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# EFFECTIVENESS OF YOGA THERAPY EDUCATION ON KNOWLEDGE AND ATTITUDES OF T2DM PATIENTS IN TAKALAR REGENCY

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***ABSTRACT***

Background : Diabetes mellitus is a chronic disease characterized by increased blood sugar levels (hyperglycemia) and glucose intolerance caused by the pancreas not producing enough insulin or the body being unable to use the insulin produced effectively. Objective : to determine the effectiveness of yoga therapy education on knowledge and attitudes of T2DM patients in Takalar Regency. Method : This research uses an experimental approach with a one-group pre-post test design. The number of respondents was 30 using the accidental sampling method. The statistical test used is the paired sample test with $\rho<0.05$. Results : In this study, pre-intervention knowledge results were obtained with a mean of 5.47, and mean post-intervention knowledge increased to 8.47 with a value of $\rho=0.001$, while pre-intervention attitudes had a mean of 20.20, while post-intervention attitudes the mean increased to 26.83, with a value of $\rho=0.001$. Conclusion : there is an influence of yoga therapy education on the knowledge and attitudes of T2DM patients in Takalar Regency.

**Keywords**: T2DM, Knowledge, Attitude, Yoga Therapy

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## INTRODUCTION

Hyperglycemia in diabetes mellitus (DM), a metabolic disorder, is caused by abnormal insulin function, or both. The characteristics of diabetes mellitus, a chronic disease that occurs due to the production of pancreatic insulin that does not meet the body's inefficient use of insulin (Dewi & Maria, 2023) . Yoga is a type of exercise that offers

many health benefits. It may be attractive as an alternative because it is easy to do and does not cause adverse side effects (Faizah, Sriwahyuni, & Muthmainna, 2023) .

According to the World Health Organization (WHO), in Indonesia, cases of DM in 2000 were 8.4 million, growing rapidly in 2030 to 21.3 million (Amalia, 2015) . According to the International Diabetes Federation (IDF), Diabetes affected 9.6% of women and 9.6% of men in 2019. With 11.3% of its population suffering from diabetes, Indonesia ranked third in the Southeast Asia region in 2019 (Kemenkes, 2019) .

According to the Takalar Regency Health Office in 2022, the number of DM sufferers in the Pattalassang Health Center Working Area (21.7%), South Polongbangkeng Health Center (5.3%), North Polongbangkeng Health Center (18.8%), Ko'mara Health Center (4%), Mangarabombang Health Center (9.7%), Bulukunyi Health Center (11.4%), Mappakasunggu Health Center (3.7%), Pattopakang Health Center (5.2%), Sanrobone Health Center (2.9%), Bontomarannu Health Center (1.5%), Bontokassi Health Center (0.9%), Aeng Toa Health Center (2.2%), Galesong Health Center (5.5%), North Galesong Health Center (5.2%), Bontongape Health Center (1.3%), and Tana Keke Health Center (0.7%) (Health Office, 2022) .

Initial data collected in the Bulukunyi Health Center Working Area, Takalar Regency showed that in March-June 2024 there were 122 prolanis diabetes mellitus patients, consisting of men and women. According to nurses and officers of the Bulukunyi Health Center, Takalar Regency, diabetes is considered one of the most common diseases due to the increasing death rate due to diabetes (Puskesmas Bulukunyi, 2024 ) .

The patient's attitude is influenced by knowledge, in this case knowledge about diabetes mellitus is very important because it will enable the patient to determine their attitude, think, and try to manage their disease and control their blood sugar (Dewi , 2023) .

One way to control type 2 diabetes is to change your lifestyle and stop using medication. To lower blood sugar levels, yoga can be done independently at home without pharmacological side effects (Sri wahyuni et al., 2018). Doing yoga exercises with consistent frequency, duration, and time is one way to lower blood sugar levels.

