

The effectiveness of Slow Deep Breathing in DM patients who experience anxiety

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Abstract

Diabetes mellitus (DM) is a chronic metabolic disease characterised by persistent hyperglycemia. The etiology of the condition could stem from issues related to insulin secretion, peripheral insulin resistance, or a combination of both factors. Slow deep breathing (SDB) is abdominal breathing with a slow or slow frequency, rhythmic and comfortable which is done by closing the eyes and blowing air through the lips. SDB technique is done for 15 minutes 3 times a day, can be accomplished at any time. It is anticipated that there will be a globally recognised standard for Sleep-Disordered Breathing (SDB) procedures. This will facilitate further research utilizing larger sample sizes for more robust analysis.

Aims: to detect the effect of the application of SDB to DM Type II patient experiencing anxiety during the treatment at Royal Prima Hospital.

Study design: the chosen design was a quasi experiment with a case study with the use of the SPSS. The sample size comprised a singular participant meeting the criteria of Type 2 Diabetes Mellitus (DM) accompanied by comorbid anxiety and undergoing treatment for a duration exceeding 48 hours. Data collection methods encompassed interviews, interventions, observations, documentation, and subsequent evaluations.

Place and Duration of Study: Royal Prima Hospital and 1 month.

Methodology: quantitative methods were employed, adhering to ethical guidelines that included obtaining informed consent from participants who agreed to partake as respondents.

Results: after SDB intervention the blood pressure was reduced from the first examination, and the period of sleep from 4 to 6-8 hours, the patient's anxiety was reduced as well as the dizziness. The patient exhibited a noticeable reduction in signs of tension.

Conclusion: Slow Deep Breathing (SDB) can reduce anxiety in DM Type II patients.

Keywords: slow deep breathing; anxiety; diabetes mellitus.

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Introduction

Diabetes Mellitus (DM) is a chronic disease characterised by levels blood glucose (blood sugar) exceeds normal namely the blood sugar level when it is the same or above of 200 mg/dl, and fasting blood sugar levels at above or equal to 126 mg/dl [1]. Diabetes mellitus is a condition of chronic hyperglycemia accompanied by various metabolic disorders hormonal disorders that cause various chronic eyes, kidneys, nerves, and vessels complications [2]. In general, diabetes is classified into: type 1 diabetes mellitus (T1DM), type 2 diabetes mellitus (T2DM), gestational, and other specific diabetes.

Type II Diabetes Mellitus is the most common type of diabetes, covering around 85% of diabetes patients [3]. The number will increase due to the increase in obesity in the population Type 2 DM is predicted to increase by 2030, reaching 7,079 per 100,000 people worldwide. This rise typically manifests in nations characterized by low economic status [4]. Diabetes is predicted to affect many adults aged 20-79 years, some of whom are diagnosed including type 1 and 2 diabetes, and those who are undiagnosed. Indonesia is the country that occupies the fifth position with the highest prevalence of diabetes, behind China, India, Pakistan and USA. China with 140.9 million people suffering from diabetes, India (74.2 million people), Pakistan (33.0 million people), America (32.2 million people), and Indonesia with 19.5 million people [5].

Data derived from Riskesdas for the year 2018, specifically pertaining to North Sumatra Province, indicates that, as per medical diagnoses, the prevalence of Diabetes Mellitus (DM) across all age groups in the region was recorded at 1.39% [6]. Data from the Medan City Health Service in 2018, the number of DM patients was 319 people, while in 2019 the number of DM patients was 402 people and this is increasing in 2020, there are 512 DM patients [7].

Diabetes is a chronic metabolic disorder characterised by increased blood sugar levels. Factors that cause diabetes include heredity/genetics, obesity, lifestyle changes, lack of physical activity, and stress [8]. The stress is a non-specific reaction of the body to a disturbed need, a universal phenomenon that occurs in everyday life, which cannot be avoided, everyone experiences it, the stress has a complete influence on a person, namely physically, psychologically, mentally, socially and spiritual. The stress can threaten physiological balance [8] [9].

