

Conference Paper

Correlation Between Pre-Operating Patient Anxiety and Increasing Blood Glucose in Patients with Diabetes Mellitus at X Room in X Hospital Sukabumi

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Abstract

Patients who are going for surgery usually experience anxiety. This can cause physiological responses including palpitations, increased blood pressure, pulse, and also breathing difficulties. For patients with Diabetes Mellitus, anxiety can increase blood glucose levels. This condition can cause delays in surgery, and could potentially increase the patient care costs during their stay in hospital. This research aims to explore the correlation between heightened anxiety and blood glucose levels amongst patients with Diabetes Mellitus. This research used a correlation study with cross sectional approach, with 22 respondents. The technique selection of respondents are using accidental sampling. The validity test of *Zung Rating Anxiety Scale* 0.85 and the reliability value of 0.79. Bivariate analysis used the *Spearman* test. Research concluded that most of respondents had mild anxiety level (59,1%) while some respondents experience normal anxiety (40,9%). Most of the respondents had high glucose levels (68,2%), while some respondents had normal glucose levels (31,8%). The results of the Spearman test revealed P-value = 0.041. Based on the research concluded that there is a correlation between pre-operation anxiety and blood glucose levels amongst patients with Diabetes Mellitus. It is recommended that nurses act to prevent or reduce anxiety in this patient demographic.

Keywords: Anxiety level, Glucose Level, Diabetes Mellitus

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Pre surgery is a perioperative phase that begins when after a decision to have surgery and ends when the patient is wheeled into a surgery room [1]. In this perioperative phase,

a patient, whether or not he/she has comorbidities, typically experiences anxiety. This anxiety in the preoperative phase is caused by the patient fearing the application of surgical procedure and not knowing the after effects caused by the surgery. Anxious patients typically have uneasy feelings fearing the unknown, for example fear of surgery, anesthesia, loss of family responsibility, pain, fear of self-concept, and even death. Anxiety can cause physical and psychological responses [2]. The significance of this study is to reveal the correlation between pre-operating patient anxiety with glucosa levels in patients with diabetes mellitus.

Anxiety will cause a physiological response to various body systems. These physiological responses include palpitations, increased blood pressure, increased respiratory rate, nausea, insomnia, loss of appetite, etc. Someone with chronic diseases including DM is prone to experiencing anxiety [3]. High levels of anxiety have also been associated with poor glycemic control and more diabetes complications, almost 20% from 70 patients exhibited current depression. Those diabetic patients with comorbid depression had significantly poor glycemic control compared to those without any mood disorder [24].

Anxiety disorders in Diabetes Mellitus patients are associated with hyperglycemia. Anxiety causes activation of the HPA axis and the sympathetic nervous system [5]. Activation of nervous system can cause a flight or fight response. This response occurs based on adrenaline. Adrenaline is released by the adrenal glands in the blood, causing the glycogenesis process to increase. The glycogen that has been obtained from the glycogenolysis process will then be converted into carbohydrates. These carbohydrates can enter the bloodstream, causing blood glucose levels to increase [6].

Handling patient anxiety about to undergo surgery is an important element in providing perioperative nursing care services. Anxiety requires serious handling from other clinical experts to identify individuals who are at risk for emotional disorders [7]. The effects of stress can cause epinephrine production to increase, mobilizing glucose, fatty acids and nucleic acids, which tend to cause hunger, tremors and weakness. One of the risk factors for excessive anxiety is in patients who have a history of diabetes mellitus.

People with DM have an anxiety level 20% higher than people without DM. Anxiety disorders have a relationship with hyperglycemia in people with diabetes [5]. Long term Hyperglycemia conditions can cause damage to various organs.

According [8], relationship between anxiety and blood glucose levels of type 2 diabetes mellitus sufferers at Gedong Air Primary Health Care, Bandar Lampung p-value of 0.012, showed that there was a relationship between anxiety and blood glucose levels of type 2 diabetes mellitus patients.

Based on interviews with patients, it is said that nurses always provide information about what they should prepare before surgery such as fasting time, maintain personal hygiene, prepare medicine, prepare mentally and give them support.

