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Work Stress and Spirituality in Diabetes Mellitus Self-Management

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Abstract--- *The problem in diabetes mellitus self-management (DSME) a productive working adult often faces is that diabetes can be caused by high work activities and low spirituality. The purpose of this study was to determine the relationship between work stress and spirituality in DSME. A descriptive correlation design with a cross-sectional approach was used. A total of 101 respondents in one health primary care facility in East Java Province participated in this study. The respondents were acquired by stratified random sampling. The independent variables were work stress and spirituality. The dependent variable was diabetes mellitus self-management. The data were obtained through several instruments (Brief Work stress Questionnaire; Daily Spiritual Experience Scale; and Diabetes Self-Management Questionnaire). The data were analyzed using Spearman Rho and regression logistic with a value of $\alpha \leq 0.05$. The result showed a relationship between work stress ($p = 0.008$) and spirituality ($p = 0.000$) with DSME. The multivariate test results showed that spirituality was the most dominant ($p = 0.000$) related variable. Conclusion: controlling work stress and increasing spirituality are important components that need to be considered to improve DSME.*

Keywords--- *work stress; spirituality; diabetes mellitus; self-management*

I. INTRODUCTION

The main goal of DM management is to regulate blood glucose levels within normal limits, reduce symptoms and prevent complications. Self-management is the most important thing in DM control, but the level of self-management in DM patients is still low [1]. Several factors influence the success of DM self-management, including age, level of education, occupation, self-efficacy, duration of diabetes, social support, insurance, communication between patients and providers, language and culture as well as reliance [2]. This work stress can reduce motivation in self-management and increase the production of the hormone cortisol which leads to an increase in blood sugar levels so individuals find it difficult to control their blood glucose [3]. Spirituality will help form positive cognitive responses in the brain that affect a decrease in cortisol and insulin resistance [4].

Diabetes mellitus is a chronic disease whose incidence rate continues to increase. According to the International Diabetes Federation (IDF), in 2017 the incidence of DM in the world reached 424.9 million and is estimated to reach 628.6 million by 2045 [5]. While Indonesian DM sufferers are ranked sixth in the world with a total of 10.3 million sufferers, and occurring at the age of 20 - 79 years, it is expected to continue to increase to reach 16.7 million by 2045 [5]. The

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"PROLANIS" program, the Chronic Disease Management Program, shows that the incidence of DM in Nganjuk is still increasing. This is evident in the results of the researchers' survey data from March 8, 2019 at the Nganjuk District Health Office which noted a significant increase in DM sufferers starting from 2016, with 4,058 people, to 8,572 in 2017, and up to 10,686 in 2018; on the other hand, in January - February 2019 a total of 2,768 people with DM had visited all puskesmas in Nganjuk Regency. There were 1,286 people in the working area of Bagor Nganjuk Puskesmas throughout 2018.

One factor that influences the success of diabetes self-management is work. According to research results from Loerbroks *et al*., (2018) work stress factors like workload, poor job control, uncomfortable work environment, cultural fluctuations, perception of social norms at work, and attitudes to prioritize work that conflicts with DM will affect diabetes self-management activities [6]. For this reason, good coping is needed from DM sufferers, namely positive appraisal in the form of spirituality [7], [8]

According to research done by Klatzkin, Baldassaro, & Rashid (2019) work stress conditions will release the hormone cortisol and affect the regulation of the HPA axis in eating so people will have difficulty in controlling the food consumed [9]. Besides, this stressful condition will reduce DM sufferers' motivation to carry out treatment regimens. The forms of self-management activities include symptom management, prevention of complications, monitoring blood glucose levels, managing hyperglycemia and hypoglycemia, determining the type and amount of food, following the duration and frequency of exercise, adherence to foot treatment and early detection of complications [10]. So spirituality affects the formation of individuals who are calmer and not afraid of threats, makes individuals hopeful in their lives, encourages them to never give up in perfecting their lives and helps the physiological barrier immune response process in the form of decreased HPA axis activation, and it can affect the decline of cortisol and insulin resistance [4]. The purpose of this study was to determine the relationship between work stress and spirituality in DSME.

II. METHODS

- Study design

  This study uses a cross-sectional approach.

- Population and Sample

  The respondents in this study were 101 people with DM in the working area of the Bagor Pukesmas aged 20-55 years, working as civil servants, farm laborers, factory workers, and entrepreneurs, as well as those who were married, selected by the stratified random sampling method.

