

Perceptions of People with Diabetes Mellitus Before and When Experiencing Complaints Against Sports Activities

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Abstract

Received: 9 February 2023 Revised: 13 February 2023 Accepted: 17 February 2023	This study aims to: (1) knowing and analyzing the perception of DM sufferers before experiencing complaints about sports activities, (2) knowing and analyzing the perceptions of DM sufferers when experiencing complaints about sports activities, and (3) knowing how the perception of DM relates to sports activities between before and when experiencing complaints. This research is qualitative and quantitative descriptively with a mix method model design. The population is all patients with DM complaints at M. Djamil hospital. The research sample of dm complaint sufferers who made regular visits at M. Djamil Padang Hospital totaled 79 people. The withdrawal technique used is total sampling. The data and information obtained are analyzed descriptively and correlationally using the help of SPSS sofwere with the person correlation method. The results of this research show that: (1) the perception of dm sufferers towards sports activities before experiencing complaints are mostly positive with respondents' statements descriptively 51 people (67%) stating very good, (2) perceptions of DM sufferers towards activities exercise between before and when experiencing complaints are mostly positive with respondents' statements descriptively 51 people (65%) stating very good, and 25 people (31%) stating good, (3) There is a positive relationship (79%) perceptions of DM sufferers towards activities exercise between before and when experiencing complaints. It is concluded that there is a meaningful relationship between dm sufferers and sports activities.
Keywords:	Diabetes mellitus, Perception, Sports activities
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INTRODUCTION

Diabetes Mellitus is a disease that does not rule out the possibility of being easily experienced by people who do not pay attention to health. The statement conveyed by ADA (American Diabetes Association) that by 2025 will reach as many as



350 million about people with diabetes mellitus in Asia, especially China, Pakistan, India, and Indonesia has been far exceeded (Yosmar et al., 2018). So the importance of this article is to educate the public about the importance of paying attention to health, especially DM disease when exercising. Increased prevalence of degenative diseases such as coronary heart disease, DM, obesity and high blood pressure, associated with patterns of consumption and lifestyle or reduced physical activity (Ziesenitz, 2012). Diabetes Mellitus (DM) is "an umbrella term for heterogeneous metabolic disorders whose main finding is chronic hyperglycemia (Domínguez-Muñoz, Adsuar, Villafaina, et al., 2020). DM is a chronic disease characterized by high blood sugar levels and metabolic disorders in general, if not controlled properly it will cause various fatal complications, such as heart, lung, kidney disease, blindness, sexual function, and limb amputation (WHO, 2018). iabetes Mellitus Type 2 (T2DM) is a chronic disease that affects millions of people (Dominguez-Muñoz et al., 2020). T2DM is a chronic condition currently affecting approximately 387 million people worldwide, and is expected to affect up to 592 million people by 2035 (Albargawi et al., 2016). Diabetes Mellitus Type-2 (T2DM) is a chronic disease characterized by chronic hyperglycemia derived from impaired insulin secretion or impaired insulin action or both (Domínguez-Muñoz, Adsuar, Carlos-Vivas, et al., 2020).

Diabetes mellitus (DM) is a corneal metabolic disorder of various origins that begins when the pancreas fails to produce sufficient amounts of insulin or when the organism fails to respond efficiently to this hormone. This causes a condition characterized by hyperglycemia, which can damage certain organs, especially the eyes, kidneys, nerves, heart and blood vessels (Im et al., 2022). So it can be concluded that Diabetes Mellitus is a multi-ethiologic metabolic disease characterized by high sugar levels and metabolic disorders in ingsuline function.

According to World Health Organization (WHO) data, in 2014 8.5% of adults over the age of 18 years and over experienced DM and in 2016 it was found that 1.6 million cases of death were caused by DM complaints (WHO, 2018). WHO also estimates that 21.3 million people in Indonesia by 2030 will experience DM. Meanwhile, the International Diabetes Federation (IDF) estimates that there will be an increase in the number of people with DM in Indonesia from 9.1 million in 2014 to 14.1 million in 2035 (Perkeni, 2015). This data is also reflected by basic health research (riskesdas) that has been carried out by the Ministry of Health of the Republic of Indonesia. If you look at the comparison of 2013 riskesdas data, the prevalence of DM was 6.9% and increased to 8.5% in the 2018 riskesdas (Ministry of Health RI, 2019).

