

THE RELATIONSHIP OF KNOWLEDGE WITH THE ATTITUDE OF YOUTH ABOUT PHYSICAL ACTIVITY TO PREVENT DM TYPE II

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Abstract

Purpose: This study aimed to determine the relationship between knowledge of adolescent attitudes about physical activity towards the prevention of type II DM.

Methodology: The research design used correlation analysis with a cross-sectional approach, and the research population was all SMAN 3 Palangka Raya students. The number of samples as many as 44 people with a simple random sampling technique. The research instrument used a knowledge and attitude questionnaire, and the data that had been collected were analyzed using the chi-square test.

Findings: Adolescents' knowledge of physical activity towards the prevention of type II DM was essentially good (70.5%), and student attitudes were mostly good (81.8%). Based on Chi Square's analysis, there is a meaningful relationship between knowledge and attitudes about physical activity towards the prevention of type II DM (p value < 0.05)

Limitation: The extent of the study using instruments is that there is a possibility that the answers given by respondents do not represent the actual conditions.

Contribution: This research is expected to contribute to the teachers at SMAN 3 schools regarding students' knowledge and attitude the knowledge and attitudes of students about the importance of physical activity in the prevention of type II DM.

Keywords: Knowledge; Attitude; Diabetes Mellitus type II; Physical Activity

1. Introduction

Diabetes can lead to premature death and is a significant trigger for blindness, heart disease and kidney failure worldwide (Kementarian Kesehatan RI., 2020). A total of 463 million people aged 20-79 years had diabetes in 2019, or 9.3% of the total population of the same age (IDF, 2021). By gender, 9% of women and 9.65% of men suffer from DM. The prevalence of DM will increase in 2030, it will be 578 million, and in 2045 it will be 700 million. The risk factors for diabetes mellitus (DM) type II are more caused by lifestyle and are included modifiable factors. Obesity, lack of activity, dyslipidemia, history of cardiovascular disease, hypertension and dietary imbalances (P2PTM Kemenkes RI, n.d.). Lifestyle modification is closely related to risk factors for non-communicable diseases (NCDs), including DM, dietary regulation, physical activity, pharmacological therapy and family support. Physical activity

should be done in one day for at least 30 minutes or one week for 150 minutes with moderate intensity (50-70% *maximum heart rate*). The ease of transportation modes and sedentary activities (such as playing on cell phones and watching TV) affect teenagers' lack of physical activity. There is data on the national average proportion of the population with a level of physical activity less than ten years of age, which increased by 33.5 per cent compared to 2013, showing a higher sedentary lifestyle (R.I, 2019).

The knowledge possessed by the individual will affect his behaviour because it will make him understand what is needed and be responsible for what he needs. Behaviour starts from a knowledge (cognitive) which means that he knows the material first; eventually, that knowledge will create an attitude and action (Karyoso, 1999). Knowledge about DM disease will shape behavior or an action to be taken to prevent DM (Effendi & Makhfudli, 2009 in (Silalahi, 2019), so that knowledge about physical activity for the prevention of type II DM is very important for adolescents considering adolescent behavior from an early age will affect level of health in old age. A preliminary study at SMAN 3 Palangka Raya found that 6 out of 10 students did not know about the risk factors for type 2 DM and said they rarely exercised.

2. Literature review and hypotheses development

A study from (Silalahi, 2019) on 70 students and students of Muhammadiyah High School Surabaya found that the knowledge of students and students was related to efforts to prevent Diabetes Mellitus type 2 ($p\text{-value } 0.0001 < \alpha = 0.1$ so that $p < \alpha$), with the majority of respondents being women (59%) and the age of the most respondents in the range of 15-19 years (96%). This type of research is quantitative with cross-sectional essay d. The study by (Natalansyah et al., 2019) with the purpose of the study was to determine the relationship between obesity and increased blood sugar levels when in adolescents at SMAN 2 Palangka Raya, and it was found that there was a significant relationship between obesity and an increase in blood sugar levels during ($p\text{-value } 0.020, \alpha < 0.05$). The study by (Ramli et al., 2021) with a total sample of 394 adolescents with an age range of 15-19 years obtained the results of the highest respondent knowledge level was in the good category (53.8%), the attitude of most respondents was in the good category (72.6%), while DM type II prevention practices were also in the good category (76.4%). Data were obtained using questionnaires to measure the level of knowledge, attitudes and behaviours about diabetes mellitus, risk factors and prevention of diabetes mellitus. Statistical data analysis using descriptive analysis.

