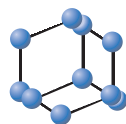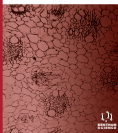**RESEARCH ARTICLE**

Prevalence of the Effects of Anxiety and Depression on People with Type 2 Diabetes Mellitus: An Analysis of Health Policy Studies in Improving the Quality of Life of Poor Families in the Urban Areas of West Lombok, Indonesia

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Abstract: ***Background***: To explore the tendency of the effects of anxiety and depression that occur in type 2 diabetes patients, especially poor patients who live in the urban areas with poor economic conditions, who do not have health access from the government, and live away from the hospitals.

Methods: It is a cross-sectional study which aimed to determine the number of patients who experienced anxiety and depression problems due to the declining health conditions caused by diabetes. A sample size of 98 diabetics experiencing anxiety and depression when the treatment was carried out was included. The study design included a qualitative study with in-depth interviews with respondents who were at risk of diabetes, as well as to determine the level of anxiety and depression that occurred when medical care was provided and the feelings experienced by the respondents after the completion of treatment.

Results: Diabetic patients are generally unaware that their illness is a chronic disease that takes a long time to treat. When the patients are sick, most of them do not immediately go to the hospital or a specialist to get their health examination and treatment, because the hospital is far from the patients' residence. Furthermore, some patients still use traditional medicine and non-medical treatment, so when the patients with critical conditions are taken to the hospital, they already have chronic diabetes.

Conclusion: The lack of access to health for chronic patients with poor economic conditions who live far from the hospitals and the scarcity of medical staff to carry out treatment of chronic diseases such as diabetes for poor patients in urban areas certainly have an impact on increasing the number of patients with chronic diseases. Therefore, the government is expected to be able to provide easy health policies to remote rural communities in order to achieve optimal community welfare and health.

Keywords: Anxiety, quality of life, diabetes, health policy, urban areas, poor family.

1. INTRODUCTION

Health development is the most important aspect of improving the health life quality of the people in a country. It is realized through the provision of good health services for the whole community supported by quality health services and performed by qualified and competent health professionals. Anxiety and depression are health problems that often occur in adult patients who need health care. Anxiety is generally experienced by many patients suffering from a chronic disease, which is a health problem that occurs throughout the world today. This happens because of the physiological changes due to the chronic diseases experienced by patients such as diabetes. In the end, the patients feel depressed due to their health problems and their inability to maintain their life quality to live better [1-4]. This is certainly another major trigger, especially for patients experiencing changes in their metabolic system that does not work well and that their immune system is weak and suffer from diabetes mellitus [5-8]. In order to find out whether a person is suffering from a chronic disease such as diabetes, it is required for every adult to have their health checked routinely as an early prevention step in dealing with the onset of chronic diseases so that they can obtain earlier treatment as well [9, 10].

A person's immune system will work well if the intake of nutrients is sufficient [11, 12]. Only then, the regulation of the control of functions and immune system can work well [13-16]. Thus, one of the factors in the occurrence of diabetes is impaired insulin secretion which cannot enter the blood cells perfectly. Diabetes Milletus type 2 is a disease caused by excessive sugar levels in blood plasma (hyperglycemia),

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as well as a lack of effective insulin needed by the body and kinetic factors, age and excessive lifestyle patterns [17, 18]. In an effort to maintain the excess glucose in the body, a patient who has been exposed to diabetes generally requires a relatively long period of treatment to be able to recover from it. Therefore, patients diagnosed with chronic diseases get anxious about their illness, resulting in depression and mental disorders [19-21].

Data from the Health Service Office of West Nusa Tenggara Province show that there are 36,486 people (2%) of the whole population in Indonesia who suffer from diabetes in 2018 (Dikes NTB 2018). In comparison, the data from World Health Organization (WHO) reveal that people with diabetes are expected to increase in number by 5.1% (194 to 333 million people), resulting in the disease being categorized as a chronic disease. Based on the foregoing, most diabetics are between 45-65 years old. Generally, patients who have been identified with chronic illness often experience anxiety and depression. Some patients also experience acute mental disorders. This will reduce one's endurance as well as immune system [13, 22, 23], hence the disease takes longer to heal. It is therefore recommended for these patients to take part in independent health programs such as regular exercises to reduce pain, anxiety, depression and to boost self-confidence [24, 25].