One of the four pillars of DM, education, affects how well sufferers control their metabolism. One way that can be used to improve the knowledge and skills of people with diabetes mellitus is by providing education. Research by Faizah et al., (2023) shows that participants have gained better knowledge and behavior so that they can understand yoga and do physical activities independently. It is expected that yoga activities can be done every week to keep blood sugar levels stable.

Research results from (Wiasa, 2018) One of the treatments that can be done is asanas therapy , such as meditation and yoga asanas. Practice body This No only focus on body, but also utilize the capabilities thoughts to improve physical health. A number of *Asana* movements that are suitable for diabetes sufferers are *Suptha Baddha Konasana, Janu sirsasana, Bharadvajasana, Marichiyasana I, Viparita Dandasana, Adho Mukha Svanasana, Adho Mukha Virasana, Savasana* (Wiasa, 2018)

Yoga therapy is a physical activity. Physical activity such as body movement or exercise that is done regularly is an effort that can be done regularly (Juripah, Muzakkir, & Darmawan, 2019) . In type 2 diabetes mellitus, exercise plays a role in regulating blood sugar. In the current era of globalization, there has been an epidemiological transition, namely a change in the pattern of disease spread from infectious diseases to non-infectious diseases. This is due to unhealthy people's lifestyles ranging from instant consumption

patterns, increasingly sophisticated technology that causes people to move less or do physical activity, lifestyle and others ( Maharini & Nugroho, 2021) . One of the efforts to control type 2 diabetes is non-pharmacological (lifestyle modification) by regulating physical activity. Providing yoga education is one alternative that can be done to increase knowledge so that they are able to do yoga therapy and can lower blood sugar levels. Yoga education and therapy can be one of the non-pharmacological treatment options that do not have side effects and can be done independently by patients at home. Sports that have an effect on blood sugar levels are aerobic exercise, one of which is yoga. Yoga exercises carried out with good frequency and regular duration have a significant effect on HBA1C in diabetes mellitus sufferers, so yoga exercises are recommended for diabetes mellitus sufferers to control blood sugar levels (Faizah et al., 2023). Based on this background, the researcher is interested in conducting research on "The Effectiveness of Yoga Therapy Education on Knowledge and Attitudes of DMT2 Patients in Takalar Regency".

## METHOD

### Design

This study uses an experimental approach with *a one-group pre-post test design.*

### Place and Time of Research

This research was conducted in the Bulukunyi Health Center Working Area, Takalar Regency, on July 2-July 31, 2024.

### Sample

The number of respondents in this study was as many as 30 people, according to the sample criteria, namely : 1) Patients with a diagnosis of DMT 2, 2) Age between 45-65 years, 3) Can read and write, 4) Do not suffer from complicated diseases, 5) Willing to be respondents or research samples.

### Sampling Techniques

*Accidental* sampling method . *This sampling determination technique is used based on coincidence, that is* , anyone who happens to meet the researcher can be used as a sample, if it is considered that the person who happened to be met is in accordance with the data source.

### Data collection

Data collection using a questionnaire consisting of a knowledge questionnaire and an attitude questionnaire.

### Data analysis

Statistical tests that used is *the t test.* This test is used If the data distribution is normal, if the data distribution is not normal then use an alternative test, namely the *Wilcoxon non-parametric test.* with the level of significance $\rho$ <0.05. This test was conducted using the SPSS Version 28 computer program.

## RESULTS

### Respondent characteristics

Table 1 Distribution of Respondent Characteristics in DMT2 Patients in Takalar Regency

| Age | N | % |
|---|---|---|
| 45-54 years | 19 | 63.3 |
| 55-60 years | 11 | 36.7 |
| Gender | N | % |

| | | |
|---|---|---|
| Man | 6 | 20.0 |
| Woman | 24 | 80.0 |
| Education | N | % |
| Didn't Finish Elementary School | 4 | 13.3 |
| Elementary School | 14 | 46.7 |
| Junior High School | 6 | 20.0 |
| Senior High School | 6 | 20.0 |
| Work | N | % |
| Doesn't work | 1 | 3.3 |
| Farmer | 4 | 13.3 |
| Self-employed | 2 | 6.7 |
| housewife | 23 | 76.7 |
| Long time suffering from DM | n | % |
| ≥ 5 Years | 12 | 40.0 |
| < 5 Years | 18 | 60.0 |
| Total | 30 | 100 |