Anxiety is an emotional condition and subjective experience towards an unclear and specific object due to anticipation of danger which allows individuals taking action to face the threat. Based on the research by Hotijah, Siti and Kurniawan (2021) it has positive relationship or the higher the level of anxiety is, the worse is the quality of sleep [10]. Apart from that, there is a significant relationship between anxiety and increased blood pressure in the elderly at Jumpandang Baru Health Center, Makassar City [11]. In the Indonesian Nursing Diagnosis Standards, anxiety falls into the psychological category and subcategory of ego integrity. Based on the formulation of nursing diagnoses according to the IDHS using the problem, etiology, sign and symptom (PES) format [12]. One action that can be taken to avoid stress/anxiety is breathing relaxation techniques. Such a breathing technique is accomplished by practicing deep breathing or what can also be called slow deep breathing (SDB).

The slow deep breathing (SDB) is a form of breathing exercise, consisting of abdominal (diaphragmatic) breathing and purse lips breathing [13]. The slow deep breathing (SDB) will optimise the autonomic nerves which influence the need for oxygen which releases neurotransmitters. The sympathetic nerve response from slow deep breathing SDB is to increase body activity. Meanwhile, the parasympathetic nervous response is to reduce the body activity [14].

The deep breathing therapy intervention (Slow Deep Breathing) is a non-pharmacological intervention and independent action under the nurses supervision. The slow deep breathing (SDB) will stimulate the autonomic nerves which influence oxygen demand by releasing neuro transmitters. Reduced bodily activity leads to a decrease in the demand for oxygen. Consequently, when oxygen consumption diminishes, metabolic activity also declines. As a result of the decrease in metabolic activity, it is highly desirable that blood glucose does not get higher. This is due to the slow deep breathing (SDB) that will reduce the brain activity as well as other body systems. With the benefits that can be obtained from the Slow Deep Breathing technique intervention, patients experiencing DM can be reduced [15].

A preliminary analysis of research data extracted from the medical records of RSU Royal Prima over the past three months (February – April 2022) indicates that among the 29 patients diagnosed with Diabetes Mellitus, 16 individuals had Type II Diabetes Mellitus, while the remaining 13 were diagnosed with other types of Diabetes Mellitus. During an interview with a nurse, it was noted that the Slow Deep Breathing technique had not been utilised as an intervention for patients diagnosed with diabetes mellitus. This observation prompted the researcher to undertake data collection research at Royal Prima General Hospital, aiming to investigate the potential application and efficacy of this technique in managing diabetic patients. To assess the anxiety scale using the HARS scale. The HARS scale has been proven to have high enough validity and reliability for measuring anxiety in clinical trial research, namely 0.93 and 0.97. This condition shows that measuring anxiety using the HARS scale will produce valid and reliable results.

Research Problem

According to research findings, addressing the challenges faced by individuals, particularly those with Type II Diabetes, who experience anxiety necessitates the implementation of suitable interventions or strategies. Failure to address these issues adequately may impede the recovery process and potentially impact the overall treatment outcomes. There's the next chance of anxiety disarranges in patients with diabetes mellitus and vice versa. It is suggested to screen diabetic patients for anxiety at beginning conclusion and follow-up visits [16]. People who experience anxiety will have a number of physical disorders such as decreased endurance, easy dizziness, muscle spasms (cramps), and can suffer from more serious diseases such as cardiovascular disease and hypertension. One of the techniques that can be used to reduce anxiety is the deep breathing relaxation. The deep breathing relaxation can increase anxiety levels in patients [17]. Developing information offer a solid contention for the part of anxiety in diabetes. Psychological interventions and/ or pharmacological treatments in patients with diabetes are required, in arrange to extend treatment adherence and control of the illness and progress patients' functioning and quality of life [18].

Research Focus

The selection of patients diagnosed with Type II Diabetes, specifically those experiencing anxiety and requiring hospitalisation at Royal Prima Hospital, was driven by their clinical relevance to the study of anxiety and its association with the Slow Deep Breathing (SDB) therapy. The investigation stems from the understanding that unresolved anxiety may precipitate elevations in blood glucose levels, potentially posing harm to the patient's health and well-being.

Research Aim and Research Questions

This study aimed to evaluate the effect of the application of Slow Deep Breathing to Diabetes Melitus Type II clients for anxiety disorders experienced while undergoing the treatment process at Royal Prima Hospital. Is there any effect for the application of Slow Deep Breathing to Diabetes Melitus Type II clients for anxiety disorders experienced while undergoing the treatment process?

