Volume. 5 Number. 2
Period: July – December 2021; page 48-54
p-ISSN : 2580-1112; e-ISSN : 2655-6669

journal homepage: https://ejournal.akperfatmawati.ac.id
DOI : 10.46749/jiko.v5i2.72

Jurnal Ilmiah Keperawatan Orthopedi (JIKO)
Article history:
Received: January 28, 2022
Revised: February 10, 2022
Accepted: February 13, 2022

The Effect of Health Education During the Covid 19 Period on Increasing Knowledge in Comorbid Patients (Suspected) With Diabetes Mellitus (DM) At Harum Sisma Medika Hospital, Jakarta 2021

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The purpose of this study was to determine the effect of health education during the Covid 19 period on increasing knowledge in comorbid (suspected) patients with Diabetes Mellitus (DM) at Harum Sisma Medika Hospital, Jakarta. This study uses a quantitative approach with a pre-experimental research design, one group pre-post test design. The sample in this study was 18 respondents who were selected by purposive sampling technique. The study took place in the isolation ward of the Harum Sisma Medika Hospital, Jakarta. The instrument used is the DKQ-24 questionnaire (Diabetes Knowledge Questionnaire) with 24 question items. The test is a paired t test. The results showed that there was a difference in the mean score between knowledge before and after health education with the p value before and after being given health education related to covid 19, namely 0.002 (P <0.05). Factors significantly associated with preventive behaviour are knowledge and education. Knowledge related to COVID-19 prevention behaviour is carried out by wearing masks, maintaining hand hygiene, and avoiding crowds. In a study of diabetic and nondiabetic patients, diabetic patients expressed concern about the risk of COVID19 infection. They changed behaviour and lifestyle due to the COVID-19 pandemic. Knowledge and attitudes are associated with COVID-19 prevention behaviour.

Keywords: Health Education; Education Level; Comorbid Diabetes Mellitus

Introduction

One of the main causes of morbidity and mortality worldwide is diabetes. This condition is also closely associated with several microvascular and macrovascular complications. So that it will have an impact on overall patient survival [1]. The association between diabetes and infection has long been recognized clinically [2]. Infections caused by influenza and pneumonia, are common infections, but become more serious if experienced by older people with type 2 diabetes mellitus (T2DM) [3], [4]. However, it is still controversial whether diabetes increases susceptibility and impacts the outcome of infection, or the cardiovascular and renal comorbidities often associated with diabetes are the main factors involved [5].

In the current state of the SARS-CoV-2 pandemic, several studies have found no clear association between diabetes and severe disease [6], [7]. However, there are several reports from China [8], [9] and Italy [10] showing that older patients with chronic diseases, including diabetes, have a higher risk of contracting COVID-19 and this can lead to death.

Currently, there are sparse data on glucose metabolism and the development of acute complications of diabetes (eg, ketoacidosis) in patients infected with

COVID-19. SARS-CoV-2 infection in diabetics may trigger higher stress conditions, with greater release of hyperglycemic hormones, eg, glucocorticoids and catecholamines, leading to elevated blood glucose levels and abnormal glucose variability [11]. Meanwhile, a retrospective study from Wuhan reported that approximately 10% of patients with T2DM and COVID-19 experienced at least one episode of hypoglycemia (<3.9 mmol/L) [12]. Hypoglycemia has been shown to mobilize pro-inflammatory monocytes and increase platelet reactivity, contributing to higher cardiovascular mortality in patients with diabetes [13]. However, it remains unknown exactly how the inflammatory and immune responses occur in these patients, as well as whether hyper or hypoglycemia can alter the virulence of SARS-CoV-2, or the virus itself interferes with insulin secretion or glycemic control. In addition, the impact of treatment for ordinary diabetics who are also infected with COVID-19, as well as therapeutic approaches for COVID-19 on glucose regulation have not yet been determined.

Diabetes is a chronic inflammatory condition characterized by multiple metabolic and vascular abnormalities that can affect our response to pathogens [5]. Hyperglycemia and insulin resistance promote increased synthesis of glycosylation end products (AGEs) and pro-inflammatory cytokines, oxidative stress, in addition to stimulating the production of adhesion molecules that mediate tissue inflammation [5,14]. This inflammatory process may constitute the underlying mechanism leading to a higher predisposition to infection, with poorer outcomes than it is in patients with diabetes [5].

Several immune problems are associated with hyperglycemia, although the clinical relevance of some of these disorders is still not fully understood [15]. Poorly controlled diabetes is associated with inhibition of the proliferative response of lymphocytes to various types of stimuli [16], as well as impaired monocyte/macrophage and neutrophil function [5]. Abnormal delayed-type hypersensitivity reactions [15] and complement activation dysfunction [17]. The results of this study showed that exposure of pulmonary epithelial cells to high glucose concentrations significantly increased influenza virus infection and replication, suggesting that hyperglycemia may increase viral replication rapidly [18]. In animals, lung structural changes have been associated with diabetes, such as increased vascular permeability and alveolar epithelial collapse [19]. Meanwhile, diabetic patients generally show a significant reduction in forced vital capacity (FVC) and forced expiratory volume in one second (FEV1), which is associated with increased plasma glucose levels [20].

The purpose of this study was to determine the effect of health education during the Covid 19 period on increasing knowledge in comorbid (suspected) patients with Diabetes Mellitus (DM) at Harum Sisma Medika Hospital, Jakarta.

Method

This research is a quantitative research, with a pre-experimental research design, one group pre-post test design. The researcher deliberately gave treatment (health education) to respondents who were only grouped into one group, namely the intervention group with the aim of studying the effects of treatment and not controlling strictly.

There is an effect of Covid 19 DM health education on increasing knowledge of comorbid patients with DM. otogenic relaxation techniques and distraction in the intervention group II.