Based on table 1 shows that the majority of respondents' age is 45-54 years, which is 19 respondents (63.3%), the majority of gender is female, which is 24 respondents (80.0%), the majority of education is elementary school, which is 14 respondents (46.7%). The majority of occupations as housewives are 23 respondents (76.7 %), and for the duration of suffering from DM, the majority are less than 5 years, which is 18 respondents (60.0%).

Table 2. Distribution of knowledge pre and post intervention of yoga therapy education in DMT2 patients in Takalar Regency

| Knowledge | Good | | Not enough | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Pre Intervention | 3 | 10.0 | 27 | 90.0 | 30 | 100 |
| Post Intervention | 23 | 76.7 | 7 | 23.3 | 30 | 100 |

Based on table 2, it was found that out of 30 respondents before the yoga therapy intervention, 3 respondents (10%) had good knowledge and after the intervention, there was an increase in good knowledge, namely 23 respondents (76.7%).

Table 3. Distribution of respondents' attitudes pre and post intervention of yoga therapy education in DMT2 patients in Takalar Regency

| Attitude | Positive | | Negative | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Pre intervention | 2 | 6.7 | 28 | 93.3 | 30 | 100 |
| Post intervention | 21 | 70.0 | 9 | 30.0 | 30 | 100 |

Based on table 3, it was found that out of 30 respondents before the yoga therapy intervention, 2 respondents (6.7%) had a positive attitude and after the intervention, there was an increase in positive attitudes, namely 21 respondents (70%).

Table 4. Analysis of the influence of providing yoga therapy education on knowledge in DMT2 patients in Takalar Regency

| Knowledge | n | Mean | SD | Min-Max | *ρ Value* |
|---|---|---|---|---|---|
| Pre Intervention | 30 | 5.47 | 1,332 | 4-8 | 0.001 |
| Post Intervention | 30 | 8.47 | 1,592 | 5-11 | |

Based on table 4, it shows that the average (mean) knowledge pre-intervention ( 5.47) and there was an increase in knowledge after the intervention yoga therapy education with an average post-intervention knowledge (8.47).

The results of the *paired sample test analysis* show that there was an increase in knowledge after the intervention where the value $\rho$= 0.00 1 < α = 0.05, there is an influence of yoga therapy education on knowledge in DMT2 patients in Takalar Regency

Table 5**.** Analysis of the influence of yoga therapy education on attitudes in DMT2 patients in Takalar Regency

| Attitude | n | Mean | SD | Min-Max | *ρ Value* |
|---|---|---|---|---|---|
| Pre Intervention | 30 | 20,20 | 2,058 | 17-26 | 0.001 |
| Post Intervention | 30 | 26.83 | 3,544 | 20-32 | |

Based on table 5, it shows that the average (mean) attitude before the intervention was (20.20) and there was an increase in attitude after the intervention. yoga therapy education, with an average post-intervention attitude (26.83).

The results of the *paired sample test analysis* show that there was an increase in attitudes after the intervention where *the ρ value* = 0.001 < α = 0.05 there is an influence Yoga therapy education on attitudes in DMT2 patients in Takalar Regency

## DISCUSSION

### The effectiveness of yoga therapy education on knowledge in DMT2 patients in Takalar Regency

The results of the study showed an increase in knowledge from 30 respondents after receiving yoga therapy education. Before the yoga therapy education was carried out, 3 (10.0%) respondents had good knowledge, whereas after the education was carried out, 3 (10.0%) respondents had good knowledge. 23 (76.7%) respondents experienced knowledge enhancement. However, 7 of the respondents stated that they did not gain knowledge enhancement, because there were several factors such as education, age, and the average education of respondents was not elementary school graduates and the average age of respondents was 58-60 years old, making it rather difficult to receive education.

