International Journal of Public Health Science (IJPHS)
Vol. 13, No. 4, December 2024, pp. 1626~1633
ISSN: 2252-8806, DOI: 10.11591/ijphs.v13i4.24233

Determinats factors self-management barriers: characteristics, spiritual well-being, and religiosity in type 2 diabetes patients

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Article Info

Article history:

Received Nov 19, 2023
Revised Mar 5, 2024
Accepted Apr 24, 2024

Keywords:

Adult
Diabetes type 2
Religiosity
Self-management
Spiritual

ABSTRACT

Holistic nursing needs to evaluate barriers to self-management, insight from characteristics, religiosity, and spiritual well-being to understand and address the multifaceted needs of individuals with chronic conditions, such as diabetes mellitus type 2. This study aimed to identify the determining factors that affect the barriers to self-management and the variables affecting them among Indonesian patients with T2DM. A cross-sectional survey was conducted among 101 patients recruited via purposive sampling from March to May 2023. The research instruments used were the Spiritual Well-Being Scale, Islamic Religiosity Scale, and Summary of Diabetes Self-Care Activities. The potential multicollinearity effects among the predictors of the barriers to self-management were also evaluated using multiple linear stepwise regression and collinearity analysis of variable inflation factors (VIFs). Most of the respondents had moderate spiritual well-being (52.2%) and high Islamic religiosity (60.4%) but also had barriers to self-management (55%). The F value of 5.888 with a probability of 0.004 (<0.05) showed that based on their regression coefficients, spiritual well-being, and Islamic religiosity simultaneously affected the barriers to self-management by 10.7%. The determinants that were found to affect the barriers to self-management were spiritual well-being and religiosity. These results suggest that it is necessary to develop an intervention model to improve the self-management of T2DM with a holistic approach.

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1. INTRODUCTION

The global prevalence of diabetes is expected to increase to 643 million by 2030 and 784 million by 2045, affecting 1 in 9 and 1 in 8 adults respectively. Furthermore, diabetes caused 6.7 million deaths, equivalent to one death every five seconds [1]. The World Health Organization (WHO) projects that diabetes mellitus will be the seventh leading cause of death by 2030, with more than 80% of fatalities occurring in low- and middle-income countries [2]. Indonesia ranks seventh in the world, following China, India, the United States, Pakistan, Brazil, and Mexico, with a total of 19.47 million people affected by diabetes. Given a population of 179.72 million, this corresponds to a prevalence rate of 10.6% in Indonesia [3], [4].

Inadequate glycemic control, as indicated by an HbA1c level of 7% or greater, represents a significant public health concern due to the increased risk of complications and mortality observed in

individuals with diabetes mellitus [5]. Patients who are diagnosed late or fail to manage their condition properly are at risk of developing both macrovascular and microvascular complications [6]. Long-term treatment of type 2 Diabetes Mellitus (T2DM) patients can lead to fatigue, stress, and a heavier burden of life, resulting in biological, psychological, social, and spiritual problems [7].

A number of factors can either facilitate or impede the self-management of type 2 diabetes mellitus. These include individual, socio-cultural, and economic factors, as well as health system and policy factors, resource availability and accessibility, and environmental influences. Some significant obstacles to self-management include a lack of knowledge regarding self-management practices for diabetes, cultural norms, inadequate counseling, absence of counseling guidelines and protocols, and financial constraints. On the other hand, there are a number of factors that can help to facilitate self-management of type 2 diabetes mellitus. These include motivation, support from family, peers, and healthcare providers, as well as the presence of resources within the community [8], [9], depression symptoms [10] and limited by unrealistic expectations and work-related factors, as well as the environment, patients faced difficulties in effectively managing their diabetes [11]. A study also revealed In Indonesia that the main barriers to effective self-management include low perceptions of disease susceptibility and severity, insufficient knowledge and skills, lack of motivation to engage in self-care management, inadequate resources or social support, and feelings of exclusion and shame [12].

To better understand the complexities of this issue in Indonesia, it is important to examine the various factors such as characteristics, spirituality, and religiosity that influence self-management among adults with type 2 diabetes. By doing so, we can gain a deeper understanding of the challenges and opportunities that exist for individuals with this condition and work towards developing more effective interventions and support strategies. One of the fundamental principles of Dossey's holistic and patient-centered nursing theory is the notion of individual and collective fields. It is crucial for nurses to exhibit professionalism, adhere to ethical standards, and engage in behaviors that promote overall health and well-being [13].