Based on the results of interviews using the ZSRAS questionnaire conducted by researchers on several respondents regarding the anxiety experienced by patients with DM who will undergo surgery, the results show that two respondents experienced moderate anxiety levels, two respondents experienced severe anxiety levels, and one respondent who did not experiencing anxiety. After the results of the anxiety level of the five patients were obtained, the blood glucose levels were checked 24 hours preoperatively. The data showed that two respondents had blood glucose levels within normal limits and three respondents had blood glucose levels exceeding the normal limit. If respondents experience high levels of anxiety, blood pressure, blood glucose levels and pulse increase. So, it can be concluded that patients who experience anxiety before surgery can increase their blood glucose levels from normal limits. If blood glucose levels are not normal, the cumulation of blood glucose level in blood, it can cause diabetes mellitus. When blood glucose levels are not controlled it can cause several complications of damage and failure of various tissues and organs.

Based on the description of the problem above, the authors are interested in conducting research on The Correlation between Preoperative Anxiety and Blood Glucose Levels of Patients with Diabetes Mellitus at Nyi Ageng Serang Room, Sekarwangi Hospital, Sukabumi.

2. Methods

This research used a correlational research with a cross sectional approach. The research was conducted on February to July 2018. The population in this study were all preoperative patients with Diabetes Mellitus in the surgical treatment room in Sekarwangi Hospital, Sukabumi. The total patients are 140 people with an average patient per month for 6 months. The sample in this study were 22 preoperative patients with Diabetes Mellitus with accidental sampling. The inclusion criterias of the sample are pre operative patients with Diabetes Mellitus, and concious patients.

The independent variable in this study is preoperative patients' anxiety. The dependent variable in this study is blood glucose levels in diabetes mellitus patients.

Univariate analysis used distribution frequency for characteristic respondent. For measuring anxiety level used the Zung Self Rating Anxiety Scale. Zung Self Rating Anxiety Scale has 20 questions and the scale using a 4-point scale, from little of the time to most

of the time. total scores may range from 20–80 with scores from 20–44 considered to be in the normal range. Higher scores are suggestive of greater anxiety. Validity result test is 0,663 and reliability result test is 0, 965.

To measure blood glucose levels, glucometer with the following criteria: High if $T \geq 200$ mg / dl, Normal if $T = 70$ -200 mg / dl, Low if $T \leq 70$ mg / d is used. Bivariate analysis uses Spearman rank correlation.

3. Result

TABLE 1: Respondents Characteristics Frequency Distribution (n=30)

Respondents Characteristics	F	%
Age		
- 18-30	1	4,55
- 31-40	3	13,64
- 41-50	6	27,27
- > 50	12	54,54
Gender		
- Male	10	45,5
- Female	12	54,5
Length of Hospitalize		
- > 3 days	2	9,09
- 3 days	20	90,91
Long suffering from DM		
- 1 to 3 years	12	54,55
- > 3 years	10	45,45
Resources		
- Health worker	22	100

In table 1, it is found that 54.54% respondents are in the elderly, women and suffers DM less than 3 years. The information about surgery 100% is obtained from health workers.

TABLE 2: Frequency of Anxiety Level Distribution

No	Anxiety Level	Frequency	
		Total	%
1	Not Anxious	9	40,9
2	Mild Anxiety	13	59,1
	Total	22	100

Table 2 shows 13 respondents (59,1%) experience mild anxiety and 9 respondents (40,9%) are not feeling anxious.

TABLE 3: Frequency of Blood glucose level Distribution

No	Blood glucose Level	Frekuensi	
		Total	%
1	Normal	7	31.8
2	High	15	68.2
	Total	22	100

Table 3 shows 68,2% or 15 respondents has high blood glucose level and 7 patients (31,8%) has normal blood glucose level.

TABLE 4: The Correlation between Preoperative Anxiety and Blood glucose Levels of Diabetes Mellitus Patients in Nyi Ageng Serang Room, Sekarwangi Hospital, Sukabumi

No	Independent Variable	Dependent Variable	P-Value
1.	Preoperative Anxiety of Diabetes Mellitus Patients in Nyi Ageng Serang Room, Sekarwangi Hospital, Sukabumi.	Blood glucose of Diabetes Mellitus Patients in Nyi Ageng Serang Room, Sekarwangi Hospital, Sukabumi.	0,041

Based on table 4, the p-value is 0.041. the result is obtained by bivariate analysis. So that, H0 is rejected if the p-value is <0.05. it means there is a correlation between preoperative patient anxiety and blood glucose levels in patients with diabetes mellitus in Nyi Ageng Serang room, Sekarwangi Hospital, Sukabumi.