Research Methodology

General Background

This study constituted a single-patient observational case study conducted at Royal Prima Hospital in Medan, North Sumatera, during the year 2022. The respondent was Diabetes Melitus Type II Patient and voluntarily declared his participation. Therefore, the informed consent was obtained from the participant involved in the study. The criteria for this research was an elderly patient aged over 55 years, showing signs and symptoms of anxiety, such as restlessness, insomnia, lack of appetite, lack of interest.

Sample / Participants / Group

The inpatient at Royal Prima Hospital managing Diabetes Mellitus Type II constituted the focus of this study. The inclusion criteria encompassed the patient diagnosed with Diabetes Mellitus Type II and co-existing anxiety, who was conscious and either newly admitted or had received treatment for no longer than two days.

Instrument and Procedures

The measuring instrument used to interview like identity, initial name, age, gender, education, address, occupation, religion, date and time of hospital admission, medical diagnosis, medical history: main complaint, current health history, and previous medical history, observation and documentation. The interview was conducted when the patient first entered the room and a re-interview was carried out every shift change to ensure there are any health complaints in patient. The observations on patient aimed to obtain data needed by researchers. The observations were carried out by looking at the patient's condition based on existing symptoms from the standard nursing assessment at the hospital.

The patient underwent a comprehensive physical examination following the head-to-toe principle, employing instruments including stethoscopes, sphygmomanometers, and thermometers. Additionally, the research involved reviewing medical records, laboratory test findings, and X-ray results of patients who granted permission for access to their records.

According to the HARS scale, there are 14 symptoms that appear in individuals who experience anxiety. Each item observed is given 5 levels of score between 0 (Zero Present) to 4 (severe). The HARS (Hamilton Anxiety Rating Scale) scale for assessing anxiety consists of 14 items [19].

This study implemented the Slow Deep Breathing Procedure Work Phase [20], comprising the following steps:

1. The patient was instructed to attain a state of relaxation and comfort, such as by sitting in a chair with back support or lying on a bed with a pillow under the head.
2. Attention was paid to ensure the patient's spine remained straight, with legs and feet uncrossed, and the entire body relaxed, including the arms and thighs.
3. Patients were prompted to silently affirm that within 5 minutes, their body would return to a state of stability, calmness, and relaxation.
4. Patients were directed to place one hand on the abdomen (stomach) and the other on the chest, with knees flexed (bent) and eyes closed.
5. Patients initiated deep, slow inhalations through the nose, allowing air to enter the lungs gradually. They were instructed to sense the expansion of the abdomen while minimizing movement in the chest. Inhalation was performed rhythmically, with a count of 1...2...3...4...5...6... while silently reciting a short word or phrase, such as "I am," followed by a 3-second breath hold.
6. Exhalation was carried out slowly through the mouth, employing pursed lip breathing technique to maintain control. Exhalation occurred in a count of 1...2...3...4...5...6... while silently uttering a word or short phrase, such as "relax" or "calm".
7. Patients should avoid forceful exhalation to prevent potential exacerbation of airway turbulence resulting from bronchospasm. During exhalation, ensure the abdomen contracts or flattens until the lungs are devoid of air.
8. Encourage the patient to repeat the deep and slow breathing procedure, emphasizing complete relaxation of the body. This regimen should be followed for 15 minutes, three times daily, or whenever tension is felt.
9. Conclude the deep breathing relaxation by gently guiding the patient through stretching exercises to loosen the muscles of the hands, feet, arms, and the entire body.
9. Instruct the patient to gradually open their eyes and appreciate the morning sunrise, returning to normal breathing patterns. Allow the patient to sit quietly for a brief period (approximately 2 minutes) before resuming activities. Emphasise the importance of focusing on abdominal movements rather than chest movements, as this can positively influence anxiety and enhance respiratory function, particularly in patients experiencing respiratory dysfunction such as hyperventilation [21].

Anxiety with criteria, Major Symptoms and Signs: Subjective: 1) Feeling confused, 2) Feeling worried about the consequences, 3) Difficulty concentrating. Objective: 1) Looks restless, 2) Looks tense, 3) Hard to sleep. Minor Symptoms and Signs: Subjective: 1) Complaining of dizziness, 2) Anorexia, 3) Palpitations, and 4) Feeling helpless. Objective: 1) Respiratory frequency increases, 2) Pulse frequency increases, 3) Blood pressure increases, 4) Diaphoresis, 5) Tremors, 6) Face looks pale, 7) The sound vibrates, 8) Poor eye contact, 9) Frequent urination, and 10) Oriented to the past.