The research aimed to identify the most significant factors that contribute to these obstacles, with a particular focus on the role of characteristics, religiosity, and spiritual well-being in hindering self-management among individuals with type 2 diabetes mellitus (T2DM) in Indonesia. This study aimed to provide valuable information on the intricate interplay of factors that impact the self-management of T2DM in the Indonesian context. It sought to yield results that would be useful in developing effective strategies to improve self-management among people with T2DM in Indonesia, this study also provides scientific information related to the determinants of barriers to self-management in patients with type 2 Diabetes Melitus.

2. METHOD

2.1. Study location, study design and sample size

The location of this research is the Bandung Islamic Hospital, based on medical record data the average number of people with T2DM per month from March to May 2023 as many as 120 patients. The purpose of this study was to identify the factors that contribute to the barriers of self-management among patients with T2DM using a cross-sectional design. A sample size was determined using the Slovin formula with a margin of error of 5% [14]. A total of 101 participants were selected through purposive sampling, which included patients with T2DM who were Muslim, aged 20–65 years, had sound cognitive awareness, and could read, write, and communicate. On the other hand, patients with T2DM who had hypoglycemia or hyperglycemia or comorbidities and complications such as stroke, heart disease, diabetic retinopathy, and kidney failure were excluded from the study.

2.2. Study procedures and instruments

The demographic questionnaire included questions on marital status (married or unmarried), sex (male or female), educational level (elementary, junior high school, senior high school, or postsecondary), occupational status (employed or unemployed), age (early adulthood [25–37 years], middle adulthood [38–49 years], late adulthood [50–60 years], or elderly [>60 years]), and illness period (<5 years or ≥5 years). Measurement of this variable as an effort to control confounding variables.

2.2.1. Spiritual well-being scale (SWBS)

The 20 questions on the six-point Likert scale-scored SWBS, a modification of the Paloutzian SWBS [15], were translated into Indonesian, with α Cronbach 0.96. A score of 6 indicates “strongly agree”; 5, “moderately agree”; 4, “agree”; 3, “disagree”; 2, “moderately disagree”; and 1, “strongly disagree.” A total score of 20–40 indicates a general lack of spiritual well-being; 41–99, a moderate level of spiritual well-being; and 100–120, a high level of spiritual well-being.

For the religious well-being domain, a score of 10–20 indicates an unsatisfactory relationship with God; 21–49, a moderate sense of religious well-being; and 50–60, a positive view of the relationship with God. For the existential well-being domain, a score of 10–20 reflects a low level of satisfaction with life and a possible lack of clarity about one's purpose; 21–49, a moderate level of satisfaction with life and purpose; and 50–60, a high level of satisfaction with life and a clear sense of purpose.

2.2.2. Islamic religiosity scale (IRS)

The IRS, a modification of the PMIR [16] and the Religiosity Scale for Muslim Subjects [17], consists of 25 statements regarding religious coping dimensions, belief in Allah, worship practices, and ethics (commands and prohibitions), with a Cronbach's alpha value greater than 0.6 (0.895). The items are scored on a Likert scale (1="strongly disagree" to 5="strongly agree"). The total possible score ranges from 25 to 125. Individuals who are highly Islamic religious score 100–125; moderately Islamic religious, 51–99; and less Islamic religious, 25–50. The scale has the following dimensions:

a. Religious coping (positive: ≥41, negative: <41);
b. Beliefs (disobedience: 5–10, moderate obedience: 11–30, full obedience: 31–35);
c. Ethics (disobedience: 5–10, moderate obedience: 11–15, full obedience: 16–20); and
d. Religion practice (seldom: 5–10, sometimes: 11–15, always: 16–20).

2.2.3. Summary of diabetes self-care activities (SDSCA)

The SDSCA is comprised of nine questions, each with a score range of 0–44. These questions assessed the frequency of self-care activities performed over the preceding seven days. Respondents were asked about their engagement in various self-care behaviors and indicated their responses by filling in a checkmark for each activity in a column spanning the past week. Nine questions covered diet, physical exercise, blood sugar monitoring, foot care, and medication. For each question, a score was assigned based on the response of the day. The third question was given a negative score, while the sixth question scored 2. Scores below 34 suggest the presence of self-management barriers, whereas scores above 34 indicate the absence of such barriers [18].