Study by (Lutfiawati, 2021) with the research objectives is to find out the relationship between the level of dietary knowledge and risk factors DM in adolescents at SMAN 14 Tangerang regency obtained results of a significant relationship between the level of dietary knowledge and dm risk factors (p-value $0.000 < 0.05$). Design quantitative research with descriptive method. The study population was adolescents aged 16-17 years, and the sampling technique used purposive sampling with a total sample of 72 respondents. The instrument used is in the form of a questionnaire sheet containing several questions. A study by (Ramadhani et al., 2022) in 1479 women aged 20-25 years who visited Posbindu, 23.73% had DM, and 21.17 had less physical activity category. In the multivariate analysis, it was found that there was a relationship between physical activity and DM after being controlled with the perancu variable, namely obesity, and less vegetable fruit consumption (AOR 2.7 95% CI: 1.97-3.72), which is as fast as people with less physical activity have a 2.7 times greater chance of having DM after being adjusted to the role variable, namely obesity and low consumption of vegetables and fruits. It can be implied that there is a relationship between physical activity and DM disease; physical activity can prevent DM.

The study by (Veridiana & Nurjana, 2019), aimed to examine the relationship between consumption patterns and physical activity with the incidence of DM in Indonesia based on Riskesdas data in 2013. The total sample was 722,329 people aged over 15 years. The study's results found the habit of consuming processed foods (biscuits) and low physical activity as risk factors for DM. Individuals with the tradition of eating biscuits have a 1,198-time chance of suffering from DM compared to people who do not have the habit. Physical activity has a vital risk factor for the incidence of DM in Indonesia. Those with mild and moderate physical activity habits had a 3,198 and 1,933 times chance of developing DM, respectively, compared to those with individuals with had a pattern of strenuous physical activity. Studies by (Alza et al., 2020) in 24 people with type 2 DM obtained a picture of physical activity levels in respondents suffering from DM 66.7% with a group of mild physical activity, and 33.3% with moderate physical activity levels. Research is descriptive with a cross-sectional design. The sampling technique in this study was total sampling. Data collection for physical activity variables was carried out using questionnaires included in the Physical Activity Level. The conclusion obtained was a picture of the fasting blood glucose levels of respondents having controlled and uncontrolled fasting blood glucose levels with light physical activity had uncontrolled fasting blood sugar levels. In contrast, respondents with moderate physical

activity had held fasting blood sugar levels. This shows that the higher a person's movement, the more controlled his blood glucose levels are.

Study by (Qifti et al., 2020) with descriptive research with a cross-sectional approach. The research sample was 171 high school students in Padang City. A total of 48% the age 16 years, 33.3% the age 17 years, 16.4% are aged 15 years, and 0.6% are 19 years. As many 64.3% with female gender and 35.7% male. The body mass index was obtained by 52.5% with $BMI \geq 25 \text{ Kg/m}^2$ and 47.4% with $BMI < 25 \text{ Kg/m}^2$. Students with a family history of DM sufferers are 64.9%, and have no family history of 35.1%. The study concludes that adolescents with risk factors should run a blood glucose check and be given health education to cause self-awareness in preventive efforts as early as possible. Study by (Widiyoga et al., 2020) on 34 dm type II patients n wounds at Griya Bromo Malang Clinic who participated in the prolanis program obtained results that there was a relationship between knowledge level and physical activity regulation ($p = 0.006 < \alpha = 0.01$). Type quantitative research with cross-sectional design. The study by (Almutairi et al., 2022) reported factors associated with physical activity before and during coronavirus disease 2019 (COVID-19) among high school students in Jeddah, KSA. Research methods with cross-sectional online surveys on 1. 500 high school students aged 11 to 15. Characteristics of sociodemography; knowledge, attitudes, and behaviors of physical activity; and information about the impact of COVID-19 on physical activity were collected. Physical activity knowledge, attitudes, and behaviors were compared before and during COVID-19 restrictions and between genders. Regression analysis is performed to assess the determinants of physical activity. The study's results showed that women students were significantly more likely to report physical activity knowledge better than men ($p < 0.001$). However, men are considerably more likely to participate in physical activity than women ($p < 0.001$). About 60% of students reported their physical activity decreased during COVID-19 isolation. Most students do not participate in the recommended daily physical activity levels during covid-19 lockdowns and school closures.

Study by (Ryninks et al., 2015) with the aim investigating young people's attitudes, and understanding physical activity in glycemic control in Type 1 Diabetes Mellitus. The research method by dividing the focus group by age 11–14 and 15–16 years was carried out on twelve adolescents with Type 1 Diabetes from a more extensive study investigating physical activity and fitness. Qualitative analysis of focus group data was carried out using Interpretive Phenomenological Analysis. Study's results obtained four themes that can be identified i.e.,

use of exercise, knowledge, and understanding, information and training, and "you can do anything". Young people feel that exercising helps them manage their diabetes and has psychological and physical impacts on their bodies. They reported a lack of knowledge and understanding of diabetes among school staff and other young people. The incredible feeling of young people is that although diabetes impacts their lives, physical activity can occur as usual with preparation, physical activity can take place as usual. The study concludes that while young people are aware of exercise's material and psychological benefits in managing their diabetes, they have difficulties in school. Professional support and discussions with young people, providing tailored strategies for managing Type 1 Diabetes while exercising, is much needed.