Data Analysis

There were four ways to analyse data: validation, observation, recognition, patterns or groupings, conclusions. The results were presented in details and discussed accordingly without any mix with other studies. The nursing assessment in the client identity included name, age, gender, education, address, occupation, religion, date and time of hospital admission, and medical diagnosis. The main complaint is often the reason clients ask for health assistance. The data was processed using the SPSS data processing application.

This research prioritised client privacy, ensuring that original data remained confidential and would not be disclosed. The study adhered to ethical standards and obtained approval through signed consent forms. Moreover, the implementation of the method was conducted under the supervision of the department head. It's worth noting that Slow Deep Breathing (SDB) is a nursing intervention routinely practiced on patients, ensuring its safety and appropriateness for this study.

The data collection methods used were: 1) Interview: client identity including the name, age, gender, education, address, occupation, religion, date and time of hospital admission, and medical diagnosis. The main complaint is often the reason clients ask for health assistance, 2) Observation: observations on patients aim to obtain the data needed by researchers. Observations are carried out by physically examining the patient using the head-to-toe principle. Observation techniques can be used using instruments such as stethoscopes, tension meters, thermometers, 3) Documentation: the research used document studies showing by looking at the results of medical records, laboratory examinations and X-ray examination results in patients who had received permission.

Research Results

Assessment

According to data gathered during an assessment on July 5, 2023, Mr. J, the patient, was 53 years old, married, and a parent to five children—three daughters and two sons. He resides with his family at home and is employed at a company.

The Chief Complaint

The patient's family reported his weakened state, noting his history of Diabetes Mellitus (DM) and regular treatment spanning two years. Mr. J expressed feelings of anxiety and concern regarding his current health status. He described experiencing weakness, pallor, and cold sweats. Mr. J attributed his anxiety to his advancing age and openly communicated his distress to his family. Additionally, he mentioned symptoms of dizziness, shortness of breath, and palpitations, further contributing to his unease.

Objective data: the patient looked weak, *compos mentis* consciousness, and was installed breathing mask 3 liters. BP rises, sweats a lot, grimaces, shortness of breath. TTV examination: BP: 180/90 mmHg, P: 89 x / minute, RR: 22 x / minute, T: 36 °C, Current Blood Glucose: 280 mg/dl.

Nursing Diagnosis

The diagnosis that emerged for Mr. J based on top priority was anxiety related to his illness.

Nursing Intervention

The nursing plan was formulated on July 5, 2023, subsequent to a comprehensive assessment and diagnosis. Nursing interventions were structured around the principles of Sleep Support (SIKI), observation, and anxiety identification. Relaxation therapy, categorized under the Indonesian Nursing Intervention Standards (SIKI) as code (I.09326), was incorporated into the plan. This therapy involves the application of stretching techniques by nurses to alleviate discomfort manifestations such as pain, muscle tension, or anxiety.

In relaxation therapy interventions based on SIKI, various actions were undertaken:

Observation:

- 1) Recognition of decreased energy levels, inability to concentrate, or other cognitive impairments.
- 2) Identification of previously effective relaxation techniques.
- 3) Assessment of the patient's willingness, ability, and prior experience with the technique.
- 4) Evaluation of physiological parameters including muscle tension, pulse rate, blood pressure, and temperature before and after exercises.
- 5) Monitoring of the patient's response to relaxation therapy.

Therapeutic Measures:

- Establish a serene environment with appropriate lighting and comfortable room temperature.
- Offer written instructions detailing the preparation and execution of relaxation techniques.
- Recommend wearing loose-fitting attire.
- Utilize a gentle, soothing tone during interactions.

Integrate relaxation therapy with analgesic or medical procedures, as deemed suitable.

Education:

- Explain the purpose, benefits, limitations, and various types of relaxation techniques available, such as music therapy, meditation, deep breathing, or progressive muscle relaxation.
- Provide detailed instructions on the selected relaxation intervention.
- Encourage adopting a comfortable position conducive to relaxation.
- Emphasize the importance of embracing relaxation sensations.
- Advocate for regular practice and repetition of the chosen technique.

Offer demonstrations and guided practice sessions for relaxation techniques like deep breathing, stretching, or guided imagery.

However, implementing these interventions may encounter challenges. Patients may be situated in shared treatment areas, hindering the creation of a quiet environment. Cooperation from other patients and their families is essential to mitigate these disturbances. Additionally, patient non-compliance poses a challenge, necessitating gentle yet assertive communication from nurses. Implementing activity contracts can help establish mutual understanding and facilitate positive outcomes.