2.4. Data collection

Data were obtained through the selection of samples from private Islamic hospitals in Bandung following predetermined inclusion and exclusion criteria. Before administering the questionnaire, the purpose of the study and the importance of confidentiality were explained to each participant, and informed consent was obtained. The questionnaire was then administered to the participants, who were accompanied by the research team to complete it, which took approximately 10-15 minutes. It is worth noting that all the completed questionnaires were free of missing data.

2.5. Data analysis

Comprehensive analysis of participant characteristics using descriptive statistics. Specifically, we considered the minimum and maximum scores for each variable, standard deviations, means, and distribution statistics. Additionally, we evaluated the relationship between the respondents' characteristics, namely, the length of illness, sex, job status, and marital status, with self-regulation barriers. Gamma correlation was used to assess the correlation between education level and barriers to self-management. Pearson correlation analysis was conducted to determine the influence of patient factors on barriers to self-management, as indicated by the patient's scores. Multiple linear stepwise regression was used to ascertain the variables impacting barriers to self-management among patients with type 2 diabetes. Concurrently, we assessed the potential multicollinearity effects among predictive variables through a collinearity analysis of variable inflation factors (VIFs).

2.6. Ethical considerations

The participants' autonomy was ensured by their informed consent and understanding that they could leave the study at any time. The study's benefits were secured through the participants' contributions to the advancement of holistic nursing science. To guarantee the truthfulness of the study, the participants' codes were used instead of their actual names. The principle of non-maleficence was upheld by the research subjects receiving no intervention other than a concise questionnaire about their religious practices and spiritual well-being in Islam, which took only 15 minutes to complete. As compensation, participants received gifts after completing the survey. This research was approved by the Ethics Committee of Al Islam Hospital Bandung with No.025/KEPK-RSAI/5/2023 and the Ethics Committee of 'Aisyiyah University Bandung with No. 572/KEP.01/UNISA-BANDUNG/VI/2023.

3. RESULTS AND DISCUSSION

3.1. Participants

The majority of the participants (89.1%) were married, had been managing T2DM for more than five years (54.5%), were female (61.4%), had attained a higher level of education (34.7%), and had an average age of 54 years. None of these characteristics were found to be associated with barriers to T2DM self-management as presented in Table 1.

Table 1. Distribution of the frequencies of the characteristics of the participants and correlation with barriers to self-management (n=101)

Characteristics	f	%	r	p
Illness period				
<5 years	46	45.5%	0.020	0.839[a]
>5 years	55	54.5%		
Sex				
Male	39	38.6%	0.056	0.571[a]
Female	62	61.4%		
Occupational status				
Unemployed	70	69.3%	0.094	0.342[a]
Employed	31	30.7%		
Educational level				
Elementary school	22	21.8%		
Junior high school	16	15.8%	0.026	0.864[b]
Senior high school	28	27.7%		
Higher education	35	34.7%		
Marital status				
Not married	11	10.9%	0.133	0.177[a]
Married	90	89.1%		
Age				
Early adulthood (25–37 years)	7	6.9%		
Middle adulthood (38–49 years)	15	14.9%	0.021	0.901
Late adulthood (50–60 years)	53	52.5%		
Elderly (>60 years)	26	25.7%		

a) Contingency coefficient, b) Gamma r correlation; SD=standard deviation mean age: 54,24, min 25 years, max 65 years

Table 2 demonstrates that the average SWBS score was 93.18, with a standard deviation of 10.96. On the other hand, the IRS score had a mean of 100.09 and a standard deviation of 7.52. The majority of respondents (52.2%) had moderate spiritual well-being, while 60.4% had high Islamic religiosity. Simultaneously, these individuals faced obstacles to self-management, with 55% of the respondents reporting this issue.

Table 2. Categories and variable scores

Variables	F	%	Mean	Min	Max	SD
Spiritual well-being			93.18	60	112	10.96
Moderate	53	52.2				
High	48	45.5				
Islamic religiosity			100.09	73	115	7.52
Moderate	40	39.6				
High	61	60.4				
Self-management barriers			34.69	21	43	4.76
Yes	45	44.6				
No	56	55.4				

SD=standard deviation

Table 3 outlines the sub-variables and categories of spiritual well-being and Islamic religiosity for the respondents. The data revealed that the majority of the respondents possessed a moderate sense of religious well-being (52.5%), moderate levels of satisfaction and purpose in life (55.4%), and adopted positive religious coping mechanisms (51.5%). Additionally, nearly all respondents (98.1%) held a moderate belief in God and a large proportion (75.2%) adhered to Islamic ethics. Furthermore, a significant number of the respondents (63.4%) followed religious practices.