Knowledge about diabetes can help them to undergo diabetes care throughout their life. Thus, more and more diabetes sufferers understand their disease better. (Setyaji, Duri, Kuniasiwi, & Putri, 2023) **.** Education Yoga therapy has also been studied to control the symptoms and complications of type 2 diabetes mellitus. By providing education, yoga therapy can improve existing patient symptoms because they have good knowledge and skills. Health education is a process of planned behavioral change in individuals. Education that includes diabetes mellitus aims to increase patient knowledge so that there is a change

in attitudes in diabetes mellitus patients properly, so that it can prevent complications (Nunung et al., 2020) .

Education plays a very important role in the management of type 2 DM because providing education to patients can change patient behavior in managing DM independently. Providing education to patients must be done by considering the patient's background, race, ethnicity, culture, psychology, and the patient's ability to receive education. Education regarding independent DM management must be provided in stages which include basic concepts of DM, DM prevention, DM treatment, and self-care (Funnell et al., 2012) (Suardi, et al., 2021) .

Education is a series of efforts aimed at influencing others, starting from individuals, groups, families and communities, to implement healthy living behavior. (Wirda et al., 2022) . Regular diabetes education (UDE) has an important role in glycemic control, thereby preventing the risk of long-term complications in people with diabetes mellitus (Liu et al., 2015) (Suardi, et al., 2021) .

This knowledge or cognitive is an important domain in shaping a person's actions. Knowledge is a factor that is significantly related to diabetes self-care activities. (Maria, Adimuntja, Thaha, & Jafar, 2018) . Level knowledge patient diabetes can be influenced by many factors, such as age, education, availability of information, doctor-patient communication. Patients who have a good level of education will usually be able to grasp information well so that it will improve understanding. disease (Ibrahim Suliman Al-Aboudi, Mohammed Azmi Hassali, 2016) .

Knowledge of DM sufferers is a tool that can help sufferers carry out diabetes management throughout their lives so that more and better sufferers understand DM. This is in line with the research conducted (Eva rosdiana, 2024).

Several previous studies have been conducted related to Diabetes Self-Management Education, such as the study of Devchand et al., (2017) the results of their study provided significant results with the variables studied Knowledge and self-efficacy, and Shakibazadeh et al., (2016) looked at HbA1C, Knowledge, Self-Care Activities, Psychosocial and Depression. The study of Hailu et al., (2019) , he found a significant increase in the average knowledge score in the intervention group and slightly in the comparison group , Abaza & Marschollek ( 2017) , found a significant increase in the average knowledge score. Research results demonstrated statistically significant improvements in diabetes knowledge, adherence to dietary recommendations, and foot care practices.

According to research by Ayu & Damayanti (2015), the importance of knowledge and skills that must be possessed by Diabetes Mellitus sufferers can help nurses in providing education and counseling. Health education for people with Diabetes Mellitus has an important role in changing behavior by increasing the patient's understanding of their disease in order to achieve optimal health and psychological adjustments and a better quality of life. Health education for people with Diabetes Mellitus is also needed because the management of Diabetes Mellitus requires special lifelong treatment behavior. Patients not only learn skills to care for themselves to avoid sudden fluctuations in blood glucose levels, but also must have preventive behavior in their lifestyle to avoid long-term diabetic complications (Ayu & Damayanti, 2015) .

Increased knowledge can be obtained in formal or non-formal education . Knowledge also contains two positive and negative aspects. These two aspects will ultimately

determine a person's attitude towards a particular object. The level of education generally affects a person's ability to understand information. The higher the education and experience somebody so the more wide also his knowledge.