The purpose of DM management in general is to improve the quality of life of people with DM. The objectives of management include: (1). Short-term goals: eliminate DM complaints, improve quality of life, and reduce the risk of acute complications. (2). Long-term goals: prevent and inhibit the progressivity of microangiopathy complications: diabetic retinopathy, diabetic nephropathy, erectile dysfunction, and macroangiopathy; coronary heart disease, peripheral artery disease, cerebrovascular disease, diabetic foot. (3). The ultimate goal of management is to reduce DM morbidity and mortality. Efforts to achieve this goal need to be carried out control of blood glucose, blood pressure, weight, and lipid profiling, through comprehensive patient management (Perkeni, 2015).

Control of blood glucose levels of people with DM is very important within the normal range, so as to avoid hyperglycemia or hypoglycemia. The handling of DM complaints can be grouped into four pillars, namely education, meal planning, physical exercise/exercise and pharmacological interventions. In addition, Indonesia is part of the 10 countries with the highest percentage of diabetus miletus sufferers, besides that the potential for susceptibility related to COVID disease is diabetic pressure, which is associated with negative health outcomes, such as reduced adherence to treatment regimens. (Im et al., 2022). Treatment of chronic diseases such as DM, on the one hand, interferes with the psychological well-being and social functioning of the individual, and on the other hand, has a negative impact on family functioning. The prevalence of negative psychological outcomes among people with DM, especially children and adolescents, and their frustration from the medical treatment process indicate the need to develop psychological interventions in the fields of clinical psychology, health psychology and pediatric psychology (Moazzezi et al., 2015).

Sports participation has innumerable health benefits across all age groups. It is widely proved that the development of some chronic-degenerative diseases associated with older age, due to metabolic and cardiovascular disorders, can be limited through regular physical exertion (Lassandro et al., 2021) Sports, Physical Education and Health utilize the physical to develop human integrity. Through physical activity mental and emotional aspects lead to developments that contribute to improvements in the mind and body that affect all aspects of a person's daily life. A holistic approach to body and spirit includes an emphasis on three domains of education: psychomotor, cognitivity and effectiveness (Bafirman, 2014)

The influence of physical activity or exercise is directly related to an increase in the speed of recovery of muscle glucose (how much muscle takes glucose from the bloodstream). When exercising, muscles use glucose stored in the muscles and if glucose is reduced, the muscles fill the void by taking glucose from the blood. This will result in a decrease in blood glucose thus enlarging blood glucose control (Barnes, 2011). Physical inactivity has been identified as the fourth major risk of global mortality factors. Therefore, the promotion of physical activit (PA) has been increasingly recognized as a priority for public health measures and many countries have responded through the development of global recommendations on PA for health (Lankhaar et al., 2021).

Physical activity in the form of exercise is useful as blood sugar control and weight loss in type 2 diabetes mellitus (Ilyas, 2011). The great benefits of physical activity or exercise in diabetes mellitus include lowering blood glucose levels, preventing obesity, playing a role in overcoming complications, blood lipid disorders and increasing blood pressure (Ilyas, 2011). One of the three keystones of diabetes therapy is exercise along with medications and diet (Sultan et al., 2021).

The recommended physical activity for people with type 2 diabetes mellitus is regular physical activity (3-4 times a week) for approximately 30 minutes and in accordance with CRIPE (Continuous, Rhythmical, Interval, Progressive, Endurance training). And it is attempted to reach 75-85% maximum pulse rate (Waspadji, 2011). The absorption of glucose by body tissues at rest requires insulin, while in active muscles it is not accompanied by an increase in insulin levels even though glucose blindness increases. This is because when a person is physically active, there is an

increase in the sensitivity of insulin receptors in the active muscles. The main problem that occurs in type 2 diabetes mellitus is the occurrence of insulin resistance which causes glucose to not be able to enter the cells. When a person performs physical activity, there will be muscle contractions which will eventually make it easier for glucose to enter the cells.

Sports exercise has the effect of increasing membrane permeability, because of muscle activity, the transport of glucose into muscle cells increases so that insulin needs can decrease by up to 40%. In the long term, sports activities are able to lower blood glucose levels, in addition to helping to keep blood cholesterol levels normal. Sports activities also help weight management in people with DM who are generally 90% more weight. Means that sports practice can maintain a physique before and when experiencing DM complaints (Kurniawan1 & Wuryaningsih, 2016).

The issues studied in this article are; (1) How do DM sufferers perceive sports activities before experiencing complaints, (2) How do DM sufferers perceive sports activities when experiencing complaints, (3) how is the relationship between the perception of DM sufferers to sports activities between before and when experiencing complaints, and (4) How the involvement of DM sufferers is involved in doing sports activities. So that the purpose of this study is none other than to be able to find out a positive perception of sports activities, besides that it can understand the importance of the benefits of sports activities to maintain, maintain and improve healthy degrees and try to do sports activities with various limitations or perceived constraints.

