/30 days, but use time was less than 4 hours for most nights. Considering this information, a change that may be beneficial to this QI project is an additional 2-week follow-up with patients who initially report a low self-confidence score to address any concerns and to use MI further to increase their motivation to use their CPAP.

This QI project’s strength is that any sleep clinic can easily implement despite patient appointment time constraints. Using MI during a patient consultation allows for time to be used more efficiently since one can assess what information the patient already knows, and then it is enhanced by the clinician. Additionally, when a patient chooses the focus of their appointment, the clinician can avoid forcing care the patient is not ready to address.

During the QI project, patients verbalized an appreciation for the care the DNP provided using MI. One patient stated, “I have never felt that a provider was genuinely interested in my opinion about my care, and I really appreciate that.” Another patient mentioned at his one-month follow-up, “I appreciate that you have been invested in making sure I am successful with using my CPAP”. These comments showcase that using MI enhances the provider and patient interpersonal relationship necessary to achieve mutual goals such as effectively treating OSA with CPAP therapy. However, realizing that individuals are different and may require more support to achieve goals is necessary.
**Interpretation**

An important aspect of MI is understanding that a patient’s motivation to change is a personal choice. A provider may assist a patient in finding and verbalizing that motivational drive, but motivation to change can only be achieved when the individual is ready. MI effectively achieves patient-centered care since the provider is not forcing the patient to do what the provider wants, but instead guides the patient to decide to change independently. Using MI gives the patient control over their healthcare.

Although the QI project included a limited number of patients, this QI project’s outcomes are comparable to those of the studies in the literature review. However, the difference between this DNP QI project and the literature was that the project occurred during a pandemic necessitating the use of telemedicine to provide patient care. The Covid-19 pandemic caused a financial burden to several healthcare clinics, so a beneficial aspect of MI is that it was cost-effective to implement. The cost of MI training was $300, but the knowledge gained from this course will allow the DNP student to implement it in patient care for years.

**Limitations**

Completing the QI project during a pandemic proved to have its challenges and limitations. Not only did the sleep center have fewer new OSA patient evaluations, but providing timely care was also a problem. The QI project started with 16 patients, but because of delays in patients receiving the CPAP devices from the DME companies, the DNP student could only include 5 patients to meet the project deadline. Given the limited number of patients assessed, it is difficult to draw strong assumptions on the efficacy of MET/MI from this DNP QI project. Delays in patients receiving their CPAPs were related to the local DME companies
reporting increased demand for services such as providing oxygen concentrators to those affected by Covid-19. An attempt was made to meet with DME companies to expedite patient care but was only achieved with 2 patients. Incorporating MET/MI with usual care in a higher quantity of newly diagnosed patients will be beneficial and necessary to continue evaluating this intervention’s effectiveness on CPAP adherence.

**Conclusions**

MET/MI can easily be integrated into usual CPAP care to improve a patient’s motivation for therapy adherence. Given its time-efficient, no-cost, and ease of integration during patient appointments, using MET/MI is a sustainable intervention to implement in CPAP care to achieve improved patient outcomes. Providers may use MET/MI in other aspects of patient care other than CPAP therapy. Increasing a patient’s self-motivation can be helpful in medication adherence, weight loss, and smoking cessation, as a few examples. Given the importance of preventing complications from untreated OSA and the high rates of CPAP non-adherence, further use of MET/MI is essential to improve treatment outcomes with CPAP therapy. While further RCT’s could be paramount to add to the evidence already available, to improve CPAP adherence within the El Paso Sleep Center, The DNP student will continue to incorporate MI with OSA patients being treated with CPAP therapy.
References


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DNP Project
PowerPoint
Using Motivational Enhancement Therapy  
To Achieve CPAP Compliance

Monicke Magnon, MSN, APRN, FNP-C

Background

- Obstructive sleep apnea (OSA) is a sleep disorder in which an individual’s airway closes or partially closes several times in a night.
- OSA symptoms: daytime sleepiness, headaches, cognitive impairments, and depressive or irritable mood.
- Untreated OSA is linked with cardiovascular disease, metabolic syndrome, and mood disorders.
- Treatment: continuous positive airway pressure (CPAP), but patient adherence is a common dilemma.

Literature Review

- A SR found that behavior interventions improved CPAP compliance by around 70 minutes per night (Askland et al., 2020).
- Two RCTs found that standard CPAP support with motivational enhancement had an average CPAP adherence between 1.5–2 hours/night higher than standard care alone (Bakker et al., 2016, Lai et al., 2014).
- A review article found that behavioral interventions, such as motivational enhancement therapy, shows to be the most effective intervention to improve CPAP adherence (Weaver, 2019).

PICOT Question

- **P:** 21 to 80-year-old patients newly diagnosed with OSA initiating CPAP therapy
- **I:** Using motivational enhancement therapy/motivational interviewing along with education
- **C:** Education alone
- **O:** CPAP compliance (over 4 hours of use per night at least 21/30 nights or 70%)
- **T:** First 30 days of treatment

Evidence Based Process

**A 10-day Reflective Practice Log (RPL)**

After completing a RPL, a Review of Patients provided 3 PICOT questions.

I selected one question and completed a Literature Review. Once completed, I developed a DNP QI Proposal for my place of employment.

I received an approval letter from my employer. I then submitted the approval letter along with my IRB application to The University of Texas at El Paso.

I received the "It's Not Research " IRB letter to start my QI Project.

Johns Hopkins Nursing Evidence-Based Practice Model

Motivational Interviewing

- Motivational interviewing (MI) is an aspect of motivational enhancement therapy.
- MI is a conversation style that promotes an individual’s desire and ideas to change, while the provider guides the individual rather than directs them to change (Rollnick, 2020).
- MI consists of four processes.

Model for Improvement

Motivational Interviewing

- T: To view my references scan here

Methods

After the patient was diagnosed with OSA and completed their CPAP titration sleep study, MI was used during the following appointments:

- CPAP titration sleep study results
- 2-day follow-up
- 1 month follow-up

Results

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<th>Epworth Initial</th>
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Discussion

- A patient’s motivation to change is a personal choice
- All had reduction in AHI and Epworth scores
- 2-week follow-up will be considered for those with lower self-confidence scores.