**The effectiveness of providing yoga therapy educational interventions on the attitudes of type 2 diabetes mellitus patients**

The results of the study showed an increase in attitudes in 30 respondents after receiving yoga therapy training . Before yoga therapy education, there were 2 (6.7%) respondents with positive attitudes, while after education there were 21 (70.0%) respondents . Meanwhile, there were 9 respondents who did not experience an increase in attitudes due to several factors such as personal experience, individual influence, and some who did not often follow education. The assessment of respondents' attitudes was carried out at the beginning of the meeting and at the end of the meeting in the fourth week. This is in line with research (Ilham, Bintang, Rinawati, & Satriana, 2024) attitude before education (25.17) and after (28.37) ( $p$ = 0.00). By providing yoga therapy education, patients will gain knowledge that has an impact on behavior so that no further complications occur. Yoga therapy is a physical activity therapy, if done routinely it will affect blood sugar levels.

Diabetes education is education and training regarding knowledge and skills for DM patients which aims to support behavioral changes to improve patient understanding of their disease, which is needed to achieve a healthy state and psychological adjustment and better quality of life (Soegondo, Soewondo, & Subekti, 2013) .

Diabetes Self-Management Education ( Diabetes Self Management Education) is an activity that helps people with pre diabetes or diabetes in implementing and maintaining the behaviors needed to manage their condition continuously outside or outside of formal self-management training. The type of support provided can be behavioral, educational, psychosocial, or clinical (Edwards, 2014).

The attitude of the sufferer is influenced by knowledge in this case knowledge about diabetes mellitus is very important because it will allow the sufferer to determine their attitude, think, and try to manage their disease and control their blood sugar (Dewi , 2023) . Attitude is a mental and neural condition obtained from experience, which directs and dynamically influences the individual's response to all related objects or situations. To be the basis for forming attitudes, personal experiences must leave a strong impression. The development of a person's health attitudes and behaviors is in line with age. Age is also related to the maturity of reason in accepting, experiencing and responding to something. As a person gets older, the maturity of reason also grows stronger, thus fostering a better attitude in a person (Ilham et al., 2024) .

Education plays an important role in the management of DM as an initial step in controlling DM. Yoga therapy education given to DM patients aims to improve patient knowledge and skills so that patients have preventive behavior in their lifestyle to avoid DM complications by implementing health education (education), diet (meal plan), physical exercise (exercise), and pharmacology. One of these programs is very effective compared to other interventions. DM education is education regarding knowledge and skills in management given to each client with DM. (Ilham et al., 2024)

One way to control type 2 diabetes is to change your lifestyle and stop using medication. To lower blood sugar levels, yoga can be done independently at home without

pharmacological side effects (Sri wahyuni et al., 2018). Doing yoga exercises with consistent frequency, duration, and time is one way to lower blood sugar levels.

According to research conducted by Amelia et al, (2018) , it shows that most type 2 diabetes patients have supportive families. Family support is the attitude, actions and acceptance of the family towards the sick person. Support can come from other people (parents, children, husband, wife or siblings) who are close to the subject of the sick person's residence as Support that can make individuals feel loved, cared for and cared for. Family support is very necessary because patient compliance is needed in the course of therapy, such as limiting food intake, physical activity, and independent monitoring of blood sugar levels (Tabasi, Madarshahian, Nikoo, Hassanabadi, & Mahmoudirad, 2014) .

A person's attitude can also be influenced by several circumstances, including their level of knowledge. Respondents' knowledge is the basis for assessing their attitudes. Respondents' attitudes will be positive if their knowledge is good, and negative if their knowledge is lacking (Zhafirah & Palupi, 2019) .

## CONCLUSION AND SUGGESTIONS

In this study, the results of pre-intervention knowledge were obtained with *a mean of* 5.47, and the *mean post-intervention knowledge* increased to 8.47 with a value of ρ= 0.001, while the pre-intervention attitude with *a mean* 20.20 , while the post-intervention attitude *the mean* increased to 26.83, with a value of ρ=0.001. thus there is an influence of yoga therapy education on knowledge and attitudes in DMT2 patients in Takalar Regency. The next recommendation for researchers is to conduct research by creating a new innovation related to yoga therapy that can be applied to all DM sufferers.

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