METHODS

This research is qualitative and quamitative descriptively. The data and information obtained are analyzed descriptively and correlationally using the help of SPSS sofwere with the person correlation method. The population is all patients with DM complaints at M. Djamil hospital. The research sample of dm complaint sufferers who made regular visits at M. Djamil Padang Hospital totaled 79 people. The withdrawal technique used is total sampling. Data collection techniques through observation with questionnaires, interviews, documentation, and combination/triangulation. The variable perception of DM sufferers towards sports activities was measured using the Likert Scale, with 5 points, the higher the resulting score the more positive the perception of sports activities.

The item validity of the instrument uses Pearson's Product Moment correlation formula by correlating the score of each item with the total score which is the sum of each grain score. The reliability of the instrument uses Softwere SPSS with the alpha formula from Cronbach. The results of the trial of the perception instrument of DM sufferers before and when experiencing complaints against sports activities are 100% valid. The reliability level of the instrument before experiencing DM alpha value (a) 0.832, and when experiencing DM alpha value (a) 0.894. This means that the reliability value before and when DM of the questionnaire results can be trusted because the reability value is above 0.6. Data processing was analyzed descriptively, and correlations using the help of SPSS softwere with the person correlation method. Data analysis techniques using SPSS.

RESULTS & DISCUSSION

Results

1. Descriptive Analysis of Perceptions of DM Sufferers Before Experiencing Complaints Against Sports Activities.

Descriptive data processing of perceptions of dm complaints of sports activities before experiencing complaints, from 79 respondents with 37 statements. Obtained the highest value of 184 and the lowest of 128, from the distribution of data obtained an average score of 4,143, a middle value of 4 and a widely appeared value of 4, and a standard deviation of 0.872. Based on the descriptive processing, the perception of DM sufferers towards sports activities before experiencing complaints was dominated by the criteria of "Very Good" namely with the number of 51 people (65%) obtained based on the processing of descriptive data of respondents with a total value of 148 - 185, and the remaining 28 people (35%) in Good condition were assessed in a total range of 111 - 148.

2. Descriptive Analysis of Perceptions of DM Sufferers When Experiencing Complaints Against Sports Activities.

Descriptive data processing of perceptions of dm complaints against sports activities when experiencing complaints, from 79 respondents with 28 statements. The highest value of 140 and the lowest of 86 were obtained, from the distribution of data obtained an average score of 4,133, a middle value of 4 and a widely appeared value of 4, and a standard deviation of 0.848. Based on the descriptive processing, the perception of DM sufferers towards sports activities when experiencing complaints is dominated by the criteria of "Very Good" namely with a total of 53 people (67%) obtained based on the processing of descriptive data of respondents with a total value of 112 - 140, the remaining 25 people (31%) in Good condition stretched a total value of 84 - 111.

3. The Relationship between DM Sufferers' Perceptions of Sports Activities Before and When Experiencing Complaints

In accordance with the statement submitted, is there a perception relationship with sports activities between before and when experiencing diabetes mellitus complaints? As per the following table:

Table 1. The relationship of perception of sports activity between before and when experiencing DM complaints.

		Before DM	When DM
Before DM	Pearson Correlation	1	,790**
	Sig. (2-taled)		,000
	N	79	79

When DM	Pearson Correlation	,790**	1
	Sig. (2-taled)	,000	
	N	79	79

According to the table above, there is a relationship between the perception of DM sufferers towards sports activities between before and when experiencing complaints with a confidence level of 79%. This means that if the perception of sports activities before experiencing DM is good, then the perception of sports activities when experiencing DM complaints is also good, and vice versa if the perception of sports activities before experiencing DM is not good, then the perception when experiencing DM complaints is also not good.

4. Participation of DM Sufferers in Doing Sports Activities

DM sufferers' participation in sports activities before experiencing complaints of an average data distribution of 3,674, a figure lower than their perception of sports activities averaged 4,143. Furthermore, the involvement of DM derida on sports activities when experiencing complaints from the average data distribution of 4. 146, a figure greater than his perception of sports activities averaging 4,133. This means that the involvement of dm sufferers doing sports activities before experiencing complaints is lower than their perception, and when experiencing complaints more increased involvement in doing sports activities.