2. MATERIALS AND METHODS

2.1. Literature Review

Diabetes that occurs in adult patients is a metabolic disorder due to hormonal disorders that can trigger chronic health problems in humans. This type of diabetes occurs due to the insulin resistance found in the body. Therefore, increasing age is certainly a risk for a decrease in health conditions [26], as well as high cholesterol levels contained in a person's body due to lack of exercise and excessive eating patterns so that a person's body affected by diabetes becomes obese [27-30, 11]. Thus, management for diabetics is expected to be able to change their lifestyle patterns by physical exercise and diet as a form of health therapy of the therapeutic strategies in overcoming diabetes, as well as planning diet with adequate and frequent food intake as well as special health gymnastics therapy for diabetics [19].

Generally, chronic patients who have diabetes often experience anxiety and feel that the disease cannot be cured. The patient is then desperate and does not want to take medication that results in depression due to psychological factors [31-33]. Therefore, treatment to overcome anxiety and depression has to be provided by every health worker. Education to patients with diabetes to always check their health conditions in the hospital should always be provided as well.

2.2. Methods

The data obtained were then analyzed using a cross-sectional approach to determine the number of patients experiencing anxiety and depression problems due to declining health conditions caused by diabetes. The sample in this study were 98 respondents who suffered from diabetes and were diagnosed with anxiety and depression during the treatment at the hospital. For optimal study results, in-depth interviews with patients and their families to obtain information on the causes of anxiety and depression experienced by patients were conducted. Questionnaires were also distributed as a supporting instrument so that the study obtained optimal results.

2.3. Sampling

This study was focused on patients who have diabetes who experienced a long period of treatment as well as long health recovery time, so they felt hopeless and eventually experienced anxiety and depression. The anxiety and depression lead to not optimal treatment for recovery. The subjects in this study were focused on respondents who were between 56-65 years old and suffered from type 2 diabetes (Table **1**).

Tables **1** and **2** show that most participants who were vulnerable to diabetes were those between the ages of 56-65

Table 1.   Distribution of participants by Age (n=98).

Age	Number of Participants	Percent
45-51	28	28.6 %
51-55	32	32.7 %
56-65	38	38.7 %
Total	n=98	100 %

Table 2.   Distribution by gender.

Gender	Number of Participants	Percent
Male	24	24.5 %
Female	74	75.5 %
Total	n=98	100 %

years old. Most of the patients were women. The large population of women patients was caused by diabetes that was experienced during pregnancy. Based on data obtained from interviews with all of the patients, they were generally affected by diabetes because they could not control the healthy food pattern needed by the body, as well as lack of nutritional intake and sports activities that aimed to burn the fat content in the body and the high levels of glucose in the blood.

2.4. Characteristics of the Participants

The participants in this study can be seen in Table **1** in terms of their age and sex. The highest percentage suffering from diabetes was female (75.5%) with a dominating age of 65 years old (38.7%) when the disease was categorized as chronic.

The high prevalence of diabetes mellitus due to age factor occurs because this disease is a degenerative disease caused by reduced insulin production and declining muscle cells activity. This, of course, can increase the fat levels in the body so that it is difficult to turn the glucose levels into energy.

All the participants in this study were the patients who have approved to be the respondents, willing to be investigated and underwent treatment for diabetes. Patients were both men and women aged between 45-65 years old and had received medical treatments at the hospital more than twice. The patients were categorized as poor patients and thus prioritized by the government. The patients in this study were 98 respondents who suffered from chronic diabetes throughout West Lombok region and would receive treatment from professional medical staff. They always experienced anxiety and some of them even experienced depression before the treatment process took place.

2.5. Procedure

To determine the level of anxiety and depression that occurred in patients with type 2 diabetes, the researchers used a qualitative approach by employing the Hamilton Anxiety Rating Scale. This measurement scale was used to determine the level of anxiety and depression, complaints of illnesses suffered by patients, as well as to find out their feelings of being quickly offended, often fearful, which can ultimately reduce their level of immunity.

In measuring the value of anxiety levels that occurred in these diabetic patients, the researchers assigned values based on the categories of diabetic symptoms experienced by patients: mild, moderate or severe.