Table 3. Categories and subvariables of spiritual well-being and Islamic religiosity

Categories and subvariables	F	%	Mean	Min	Max	SD
Spiritual well-being						
Religious well-being			46.63	29	56	6.201
Unsatisfactory relationship with God	0	0.0				
Moderate sense of religious well-being	53	52.5				
Positive view of the relationship with God	48	47.5				
Existential well-being			47.19	29	56	5.462
Low level of life satisfaction and possible lack of clarity about purpose in life	0	0.0				
Moderate level of life satisfaction and purpose	56	55.4				
High level of life satisfaction and a clear sense of purpose	45	44.6				
Islamic religiosity						
Religious coping mechanisms			40.15	27	46	3.609
Negative	48	47.5				
Positive	52	51.5				
Beliefs			27.73	20	33	2.545
Low	0	0.0				
Moderate	90	89.1				
High	11	10.9				
Ethics			16.27	11	19	1.448
Not obedient	0	0.0				
Sometimes obedient	25	24.8				
Obedient	76	75.2				
Religious practice			15.94	11	20	1.586
Seldom	0	0.0				
Sometimes	37	36.6				
Always	64	63.4				

SD=standard deviation

3.2. The relationship between spiritual well-being and Islamic religiosity with self-management barriers in the context of type 2 diabetes melitus

According to Table 4, there is a correlation between spiritual well-being (measured by r=0.287 and p=0.03) and Islamic religiosity (measured by r=0.314 and p=0.001) and the self-management barriers faced by individuals with type 2 diabetes. This finding highlights the potential importance of spiritual and religious factors in diabetes management.

Table 4. Regression linearity between the continuous variables and barriers to self-management of T2DM (n=101)

Variables	R^2	r^a	F	p^b
Spiritual well-being	0.082	0.287	9.437	0.003
Islamic religiosity	0.099	0.314	11.126	0.001

In Table 5, the value of F was determined to be 5.888, and the probability was 0.004 (less than 0.05), indicating that the regression coefficients for spiritual well-being and Islamic religiosity have a collective impact of 10.7% on self-management barriers, with the remaining 89.3% influenced by other factors. Furthermore, it was established that there was no multicollinearity issue among the independent variables, as none of them were found to have a variance inflation factor greater than 10.

Table 5. Multivariable linear regression analysis of the barriers to self-management of T2DM (n=101)

Variables	B	Standard error	t	p	95.0% confidence interval for B		Collinearity statistics	
					Lower bound	Upper bound	Tolerance	VIF
(Constant)	15.335	6.093	2.517	0.013	3.243	27.427		
SWBS score	0.056	0.058	0.963	0.338	−0.059	0.170	0.505	1.981
IRS score	0.141	0.085	1.662	0.100	−0.027	0.310	0.505	1.981

Dependent variables: barriers to self-management; T2DM=type 2 diabetes mellitus, SWBS=spiritual well-being scale, IRS=islamic religiosity scale, VIF=variable inflation factor. R2=0.107, F=5.888 (p=0.004)

3.3. Discussion

This study highlighted that spiritual well-being and religiosity were the key factors that influenced the obstacles encountered in the self-management of T2DM. Previous studies linking spiritual factors and religiosity with self-management in patients with type 2 diabetes mellitus are still rare, more research links psychological factors such as depression [10], [19], embarrassment, worry about disease progression with

self-management in patients with T2DM [20]. In the context of holistic care, spirituality encompasses a range of feelings, thoughts, experiences, and behaviors that emerge from the pursuit of meaning. This includes a sense of connection with an absolute, close, or transcendent spiritual power as well as a belief in meaning, value, direction, and purpose. Spirituality involves a connection with oneself, others, nature, and higher power Research indicates that spirituality and religion can be beneficial for mental health by providing coping strategies for managing stress [21]. Notably, spirituality is a crucial component of successful diabetes management, particularly in type 2 diabetes mellitus (T2DM) [22]. Enhancing one's awareness is a critical step in cultivating spirituality, and actively participating in religious rituals can further promote a deeper understanding of this complex and multifaceted concept. Religious rituals, which are cultural phenomena that regulate human interactions in a variety of contexts, have the potential to instill a sense of purpose and confidence in individuals, ultimately contributing to their overall spiritual well-being [23].