4. Discussion

Diabetes mellitus is a chronic disease, which is characterized by disorders of the metabolism of carbohydrates, lipids and amino acids, either as a result of decreased insulin secretion, or due to a reduction in insulin cell sensitivity in body cells [9]. The conditions experienced by DM patients over the years will affect their quality of life, which of course has an impact on emotional conditions, including depression and anxiety [10]. The results showed that there is a correlation between depression, anxiety disorders and Diabetes Mellitus which are associated with hyperglycemia dan diabetes complications [9].

From the results, it is found that there are 13 DM patients (59.1%) who were going to undergo surgery experience mild anxiety and 9 patients (40.9%) did not experience anxiety.

This study was supported by [11] regarding the level of anxiety of preoperative patients at dr. Soekardjo Tasikmalaya showed from 42 respondents: 21.4% respondents

experienced mild anxiety, 50% respondents experienced moderate anxiety and 28.6% respondents experienced severe anxiety.

Mild anxiety is usually described as a form of tension experienced daily, in which a person is more alert and has wider perceptions and sharpens the senses [12]. Anxiety is a form of worrying about unclear things, and it creates unstable emotions. Several conditions show frequent angry and overresponsive behaviors that suddenly peak, but are often considered depressive as well. This condition is sometimes followed by all kinds of fantasies, delusions, and illusions. Some feel nauseous and vomiting, the body feels very tired, sweats a lot, shakes, and often suffers from diarrhea and chronic tension and fear that causes high blood pressure.

The anxiety of DM patients who will experience preoperative is influenced by several factors including age, education level, gender and length of hospitalized. The results showed that most of the respondents were in the age range of more than 50 years. Anxiety tends to be experienced by all age ranges, but the older someone gets, the more problems he will experience in his life, so that he will experience anxiety more when he gets older [13]. This is supported by [9] that most DM patients who experience anxiety 44% are in the range 45-64 years.

The results also showed that most of the 54.5% respondents were female. The results of this study were supported by [14], women were associated with higher rates of depression in diabetics [14]. [9] also reported that women had three times the percentage of anxiety (62%) compared to men (21.5%). Women also show symptoms of depression with a double percentage (41.4%) than men (17.8%) [9]. This is because women play multiple roles, so they have higher responsibilities. This causes women tend to seek psychological support when they are anxious or depressed, so that they are more likely to be registered in health care facilities. Apart from that, it is related to women's social roles, being passive, dependable and expressive, which allow them to be more emotional and open in expressing their feelings [9].

The results showed that the duration of having diabetes was mostly in the span of 3 years. The duration of having diabetes is associated with the development of anxiety and depression, several studies have reported that the duration of illness is known to significantly increase the risk of developing diabetes complications so that it affects spending on health care, as a result of which these patients are more prone to experiencing psychological problems such as anxiety and depression [14].

Based on the results of the study, it was found that 15 respondents (68.2%) had high blood glucose levels and a small proportion of respondents had normal blood glucose

levels as many as 7 people (31.8%). From the research results, it was found that the highest blood glucose level was 413 mg / dl.

A person is been said to have hyperglycemia when his blood glucose levels is far above normal values. Meanwhile, hypoglycemia is a condition in which a person experiences his blood glucose values are below normal. The results of this study used a temporary blood glucose check.

According to [25] there are various kinds of blood glucose checks. One-time blood glucose check is a blood glucose check which carried out every time without having to pay attention to the last food eaten, fasting plasma glucose (2 hours after eating), the test is done after the patients are fasting for 8-10 hours, and post prandial glucose is test which is done 2 hours after the patient has finished eating.

Factors associated with high blood glucose levels in diabetes mellitus patients include gender, age, obesity and stress levels [16]. The results of this study are in line with the research of [17] which states that age has a correlation to blood glucose levels because the older a person is, the insulin sensitivity becomes lower. So that glucose in the blood cannot be metabolized optimally [17]. The results of this study are also in line with [18] which states that women with diabetes are often hyperglycemic than men.