As for the data collection process, the researchers sought prior permission from all respondents in this study to be interviewed and asked for health information about things that had happened during the disease treatment process so that the informant could explain the feelings of anxiety experienced when dealing with the illness. In order to complete the data in this study, the researchers also asked the patients' family for approval to explain additional information which was deemed necessary as other supporting data in order to obtain good research results.

The data were obtained and determined based on several criteria, such as (a) job characteristics (b) education, and (c) anxiety levels. These criteria were needed to determine the anxiety and depression factors that occurred in these respondents to find out how the care was conducted during the recovery times and to find out how the patients handled diabetes.

Table **3** shows that most of the respondents work as farm laborers or construction workers with wages that were just enough to eat daily with their families. Therefore, if a diabetic participant in the study has a chronic health problem and must be taken to the hospital, the patient does not have the ability to pay for his health care.

The number of diabetes cases that occur in the communities in the urban areas of West Lombok shows that in general, the respondents contracted diabetes due to unhealthy lifestyles and lack of knowledge about diabetes. It was also caused by the lack of socialization from the government regarding the importance of maintaining personal health by not consuming too much food that contains high sugar levels and can spare time to exercise regularly.These measures were necessary for better health and to maintain the balance of nutrients needed by the body. Setting a healthy lifestyle is certainly one of the factors to overcome anxiety, especially for diabetic people. Anxiety is certainly a negative response that is always felt by the people with diabetes due to the difficulty of decreasing the blood sugar levels. Therefore, setting diet, having adequate rest and exercising regularly can definitely overcome health problems especially those related to diabetes.

3. RESULTS

Anxiety is a feeling that arises as a result of a response to a threat to someone who has a chronic disease and requires a long treatment time for recovery, such as diabetes mellitus. This disease occurs due to kinetic factors or unhealthy lifestyle and lack of nutritional intake as well as high glucose in the blood that cannot be adequately controlled. This is inseparable from the lack of socialization of a healthy lifestyle program, the need to regulate a healthy diet by designing a diet program that is beneficial for health [34], as well as government efforts in controlling the prevalence of the epidemic of diabetes which is commonly found in urban areas.

Based on the control criteria of the respondents obtained in this study, there are three important things that serve as guidelines to find out why diabetic patients who go to the hospital are in general suffering from chronic disease patients who live in urban areas. Table **4** shows the criteria of the respondents who experience anxiety and depression which are grouped based on their education or occupation.

Diabetes mellitus is a metabolic disease due to high glucose in the blood, resulting in an imbalance amount of insulin in the patient's body. In addition, lifestyles that cause obesity and age are certainly the main factors why diabetes is difficult to cure.

The data show that diabetes is measured by the age of the respondents (see Table **1**). In West Lombok region, this disease is generally contracted by adults over the age of 40

Table 3.   Characteristics of participants by work, education and anxiety.

Job Characteristics	Description
Farm laborers	As a day laborer with the task of assisting agricultural landowners to grow rice, soybeans, and corn and get wages based on the amount of crop.
Night Guard	Shop or office security guards and get wages according to the number of hours worked.
Driver	The rural transportation driver works only for half a day and earns wages based on the amount of income he has while working as a driver.
Entrepreneurs	Work alone at home by opening a washing and ironing service while selling snacks.
Labor	As manual laborers and work based on temporary requests for work, such as construction laborers or farm laborers who help landowners to plant crops in the fields.
Criteria For Anxiety Felt By Respondents	
Weight	Individuals tend to focus on one problem in detail, are easily offended, often feel loss of self-control and excessive fear of their own thoughts, excessive levels of panic and unable to do any work even though given directions.
Medium	Able to decide important things, and to do a good job if directed.
Light	Anxiety felt as a result of his illness can be overcome properly, and tends to be calm and not nervous.

Table 4.   Respondent criteria based on education, occupation and anxiety level.

	(n=98)	Percent
Education		
Primary school	34	31.3 %
Middle school	28	27.0 %
High school	21	22.7 %
No school	15	19.0 %
Profession		
Farm workers	39	42.0 %
Construction workers	27	21.5 %
Driver	19	16.3 %
Night guard	9	11.7 %
Entrepreneur	4	8.05 %
Anxiety Level		
Weight	12	10.2 %
Medium	56	57.1 %
Light	32	32.7 %

years old. This is consistent with the interview results with a person with diabetes (Mrs. A.48.) stating the following:

> *"Diabetes complaints are often felt, namely the occurrence of physical disorders such as difficulty to sleep, lack of enthusiasm for activities, and headaches".*

Poor health conditions can cause diabetes [35-38]. In addition, if the patients rarely carry out sports activities, they will become obese which can lead to increased glucose levels in the blood. It can cause vascular complications that will affect the kidney and heart performance in diabetics [39-44].