Table 2. Parisippation of DM Patients Doing Sports Activities					
Perceptual	Exercise	Perception	of		
Conditions	Participation	Sports activities			
Before DM	3.674		4.143		
When DM	4.146		4.133		

Discussion

Perceptions in dm sufferers of sports activities before experiencing complaints were 51 people (65%) Very Good ,and 28 people (35%) Both with an average score of 4,143, and involvement in doing sports activities with an average data distribution of 3,674. From these results, it can be concluded that the perception of DM sufferers before experiencing complaints is very positive about sports activities, but the perception they have is not in line with their involvement in sports activities. When experiencing DM complaints, the perception of DM sufferers towards sports activities was 53 people (67%) Very Good, and 25 people (31%) Good, with an average score of 4,133, and involvement in doing sports activities with an average data distribution of 4,146. So it can be concluded that the perception of DM sufferers when experiencing complaints is very positive about sports activities, and in line with their involvement in carrying out sports activities.

Timmers et al., (2008) It is known that a negative perception of the disease will make the patient's quality of life low, and the perception of a positive disease will make the quality of the patient higher. (Clark et al., 2011) Employees with high levels of stess have a low quality of life, are often tired and also have health problems when compared to employees with employees who have low stress levels. The motivation of adolescents to overcome diabetes is certainly still lacking and strategies are needed so that adolescents realize the importance of protecting themselves from diabetes by understanding diabetes and exercise as a way to overcome diabetes. The efforts of parents and medical to be able to provide education on the importance of understanding diabetes mellitus.

The Relationship between Perceptions of DM Sufferers Before and When Experiencing Complaints Against Sports Activities there is a relationship between the perception of DM sufferers towards sports activities before and when experiencing complaints. Perception will influence a person's behavior to be healthy (Wright et al., 2009). The behavior of a person and has proven a determining factor in determining changes in human behavior (Buckley et al., 2021). DM in its management is very different from other chronic diseases, diabetic patients need individual disease management (self management), so that the knowledge possessed by each patient is important in maintaining overall health and improving the quality of life for patients (Campbell & Sullivan, 2009). In this sense, the general health of the feet or the presence of leg pain plays an important role in the continued practice of physical activity since people suffering from poor foot health or higher leg pain can be limited in the usual practice of their physical activity (Domínguez-Muñoz et al., 2021)

The perception of patients looks good if they can do their daily activities well, can enjoy pleasant free time so that they are sure that the disease can be controlled properly (Wright et al., 2009). Facilitation factors are awareness regarding the benefits of exercise and complications associated with diabetes, positive family support, and emphasis by nursing staff. Lack of time, obligations to other, inability to link exercise to blood sugar control, lack of perception of obesity as a health problem, inadequate suppression by doctors, social/cultural problems, lack of infrastructure, and physical distancing are factors that act as barriers to physical activity. In addition to the above, the lack of understanding of compliance with standard guidelines while advising patients with doctors was also noted (Advika et al., 2017). A person's perception is different when doing physical activity, some have high motivation and some are low in motivation to do physical activity. A patient with higher self-motivation mentioned that fatigue is a kind of special symptom of having high blood glucose. Therefore, when he feels tired, he will rest first before doing physical activity sports (Kang et al., 2021). It should also be borne in mind that in addition to the patient's mental health status, psychological, medical and social resources, an important factor in his achievement is also his body composition and possibly hereditary factors (Cyranka et al., 2021). The more positive the perception of DM sufferers towards sports activities before and when experiencing complaints, the higher the participation of involvement in sports activities, because they understand that sports activities provide the meaning of doing physical work well or processing the body / physique well, because physical activity in health sports is essentially aimed at maintaining and improving the degree of health.

Sports practice plays a major role in the prevention and control of insulin resistance, prediabetes, type 2 diabetes as well as accompanying complications (Colberg, 2010). Aerobic exercise training and weight training can improve insulin action, can help with the management of blood glucose levels, pleather, blood pressure, cardiovascular disease risk, death and quality of life and can alleviate DM complaints (R.Colberg et al., 2010).

So it can be concluded that although vitamin D has been widely studied in relation to some glycemic results and some indications that increase vitamin D plasma concentrations may be related to the prevention of T2DM. Further studies with better trial design and larger sample sizes are needed to draw firmer conclusions. Out of a total of 17 studies included in the review. The effects collected from 15 studies that measured HbA1c showed an insignificant effect of vitamin D against HbA1c (Mean difference (MD) = .060.06 mmol/l; 95% CI = -0.26 to 0.14; I2 = 76%). A combined analysis of seven studies measuring the effect of vitamin D on blood glucose also found no significant effect of vitamin D on T2DM (MD = -0.03 mmol/l; 95% CI = -0.69 to 0.63; I2 = 76%). Three studies analyzed the effect of vitamin D on insulin sensitivity also observed no significant effects (MD = .51.51 mmol / l; 95% CI = .63.61 to 0.60; I2 = 67%), (Mzwandile, et al 2017).