When providing intervention there are certainly several challenges that need to be faced. Patients who are being treated are currently in the treatment room together with other patients so arranging a quiet room is quite difficult, because there are obstacles from patients and families of other patients. This can cause the results obtained from this intervention to not be optimal. To overcome this, good cooperation between patients and other patient families is needed, and sometimes the patient himself is less compliant in following the instructions given, so the nurse must be a little firm but still gentle with the patient and the patient's family before taking action, such as carrying out activity contracts so that good results can be achieved.

Nursing Implementation

On the first day, July 5, 2023, during the intervention, begin by inquiring about sleep patterns and duration. Emphasize the importance of sufficient rest. Conduct a blood pressure measurement and assess for signs of decreased energy levels, difficulty concentrating, or any other symptoms affecting cognitive function. Identify any relaxation techniques previously employed that have proven effective.

On the second day, July 6, 2023, focus on assessing the individual's readiness, ability, and past experience with the technique being introduced. Perform checks on muscle tension, pulse rate, blood pressure, and temperature both before and after engaging in the exercise. Teach slow, deep breathing techniques as a method of relaxation and stress reduction. On the third day, July 7, 2023, set up a serene environment with appropriate lighting and a comfortable room temperature to facilitate relaxation. Provide a detailed explanation of the chosen relaxation technique, guiding the individual to assume a comfortable position and encouraging them to focus on experiencing the sensation of relaxation. Emphasize the importance of regular practice of the technique for maximum benefit: (Tabel 1; Figure 1).

Table of sleep periods before and after SDB action for 3 days.

Table 1. Sleep period

Sleep Period	<4 hours/day	4-5 hours/day	6-8 hours/day
First day	1	0	0
Second day	0	1	0
Third day	0	0	1

From table 1, you can see the change in sleep duration, initially there was a change of 4 hours after SDB was carried out. On the 2nd day the sleep duration becomes 4-5 hours and on the 3rd day it becomes 6-8 hours. This shows that SDB can improve sleep quality. Initially there was only a slight increase.

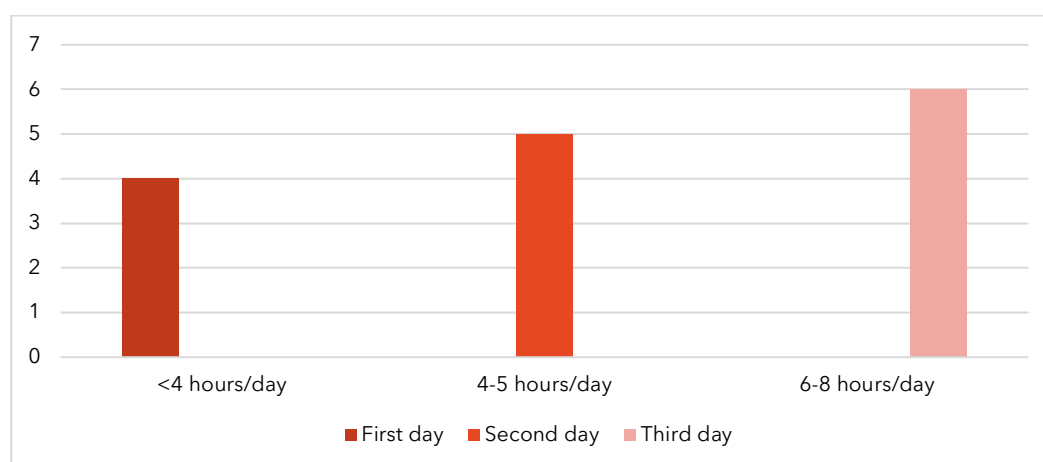


Figure 1. Sleep period

Graph 1 shows the sleep period data, namely: the first day < 4 hours/day, the second day 4-5 hours/day, and the third day 6-8 hours/day. This means that the number is increasing every day. This shows that SDB has an influence on sleep patterns.

Implementing a procedure to enhance comfort through slow deep breathing yielded mixed results. The client initially expressed discomfort with the relaxation therapy provided. However, the family demonstrated understanding and provided positive support, enabling the client to ultimately experience improved rest. Regarding the regulation of nap time, the client willingly accepted the nurse's advice, indicating a readiness to adhere to recommended guidelines. Efforts to address anxiety levels resulted in a noticeable decrease in the client's anxiety, indicating positive progress in anxiety management (Tabel 2; Figure 2).