- Measurements

  The information collection tool in this study used 3 questionnaires namely demographics, Brief Work stress Questionnaire that was developed by Inoue [11] with Cronbach Alpha values> 0.96. This tool is used to explore stress conditions and causes of work stress experienced by respondents. The questionnaire has 40 questions, items with a Likert scale whose answers are classified as 1 = strongly agree, 2 = quite agree, 3 = disagree, 4 = strongly disagree. As for the assessment score $x < 90$, it includes low-stress response, moderate work stress response: $90 \leq x < 105$, and high work stress response: $x \geq 105$. Furthermore, we used the Daily Spiritual Experience Scale questionnaire developed by Underwood [12] with a Chronbach Alpha value of 0.94, to see a person's ability to balance their relationship with God, others, themselves and the environment. The number of questions used in this questionnaire is 16 items. The scale in the answer to this questionnaire is the Likert scale 1 = never / never, 2 = once at a time / somewhat close, 3 = several days / very close, 4 =

almost every day / as close as possible, 5 = every day, 6 = several times a day. The scoring score of 16-42 includes a low level of spirituality, 43-68 a moderate level of spirituality, and 69-94 a high spirituality. The questionnaire to assess self-management is the Diabetes Self Management Questionnaire developed by Schmitt [13] with Chronbach Alpha 0.94, to detect clinical cases in people with DM who do not adequately adhere to their self-management regimens. The number of questions in this questionnaire is 27 items. The answer scale in this questionnaire uses a Likert scale that is 1 = never, 2 = sometimes, 3 = often, 4 = routine. As for the assessment, 27-54 means low Diabetes Self Management, 55-81 moderate Diabetes Self Management, and 82-108 good Diabetes Self Management.

- Procedure

The respondents in this study were visited by researchers and asked to fill out questionnaires. Before completing the questionnaire, they were given sufficient explanation related to the research to be carried out and attracted their interest to participate in this study; then they signed a written agreement for this study. This research was conducted in the working area of Bagor Health Center, Nganjuk.

- Analysis

This research was analyzed by Kolmogorov Smirnov and the data normality was abnormal. So the spearmen rho is used to analyze and linear regression to see the dominant variable that has a relationship with DM self-management.

- Ethical consideration

This research has been subjected to an ethical test by the KEPK Health Research Ethics Commission, Faculty of Nursing, Airlangga University and was approved on May 14, 2019, with certificate number 1402 - KEPK. This research was conducted by emphasizing ethical issues, which in general can be divided into several parts, namely the principle of benefits, the principle of respecting the research subjects' rights and the principle of justice.

III. RESULTS

The majority of the respondents aged 46-55 years old (early elderly) were female, most respondents only had basic education (elementary, junior high) and were married. Most respondents were factory workers, either factory workers or farm laborers while the average respondent worked 8-14 hours a day. The duration of diabetes in most respondents is less or equal to 5 years, with the consumption of a type of glimepiride drug (Table 1).

Table 1. Demographic data and DM patient information (n=101)

Category	%	n
Age (year old)		
26-35	18.8	19
36-45	20.8	21
46-55	60.4	61
Gender		
Male	30.7	31
Female	69.3	70
Education		
Basic Education	54.5	55
Middle Education	24.8	25
Higher Education	20.8	21
Marital Status		
Married	81.2	82
Widow/Widower	18.8	19
Duration of DM		
≤ 5 Years	51.5	52

Category	%	n
> 5 Years	48.5	49
Medicine consumed		
Glimperide	61.4	62
Metformin	1	1
Glibenclamid	14.9	15
Glibenclamid, Metformin	1	1
Glimperide, Metformin, Insulin	21.8	22
Profession		
Farm Worker	14.9	15
Entrepreneur	15.8	16
Factory Workers	41.6	42
Civil servants	27.7	28
Job		
Labor	47.5	48
Shopkeeper	5.0	5
Village head	3.0	3
Headman	2.0	2
Teacher	9.9	10
Manager	3.0	3
Lecturer	2.0	2
Staff	15.8	16
Marketing	8.9	9
Headmaster	2.0	2
Chief	1.0	1
Work hours per day		4
1-7 Hours	45.5	6
8-14 Hours	54.5	55

Most respondents reported moderate work stress, whereas DM self-management by the majority of respondents is classified as moderate. The results showed there was a relationship between the work stress felt by respondents and self-management DM (p=0.008). This research reports that their level of spirituality is high. There was a significant relationship between the level of spirituality and self-management of DM (p=0.000), as well as it being the dominant variable affecting DSM (p=0.001).

Table 2. The relationship between work stress, spirituality and diabetes mellitus self-management.