Based on the age range of patients obtained in this study, the age group that experienced DM was in the old age range, namely: 61-70 years as many as 29 people (36.71 %) and 71-80 years as many as 8 people (10.13 %), then followed in the age range of 51-60 years as many as 27 people (34.18 %), followed by the age range of 41-50 years as many as 11 people (13.92 %), the age range of 31-40 years is 3 people (3.80 percent) and the age range is 31-40 years 1 person (1.27 %). So it can be seen that in the same age range and over 61 years old is the age group that experiences the most DM in this study.

Effective health education programs tailored to meet the individual needs of patients are critical. Patients need to be provided with accurate information about medications, side effects and therapeutic effects. An educational program can correct misunderstandings among patients. Patients report different ways they are diagnosed with type 2 diabetes. Most patients visit health facilities after experiencing signs and symptoms of diabetes, often for some time before seeking medical help. Stress and family history are considered the causes of developing diabetes and the reason for uncontrolled diabetes. Fatalistic beliefs are shared when patients talk about the causes of diabetes, the reasons for developing diabetes and their inability to control their blood glucose levels so that patients also assume by showing a poor understanding of the basic knowledge of diabetes, (Amer et al., 2019). The daily lives of patients turned out to affect their self-care agency. Personal and disease-related characteristics of patients must be identified so that their self-care behaviors can be improved. About 97.3% of patients with type 2 diabetes stated that they were independent in ADL and 75.3% of those in IADL. The average patient selfcare ability score was found to be 83.85 ± 17.87 ADL and IADL was found to be influenced by age, marital status, education, duration of illness, willingness to receive further education, and the presence of other diseases besides diabetes. There is a significant correlation between the scores of self-care agencies and marital status, education, duration of illness, willingness to receive further education, the presence of other diseases besides diabetes, regular blood sugar checks and compliance with the diet. A significant positive correlation was found between the daily living activities of patients and their self-care agency (Istek & Karakurt, 2016).

Age is one of the risk factors for DM that is not biased to be modified apart from race-ethnicity, and gender and history of DM events contained in the family (Diabetes Pro, 2014). Incidence in the United States alone, nearly 27 percent of the same age group and over 65 years of age experienced DM, according to the CDC report that the incidence of DM increased markedly from the figure of 6.9 per 1000 (1980) to 15.4 per 1000 (2011) in the age group of 65-79 years (Diabetes Pro, 2014; Diabetes Public Health Resource, 2014). The appearance of the incidence of DM in old age is related to insulin disorders and glucose intolerance especially in skeletal muscles (Sinclair, 2010). So that exercises of high intensity and short duration cannot be applied to most people, it is more advisable to carry out an exercise program of moderate intensity and longer duration. The program is recommended because it has a low risk of injury and has the potential to produce high calorie output (Kraemer, 2004).

A person's physical fitness decreases, he is unable to carry out his daily activities properly so that he feels fatigue, weaker muscles, lack of immunity, energy, and passion so that he cannot achieve good Achievements. People who are dynamically healthy can improve their physical and psychological movements (Bafirman, 2017). However it is important that for all with diabetes and especially those enrolled in cardiac rehabilitation programs (CR) that every effort must be made to promote physical activity, when managed properly, as an essential component of a healthy lifestyle (cardiometabolic, circulatory, sensory-neuro-motor and psychological) (Buckley et al., 2021).

(Plotnikoff, 2006) In the Canadian Journal of Diabetes, physical activity is key in the management of diabetes mellitus, especially as a blood sugar control and improves cardiovascular risk factors such as lowering hyperinsulinemia, increasing insulin sensitivity, lowering body fat, and lowering blood pressure. Regular moderate physical activity is associated with a 45-70% reduction in the type 2 diabetes mellitus population and lowering HbA1c levels to levels that can prevent complications. Physical activity of at least 150 minutes every week consisting of aerobic exercise, resistance training and a combination of both is related to the decrease in HbA1c levels in people with type 2 diabetes mellitus (Umpierre, 2011). So the satatement asserts that behavior change occurs when the social context and environment of the individual change. Thus it is important to explore the influence of psychosocial and interpersonal factors on diabetic self-management behavior (Kangas et al., 2021).

CONCLUSION

It is concluded that there is a meaningful relationship between dm sufferers and sports activities.

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