3. Research methodology

This type of research is correlational with a cross-sectional approach. The sampling technique in this study was simple random sampling. The instruments used to collect this research data were demographic, knowledge data questionnaires, and attitude questionnaires about physical activity prevention of DM type 2. The knowledge questionnaire about the risk factors of DM type 2 physical activity sourced from (Aethelstone, 2017) in this questionnaire amounted to 10 statements, of which there were 5 negative statements and 5 positive statements. While the attitude questionnaire on risk factors of DM type 2 physical activity was adopted from (Yunanto, 2017), which amounted to 14 statements, 7 positive and 7 negative, the measurement of questionnaire statements used a Likert scale. Data processing using computer applications.

4. Results and discussions

The respondents' characteristic data comprised 15-18 years (90.9%), the majority of women (68.2%). The majority of respondents did not know about their family history, whether they had a history of DM or not, which amounted to 43.2%. Respondents who knew of a history of DM in their family were 22.7%, and respondents who stated that there was no history of DM in their family were 34.1%. This is the same as the results of a study by (Ramli et al., 2021); the majority of respondents are 15 years old (32.5%), the dominant gender is female (59.9%); study by Qifti, Malini & Yetti (2020) of a total sample of the majority (48%) aged 16 years, 33.3% aged 17 years. Most of the respondents (64.3%) were female. Meanwhile, the

characteristics of students with a family history of DM 64.9%, and do not have a family history, which is 35.1%. (Isnaini & Ratnasari, 2018) stated that individuals with a family history of DM would be 10,938 times more likely to suffer from type 2 DM due to heredity than individuals who do not have a family history. In this case, close family such as mothers, fathers, and siblings.

Study results were obtained as a large part of respondents who knew knowledge with good categories total 70.5%, and respondents who had less category knowledge 6.8%. Many respondents had a good attitude, 81.8%, and a bad attitude 18.2%. This result is the same as the research conducted by (Ramli et al., 2021), namely the highest level of knowledge of respondents is in the excellent category (53.8%) as well as the attitude of most respondents is in the superb type (72.6%). The study by Almutairi, Burns & Portsmouth (2022) found that female students were significantly more likely to report knowledge of better physical activity compared to men ($p < 0.001$). Nevertheless, men substantially participate in physical activity compared to women ($p < 0.001$). Individuals who have a level of knowledge at the level of know (know) means that they can remember again a material that has previously been studied or stimulation that has been obtained before until this level of knowledge is the lowest, but with individuals with a level of knowledge at the application level (application) which is a level of ability to use or apply material that has been obtained in one particular condition in real life (Notoadmodjo, 2010).

The results of the study were obtained by the majority of respondents with good knowledge and attitudes, amounting to 90.3%. Respondents with good knowledge and a lack of attitude amounted to 9.7%; respondents with sufficient knowledge and a good attitude amounted to 70.0%. Respondents with sufficient expertise and lack of attitude amounted to 30.0%. Respondents with insufficient knowledge but good attitudes amounted to 33.3%. Respondents who had little knowledge and attitudes were also 66.7%. Statistical results test knowledge variables with attitude show data $P\text{-value} = 0.028$, meaning that there is a relationship between knowledge and attitude about physical activity to the prevention of DM type 2. The results of this study are the same as the results of (Silalahi, 2019) research, that there is a meaningful relationship between knowledge about DM type 2 and preventive measures of DM type 2 in students of Muhammadiyah 7 Surabaya High School ($p\text{-value} 0.0001 < \alpha = 0.1$; $p < \alpha$). Similarly, the results of a study by Widiyoga, Saichudin & Andiana (2020) which obtained results there was a relationship between the level of knowledge and the

regulation of physical activity ($p = 0.006 < \alpha = 0.01$) in non-wound type 2 DM patients at the Griya Bromo Malang Clinic.

5. Conclusion

The results of this study concluded that the majority of respondents aged 15-18 years (90.9%), the majority were female (68.2%), the majority of respondents did not know about their family history (whether they had a history of DM or vice versa) which amounted to 43.2%. Respondents who knew of a history of DM in their family were 22.7%. The study results were obtained as a large part of respondents had knowledge of good categories with a total of 70.5%, and respondents who had less category knowledge by 6.8%. The majority of respondents had a good attitude 81.8%, and a bad attitude of 18.2%. Based on the statistical knowledge test with an attitude showing data $P\text{-value} = 0.028$, there is a relationship between knowledge and attitude about physical activity to the prevention of type 2 DM. The age of adolescence can determine how their health condition will be old, and the earlier the adolescent knows the risks that can be caused by an unhealthy lifestyle, the greater the chances of enjoying the results with optimal health in old age.

6. Limitation and study forward

It is possible that the respondent in answering the questionnaire did not match the actual conditions. It is expected that the number of respondents, and research variables can be increased again.

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