This study found that participants were predominantly in middle adulthood. Previous research has indicated that at this stage, life satisfaction levels tend to be lower and spiritual well-being scores are negatively correlated with depression in middle-aged individuals [24]. This research in line with other study, there is a negative correlation between spirituality and distress, indicating that higher levels of spirituality are associated with lower levels of distress. For believers, religiosity can be an effective way to cope with life's challenges through worship and other religious practices that focus on managing emotions [25]. The study's results support the use of a spirituality approach in holistic patient management. Research has also demonstrated a moderately positive association between Islamic spirituality and distress among patients with T2DM [25]. This relationship is influenced by spirituality's impact on life expectations, beliefs' effect on diabetes mellitus self-management coping mechanisms, and responsibility's effect on diabetes mellitus self-management [26].

Spiritual well-being is a critical aspect of overall health and well-being. It involves the horizontal component of having a sense of meaning and purpose in life as well as the vertical component of having a relationship with a higher being or God [27]. Research has shown that there is a two-way relationship between spiritual religious beliefs and integrated clinical services [28]. To provide holistic care in nursing, as well as in an Islamic context, nurses caring for patients with T2DM can implement resilience-based Islamic programs or a combination of meditation, prayer, stress reduction, and dhikr (the Sufi brotherhood's ritual formula chanted fervently in adoration of God and as a method of experiencing ecstasy). Studies have shown that resilience-based Islamic programs, based on biochemical testing findings related to T2DM, can reduce diabetes mellitus-related fatigue and improve health-related quality of life [22]. In addition to these treatments, cognitive–behavioral therapy has been found to be effective in treating diabetes mellitus and depression in patients [29], nd nurses who care for muslim patients can incorporate Islamic traditions into their approach through ethics, guiding, and direct healing strategies. Ethical strategies can involve educating patients about diet and exercise adherence, discussing the potential health consequences of disobedience and negligence as servants of God, and highlighting the health benefits of fasting [30].

3.4. Limitations and implications

The study revealed that the connection between the SWBS and IRS scores and the obstacles to self-management of T2DM was weak, and the scores only accounted for 10.7% of the variance compared with other unknown factors. Nevertheless, spiritual and religious factors should not be disregarded during the assessment, planning, implementation, and evaluation of interventions as they play a crucial role in holistic practice, particularly in increasing self-management awareness among patients with T2DM.

The study's implications are significant for holistic nursing science and practice, providing information for future research on enhancing self-management awareness with a holistic approach that incorporates spiritual well-being and religion and exploring the spiritual and religious beliefs of patients with T2DM. Understanding and appreciating Islam's emphasis on compassion can foster greater interest in cultivating compassion in all aspects of one's intentions, thoughts, and actions.

Islam mandates followers to become knowledgeable and skilled in any profession that benefits all living beings. Islamic nursing practice and management require considerations for sex, dress codes, personal values, codes of conduct and ethics, dietary restrictions, family planning, and life, as well as healthy and safe living and spiritual development. Although the findings of this study are promising, there are several limitations. For instance, the study's conclusions cannot be widely applied due to its single-center design.

4. CONCLUSION

The participants in this study with T2DM demonstrated moderate spiritual well-being and high Islamic religiosity. It was discovered that spiritual well-being and religiosity were the determinants that impacted obstacles to self-management. These findings indicate that it is crucial to develop an intervention plan to improve the self-management of T2DM using a holistic approach.

In practical applications, patients with T2DM who have moderate or even low spiritual and religious well-being scores should receive additional attention from nursing staff. To provide effective and comprehensive care, nurses must understand the spiritual and religious challenges faced by patients with T2DM as well as the relationship between these issues and the patients' condition.

ACKNOWLEDGEMENTS

The acknowledgment of the Institute for Research and Community Service at the University of 'Aisyiyah Bandung is gratefully received by the writers with research grant number 018/Mo.U.01/UNISA-Bandung/III/2023, along with appreciation for the support provided by all the research participants and contributors.

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