Table 2. Anxiety Level

Anxiety	Sign & Symptom	Anxiety Level
First day	7	Mild anxiety
Second day	5	No anxiety
Third day	3	No anxiety

From the table, it can be seen that the patient who had signs and symptoms of anxiety found that on the first day with a scale of 7 he felt mild anxiety, on the second day with a scale of 5 he did not experience anxiety, and on the third day with a scale of 3 he did not experience anxiety.

Discussion

Based on interviews conducted, the author identified Mr. J as a participant. During a home assessment, Mr. J reported suffering from diabetes mellitus (DM) and experiencing persistent anxiety regarding his condition, particularly during diabetic episodes. He described feeling shortness of breath and experiencing difficulty breathing. His blood pressure reading during the assessment was 180/90 mmHg. Mr. J resides with his wife and their five unmarried children. He mentioned confiding in his wife when feeling fatigued. Mr. J presents himself as well-groomed, amicable, and open about his experiences. He demonstrated good compliance with therapy instructions. Therapy 1 was evaluated as successful, leading to the continuation of Therapy II.

This is supported by other research where patients with anxiety who received respiratory aids experienced a decrease in anxiety [22]. This research is supported by Verawaty, The Deep Breathing Relaxation Technique has an effect on reducing students' anxiety levels [23].

Anxiety causes changes in various hormones, one of which is the hormone serotonin. The serotonin hormone is known as 5- hydroxytryptamine or 5-HT) is a functional chemical compound as a neurotransmitter of one part brain to another part [24]. Serotonin has an important role in influencing mood. Balanced serotonin levels also play a role in various other body functions, such as the blood clotting process, digestive system, and sleep cycle [25].

When applying deep breathing techniques and positive affirmations, the body will work to release serotonin and endorphin hormones which can help all nerves working in harmony and balancing so that they can improve the mood and make the mother calmer and happier [26]. An effective deep breath effectuation can increase the vital capacity and pulmonary ventilation [27].

Nursing diagnoses are based on data analysis according to priorities (SDKI DPP PPNI Working Group Team) [28], namely anxiety. The following interventions have been prepared according to the SDKI (SDKI DPP PPNI Working Group Team) [28], SLKI (DPP PPNI SLKI Working Group Team) [29], and SIKI (SIKI DPP PPNI Working Group Team) [30] by adjusting the case review.

In the Indonesian Nursing Outcome Standards (SLKI), the main outcome for the diagnosis of anxiety is: "decreased level of anxiety." The level of decreased anxiety is given the code L.09093 in the SLKI. A decreased level of anxiety means a decrease in emotional conditions and subjective experiences towards unclear and specific objects due to anticipation of danger which allows individuals to take action to face the threat.

The result criteria to prove that the level of anxiety has decreased are: verbalisation of confusion decreases, verbalisation of worry due to declining conditions, restless behaviour decreases, decreased tense behaviour, concentration improves, and sleep patterns improve.

The relaxation therapy interventions in the Indonesian Nursing Intervention Standards (SIKI) are coded (I.09326). The relaxation therapy is an intervention carried out by nurses to use stretching techniques to reduce signs and symptoms of discomfort such as pain, muscle tension, or anxiety.

Actions taken in relaxation therapy interventions based on SIKI include: observation, 1) identify decreased energy levels, 2) inability to concentrate, or other symptoms that interfere with cognitive abilities, 3) identify relaxation

techniques that have been used effectively, 4) identify willingness, ability, and previous use of the technique, 5) check muscle tension, pulse rate, blood pressure, and temperature before and after exercise, 6) Monitor response to relaxation therapy.

Therapeutic: 1) create a calm, uninterrupted environment with lighting and a comfortable room temperature, if possible, 2) provide written information about preparation and procedures for relaxation techniques, 3) wear loose clothing, 4) use a soft tone of voice with a slow, rhythmic cadence, 5) Use relaxation as a supportive strategy with analgesics or other medical procedures, if appropriate.