Result and Discussion

Univariate Analysis

Table 1. Distribution of characteristics of comorbid DM patients by age at the Sisma Medika Hospital, Jakarta in 2021 (n=18)

Characteristics	Mean	SD	Min-Max	95%CI
Age	45,72	11,002	33-65	40,25-51,19

Table 1 describes the average age of patients with comorbid DM, which is 45.72 with a standard deviation of 11.002 years. Where the youngest age is 33 years and the oldest 65 years. At 95% Confident Interval between 40.25-51.29.

Table 2 Distribution of the characteristics of comorbid DM patients by gender, education, occupation, family history and recent education history at the hospital. Sisma Medika Jakarta in 2021 (n= 18)

Characteristics	Frequency	%
Gender		
Woman	4	22,2
Man	14	77,8
Total	18	100
Education		
Senior High School	16	88,9
Diploma/Bachelor	2	11,1
Total	18	100
Work		
Jobless	9	50.0
Civil Servant	1	5.6
Private	4	22.2
Entrepreneur	3	16.6
Retired	1	5.6
Total	18	100
Family History		
Have	9	50.0
Haven't	9	50.0
Total	18	100
Highest Education History		
< 1 month	10	55.6
1-6 month	2	11.1
6 month	6	33.3
Total	18	100
Pre Education		
Lack of Knowledge	15	83.3
Enough Knowledge	3	16.7
Total	18	100
Post Education		
Lack of Knowledge	9	83.3
Enough Knowledge	4	22.2
Good Knowledge	5	27.8
Total	18	100

Table 2 illustrates that the distribution of the characteristics of respondents (gender, education, occupation, family history, recent education history, pre education, post education) at Harum Sisma Medika Hospital Jakarta in 2021 who experienced comorbid DM with a total of 18. Most of them were male (77.8%) and female (22.47%). The distribution of work of comorbid DM patients is dominated by not working or housewives 50.0%, education is dominated by high school 88.9%.

Judging from the family history there is 50.0% and no 50.0%, the most recent educational history is dominated by patients who received less than 1 month of education, pre-education or before being given health education in comorbid DM patients dominated by 15% less knowledge and post-education after being given education Health knowledge in comorbid DM patients is 50.0% less knowledge and 27.8% good knowledge.

Bivariate Analysis

Table 3 Effect of Covid 19 Health Education on Increasing Knowledge of Comorbid Patients with Diabetes Mellitus (DM) at Harum Sisma Medika Hospital 2021

Education Health Covid 19		N	Mean	Std. Deviasi	P Value	p *Value*
Knowledge	Pre	18	9,22	3,154	0.02	0,002
	Post	18	13,06	5,693		

Based on the table above, it can be seen that the knowledge of comorbid DM patients with the average value before being given health education related to covid 19 was 9.22 and the standard deviation was 3.154. DM comorbid patients after being given health education related to covid 19 with an average value of 13.06 and a standard deviation of 5.693. It can be seen that the average value before and after being given health education related to covid 19 was -3.833 with a standard deviation of 4.328. The p value before and after being given health education related to covid 19 is 0.002.

Discussion

The knowledge of comorbid DM patients with the average value before being given health education related to Covid 19 was 9.22 and the standard deviation was 3.154. DM comorbid patients after being given health education related to covid 19 with an average value of 13.06 and a standard deviation of 5.693. It can be seen that the average value before and after being given health education related to covid 19 was -

3.833 with a standard deviation of 4.328. The p value before and after being given health education related to covid 19 was 0.002 (P <0.05).

Factors significantly associated with preventive behaviour are knowledge (Pvalue 0.0001), attitude (P-value 0.0001), and education (P-value 0.0001). Research in Northwest Ethiopia, Vietnam, South Korea, and China also showed that knowledge is significantly related to COVID-19 prevention practices [21; 22; 23; 24]. Good knowledge is associated with good COVID-19 prevention behaviour [25]. Based on research in South Korea, knowledge related to COVID-19 prevention behaviour is carried out by wearing masks, maintaining hand hygiene, and avoiding crowds [23].

In a study of diabetic and nondiabetic patients, diabetic patients expressed concern about the risk of COVID19 infection. They changed behaviour and lifestyle due to the COVID-19 pandemic [26]. Knowledge and attitudes are associated with COVID-19 prevention behaviour [27; 24; 28]. Good knowledge and a positive attitude are significantly associated with COVID-19 prevention behaviour compared to other factors [29]. Meanwhile, according to a 2020 study in Sudan, knowledge and attitudes do not significantly affect COVID-19 prevention behaviour [30]. Knowledge and attitudes are part of the predisposing factors influencing behaviour change [31]. Efforts to increase knowledge and encourage positive attitudes are needed for diabetic patients to make behavioural changes to prevent COVID-19.

Health education aims to change the behavior of individuals, groups, and communities towards positive things that are planned through the learning process. Behavior change in health education covers 3 domains, namely knowledge, attitudes, and skills through the health education process.

Health education conducted by health workers can increase a person's knowledge. Knowledge is the result of knowing that occurs after people sense a certain object. Sensing occurs through the five human senses, namely sight, hearing, smell, taste and touch. Most of the knowledge is acquired through the eyes and ears [32].

Conclusion

Factors significantly associated with preventive behaviour are knowledge and education. Knowledge related to COVID-19 prevention behaviour is carried out by wearing masks, maintaining hand hygiene, and avoiding crowds. In a study of diabetic and nondiabetic patients, diabetic patients expressed concern about the risk of COVID19 infection. They changed behaviour and lifestyle due to the COVID-19 pandemic. Knowledge and attitudes are associated with COVID-19 prevention behaviour.

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