The results of the bivariate analysis statistical test obtained a P- value of 0.041, so there is a corellation between preoperative patient anxiety and blood glucose levels of patients with diabetes mellitus at the Nyi Ageng Serang room in Sekarwangi Hospital, Sukabumi.

This research is supported by [19] regarding the corellation between anxiety and blood glucose levels in diabetes mellitus patients at the DKT Yogyakarta hospital where the results of this study indicate that there is a correaltion between anxiety and blood glucose levels with a p-value of 0.008. The anxiety experienced by 60% respondents was severe anxiety [19].

This study is also in accordance with research on the correlation between Anxiety Levels and Blood glucose Levels in Pre-General Anesthesia Patients in Yogyakarta City Hospital by [20] which shows that 69.8% pre-general anesthesia respondents experienced moderate anxiety and 96, 2% has normal GDS. The statistical test results showed a significant correlation between anxiety and blood glucose levels in pre-general anesthesia patients with a p-value of 0.010.

According to [21] anxiety in diabetics affects blood glucose levels which causes blood glucose levels to be unstable even though diet, physical exercise and proper drug use have been attempted. This is due to an increase in the hormone glucocorticoids (cortisol), ketocolamine (epinephrine), and Growth Hormone. Anxiety involves feelings,

behaviors and physiological responses. Physiological reactions to anxiety can affect the hypothalamus pituitary axis so that it can affect endocrine functions such as increased cortisol levels which in fact have an impact on insulin release and can adversely affect blood glucose regulation [21].

Anxiety is something that is not easy for high blood glucose levels patients [22]. Anxiety can affect a person's mindset so that he has a bad coping view of a problem. Severe anxiety can worsen the condition of the disease so that as a result it can cause complications in diabetes. Anxious diabetic patients have poor blood glucose regulation and increased symptoms of the disease. Increased blood glucose levels can lead to some diabetic problem such as nephropathy, stroke, heart risk, hypertension and even death.

Anxiety in diabetes patients can be triggered by certain treatments such as surgery. This will cause the release of epinephrine and noradrenaline. Those hormones cause changes in blood glucose levels and makes the body to stop insulin production [23].

Based on the results of this study, anxiety that occurs in diabetes mellitus patients will actually increase blood glucose levels. The same condition was also found by researcher during the research especially for those who are chronic and has complication illness. On the other side the anxiety of diabetes mellitus patient will increase glucose level. Therefore, it is necessary to take supportive measures for diabetes mellitus patients who will undergo surgery to avoid anxiety. Supportive action for preoperative patients is by providing preoperative information.

One of the factors that influence anxiety according to [1] is the patient's level of knowledge about surgery information. Fear of the unknown or anxiety can be reduced by providing information about the surgery to be performed. The main nursing strategy during this preoperative period is to provide information that aims to prevent potential complications. Fear of the unknown can diminish because of knowledge of the treatment. The amount of information that must be provided before surgery depends on the patient's and family's background, interests and degree of stress. It is best to ask patients what they want to know about the operation that is going to take place. Information that can help patients and their families before surgery are preoperative examinations and reasons, routine matters before surgery, special tools needed, delivery to the operating room (time, checking procedures), recovery room, possibility medications after surgery.

5. Conclusion

The results showed that most of preoperative diabetes patients experienced mild anxiety and most of the patients had high blood glucose levels. There is a correlation between anxiety of preoperative patients and blood glucose levels of diabetes mellitus patients at the Nyi Ageng Serang room in Sekarwangi Hospital, Sukabumi.

It is hoped that this research will provide input and information in improving preventive and promotive programs for diabetes mellitus patients in preoperative preparation.

It is hoped that the results of this study can provide input for further researchers to carry out further research with methods that can reduce stress levels of patients who will undergo surgery, for example, prayer / spiritual therapy, nutritional therapy, music therapy and other therapies as well as adding variables that can affect anxiety of diabetes patients such as past medical history, history of comorbidities, gender, age etc.

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Conflict of Interest

The authors have no conflict of interest to declare.

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