Education: 1) explain the purpose, benefits, limitations and types of relaxation available (ex: music, meditation, deep breathing, progressive muscle relaxation), 2) describe in detail the selected relaxation intervention, 3) Suggest taking a comfortable position, 4) encourage to relax and feel the sensation of relaxation, 5) Encourage frequent repetition or practice of the selected technique, 6) demonstrate and practice relaxation techniques (ex: deep breathing, stretching, or guided imagery)

On the first day 05 Juli 2023 of examination, the blood pressure was 180/80 mmHg, slept $\pm$ 4 hours, felt weak and the patient said he was anxious, looked tense, confused. This shows that the problem has not been resolved so that the intervention was continued by identifying when the level of anxiety changes (eg, condition and time), monitor for signs of anxiety, create a therapeutic atmosphere to foster trust and accompany the patient to reduce anxiety.

On the second day 06 Juli 2023 after checking the blood pressure was 180/90 mmHg, sleeping hours were $\pm$ 5 hours. The patient still looked weak but was able to sit up on his own. The nurse asked the patient to do the Slow Deep Breathing technique and the patient was able to do the slow deep breathing technique and the patient said he was dizzy and his anxiety reduced.

On the third day 07 Juli 2023 after the examination, the blood pressure was 170/80 mmHg, 6-8 hours of sleep, the patient's high anxiety was reduced, dizziness was reduced. The patient is able to perform deep breathing techniques. The patient no longer looked tense. The problem was resolved, and the intervention was stopped.

The slow Deep Breathing (SDB) interventions allow nurses to recommend and implement strategies to promote to reduce anxiety in patients [10]. These methods can be used as appropriate complementary treatments by nurses and midwives for ill patient generally like undergo surgeon etc. Slow deep breathing exercise is successful to decrease the push levels for patients with diabetes mellitus. Slow deep breathing exercise is strongly recommended for patients with diabetes mellitus as self-intervention to reduce stress levels [31].

The results of the description of nursing care for clients "Providing Slow Deep Breathing in Anxiety Disorders In Diabetes Mellitus II Patient" the patient's high anxiety was reduced, dizziness was reduced. The patient is able to perform deep breathing techniques. The patient no longer looked tense. The problem was resolved, and the intervention was stopped. The Slow Deep Breathing (SDB) intervention and the results the blood pressure was reduced from the first examination, and the periode of sleep taking more time from 4 hours to 6-8 hours of sleep, the patient's high anxiety was reduced, dizziness was reduced. The patient no longer looked tense.

Anxiety is an unpleasant emotional state characterised by fear and painful and unwanted physical symptoms. In contrast, anxiety disorders are feelings that cannot be avoided. Anxiety disorders make people feel low self-esteem, get angry easily, and often harm others, but they are more detrimental to themselves [32]. The responses that arise from anxiety are worry, restlessness, restlessness and can be accompanied by physical complaints. Conditions are experienced subjectively and communicated in interpersonal relationships. Anxiety is different from fear which is an intellectual assessment of something dangerous. Anxiety is an emotional response to such judgments whose cause is unknown. Meanwhile, fear has a clear and understandable cause. The capacity for anxiety is necessary for survival, but severe levels of anxiety are incompatible with life [33]. Most T2DM patients experience anxiety [34].

Diabetes Mellitus Type II and its complications bring huge losses to patients and their families, make the patient excretes more costs, and increase anxiety about his future [35]. The disease is a chronic disease that the patient will suffer from for life and can occur in both men and women. Patients will feel uncomfortable and vaguely worried about the disease they are experiencing accompanied by autonomic responses, feelings of fear caused by anticipation of the dangers of DM Type II [11]. According to Semiardji (2013) Patients DM Type II generally experience anxiety about their current condition. They will worry about high blood sugar levels and the complications that can occur, which will cause anxiety [11]. Excessive anxiety can hinder a person's ability to initiate sleep, leading to the development of poor sleep habits. These disrupted sleep patterns can upset the body's physiological and psychological balance [36].

According to Adam & Tomayahu (2019) Anxiety and Diabetes Mellitus have a very close relationship, especially unhealthy lifestyles which are very influential, coupled with increasingly rapid technological advances and various diseases being suffered, causing a decline in a person's condition, thus triggering anxiety [37]. based on research from Angriani (2020), Anxiety levels in diabetes mellitus sufferers because diabetes mellitus is considered a complex

disease, because has a complex negative impact on the continuity of individual anxiety. Anxiety that occurs because someone feels threatened both physically and psychologically [38]. This is supported by Dewi (2022), who found that anxiety among individuals with diabetes is linked to functional disability, pain, and existential uncertainty. Anxiety tends to escalate with debilitating complications such as vision loss, fatigue, and weight loss [39].