Variables	Category	Self Management DM						Total		r	p*	p**
		Bad		Moderate		Good						
		%	n	%	n	%	n	%	n			
Work	Low	0	0	5.9	6	5.9	6	11.9	12			
Stress	Moderate	2	2	61.4	62	11.9	12	75.2	76	0.262	0.008	0.053
	High	0	0	10.9	11	2	2	12.9	13			
Spirituality	Low	2	2	0	0	0	0	2	2			
	Medium	0	0	22.8	23	2	2	24.8	25	0.461	0.000	0.001
	High	0	0	55.4	56	17.8	18	73.3	74			

p: spearmen rho; p**: linear regression; r: spearmen correlation; coefficient correlation: p<0.05*

IV. DISCUSSION

Problems with psychological conditions such as work stress will hamper an individual's ability to perform diabetes self-management and visit health care services [14]. According to research from Nie *et al.*, the average working time in a day is 8 hours per day or 40 hours a week; if it exceeds that time the excretion of the catecholamine hormone can increase which has an impact on stress and disturbs the body [15]. Based on existing data, work stress affects diabetics' self-management, especially those who experience work fatigue due to working 8-14 hours a day. Excessive fatigue will cause

them to experience signs and symptoms of stress such as feeling joint pain, headaches, exhaustion, etc. This will affect their ability to conduct self-management which will be disorganized.

As someone ages, they will have more mature thoughts, so their management behavior will be better than in younger ages [16]. In this study the majority of respondents are included in the early elderly, so they can provide a good response to stress sources to help them deal with uncertainty, contraindications and can compromise with the situation. But causing independence in self-management to be reduced as a result of the decline in physical conditions experienced by the early elderly.

The results of Garrett *et al.'*s research explain that differences in duties and basic functions of workers will affect workload and pressure; the higher the position, the higher the education, and knowledge, the higher work stress experienced [17]. The position of most respondents is factory workers or farm workers. Thus the stress experienced by respondents is not too high compared to school principals, teachers, personnel managers and lecturers, but the experience and knowledge of management information itself are still low compared to those who have high positions so the self-management is classified as moderate.

Buksh an*et al.* explain that the success of self-management as a form of DM disease treatment depends on understanding the aspects of one's spirituality, which is a positive coping form to adjust to the disease, encouraging individuals to always strive to live their daily lives and achieve a good quality of life [18]. In this study, the majority of respondents have a high level of spirituality. Therefore this form of coping that originates from spirituality will create positive perceptions for people with DM so they will more easily adjust their new behavior into their daily life.

This is supported by other factors, according to research from Kumah *et al*., who suggest that DM sufferers with longer disease duration have experience in dealing with the disease including its signs and symptoms, so long sufferers will be more adapted to the treatment and management regimen undertaken and make it a new lifestyle on a daily basis [19]. Most respondents' DM duration is less than 5 years. Thus those who have been suffering from DM $\leq$ 5 years experience fewer self-management activities carried out daily, so that confidence in their abilities is lower than in respondents who have been suffering from DM for longer. This will lead to the process of adaptation to new lifestyles, namely longer self-management activities, which have an impact on some DM self-management activities such as routine visits and blood sugar control when the signs and symptoms of DM occur again.

The level of education also shows the ability of DM sufferers to receive education related to self-management [20]. The majority of respondents have basic education. Efforts to achieve a successful self-management behavior requires comprehensive information; this can be obtained when individuals have a high level of education so the self-motivation created is also better. If these efforts cannot be carried out, it will have an impact on self-management that is not optimal, such as often ignoring the education provided by the health team including dietary patterns; when the drugs consumed are stable and their condition is stable they choose not to buy drugs or visit health services, and do not want to look for information related to DM self-management including short-term and long-term benefits. Thus the level of spirituality is also a dominant variable related to self-management of DM, this is because of positive perceptions stemming from these aspects. This is the same as the qualitative research from Gupta *et al.* that the role of spirituality is quite significant in the independence of people with DM in self-managing their illness [21].

V. CONCLUSION

Research on the relationship between work stress and spirituality level and diabetes self-management in Bagor, Nganjuk, states that the work stress felt by DM sufferers is at a moderate response level with a high spiritual level, and both are related to DM self-management. Therefore it is necessary to consider the psychological and spiritual dimensions of DM sufferers in order to improve their quality of life. So it is advisable to arrange an intervention program to control work stress and increase the level of spirituality in order to optimize DM self-management

CONFLICT OF IINTEREST

No conflicts of interest have been declared.

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