Prolonged anxiety can disrupt sleep and result in chronic sleep disorders. The research by Laka (2018), which stated that hypertension has a relationship with the level of anxiety in the majority respondents experienced levels of anxiety [40]. In the interim, 2.4% of respondents shown a maladaptive adapting technique with gentle anxiety level, and 16.7% shown direct anxiety with esteem of $p = 0.004$ which means there is a relationship between coping strategies and anxiety levels of diabetes mellitus sufferers [41].

The stress is really influential against diabetes due to there is an influence on control and blood glucose levels, if someone faces a situation that causes stress, hence the stress response It could be an increase in hormones adrenaline that can ultimately change glycogen reserves in the liver become glucose, the hormone adrenaline is one of the factors for someone to remain awake at night [42]. The stress can affect the sleep quality, as well as can cause adrenaline increases, heart palpitations and blood flow increase cause someone to be awake, experiencing anxiety ultimately disrupting abilities to be able to sleep adequately [43].

There are many negative impacts resulting from anxiety itself. Therefore, it is necessary to take nursing action for Type 2 DM patients so that it does not cause other health problems for the patient. One of the nursing actions that can be taken is relaxation techniques. There are many kinds of relaxation techniques. One of them is the deep breathing relaxation technique (SDB). The aim of deep breathing relaxation technique is to increase alveolar ventilation, maintain gas exchange, prevent lung atelectasis, increase cough efficiency, reduce stress, both physical and emotional stress, namely reducing pain intensity and reducing anxiety.

Slow Deep Breathing (SDB) interventions allow nurses to recommend and implement strategies to promote to reduce anxiety in patients [10]. These methods can be used as appropriate complementary treatments by nurses and midwives for ill patient generally like undergo surgeon and etc. It is hoped that this research can be used as source of information that SDB beneficial for patients who experience anxiety like sleep pattern disorder, blood pressure and etc.

Limitations of the study

The limitation of this research consisted in the restricted number of respondents so it cannot be compared with the control group. The act of Slow Deep Breathing is not carried out for a long period of time.

Conclusions and Implications

Based on the provided nursing care actions, it was demonstrated that the interventions carried out were successful. Where The results of the description of nursing care for clients "Providing Slow Deep Breathing In Anxiety Disorders In Diabetes Mellitus II Patient" the patient's high anxiety was reduced, the dizziness was as well reduced. The patient became able to perform deep breathing techniques and did not longer look tense. The problem was resolved and the intervention was stopped. The Slow Deep Breathing (SDB) intervention and the results the blood pressure was reduced from the first examination, and the period of sleep taking more time from 4 hours to 6-8 hours of sleep, the patient's high anxiety was reduced, the dizziness was also reduced. The patient no longer looked tense. The level of anxiety that was initially mild became non-existent.

There are many negative impacts resulting from anxiety itself. Therefore, it is necessary to take nursing action for Type 2 DM patients so that it does not cause other health problems for the patient. One of the nursing actions that can be taken is relaxation techniques.

Suggestions for Future Research

It is recommended for future researchers to conduct further research on modifications to the slow deep breathing exercise technique with different variables and a larger sample. There are many kinds of relaxation techniques. One of them is the deep breathing relaxation technique (SDB). The aim of the deep breathing relaxation techniques is to increase alveolar ventilation, maintain gas exchange, prevent lung atelectasis, increase cough efficiency, reduce stress, both physical and emotional stress, namely reducing pain intensity and reducing anxiety. The slow Deep Breathing (SDB) interventions allow nurses recommending and implementing strategies in order to reduce anxiety in patients. These methods can serve as suitable complementary treatments for nurses and midwives caring for patients undergoing surgery and other illnesses.

Future researchers should also explore the integration of slow deep breathing exercises with other complementary therapies, such as mindfulness meditation or progressive muscle relaxation, to determine their combined effects on patient outcomes.

Declarations

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Institutional Review Board Statement

This research obtained ethical permission from the Ethics Committee of the Faculty of Nursing and Midwifery, Prima Indonesia University on June 20, 2023, with permit number 027/KEPK/UNPRI/VI/2023.

Informed Consent Statement

Informed consent was obtained from all respondents included in this study and informed consent was signed without coercion and consciously.

Conflicts of Interest

There is no conflict of interesting statement in this research.

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