Effective patients' self-care health program, which is carried out comprehensively, is important to produce optimal health in order to speed up the healing process [45-48]. Therefore, diabetics are expected to always strive to control their health with the help of medical professionals for the comprehensive services. In addition, the role of family and
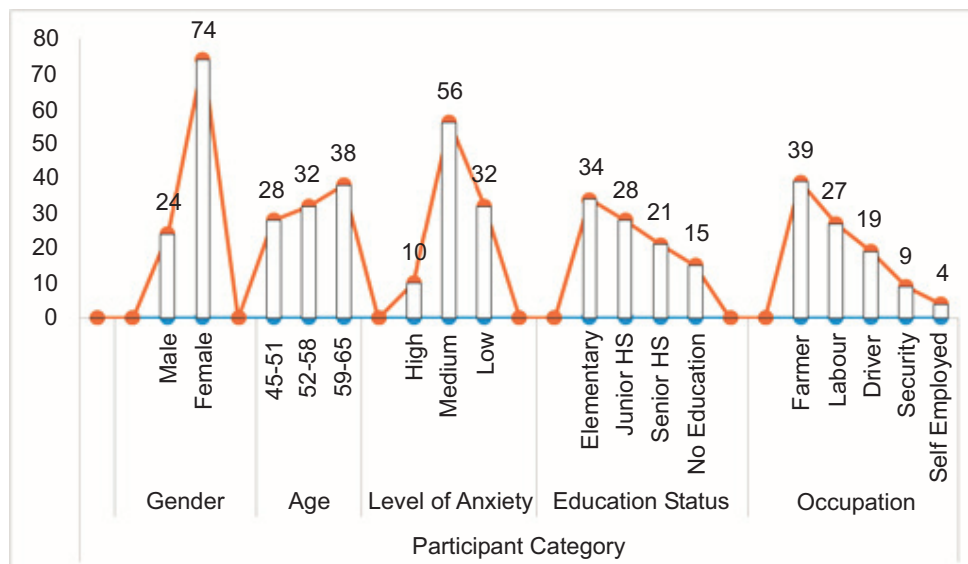
Fig. (1). Response to anxiety in people with diabetes. *(A higher resolution / colour version of this figure is available in the electronic copy of the article).*

community is needed to overcome the anxiety problem so that the health conditions of the diabetics can be better. With the availability of professional medical personnel, anxiety problems suffered by the patients can be adequately overcome. The level of anxiety that occurs in diabetic patients can be seen in Table **4**.

Each respondent is different in terms of the education level, work, and anxiety levels experienced. Their response to the disease cannot be separated from their ability to cope with the symptoms of the illness.

Based on the anxiety level experienced by the diabetics, feelings of anxiety and depression are generally felt by the respondents with a primary school education background (31.3%) who find it difficult to understand how to deal with the disease. This is related to the inability of these respondents to maintain their health. They are very dependent on the help of others. Therefore, when the treatments were conducted by the medical personnel in the hospital, excessive feelings of anxiety and severe depression would certainly hinder the healing process of the respondents. In fact, the illness would tend to become chronic which then would require longer healing time.

Anxiety and depression experienced by people with diabetes who live in urban areas cannot be separated from the factors of work and wages earned. It is because their income was not sufficient to fund periodic hospital treatment, as well as the costs involved in having to go for further treatments or expensive hospitalization [49-51]. Therefore, they prefer to do a traditional treatment at home, which cannot give reassurance that the disease has been cured. If they decided to have a treatment at the hospital, they were shocked by the diagnosis which required serious treatments. Usually, the treatments must be done intensively in the hospital in accordance with the procedures of treatments for patients with risky chronic diseases.

The results show that level of education greatly affects the quality of patients' health. This is because knowledge and understanding of good health can certainly help to anticipate early treatments of chronic diseases, as well as illnesses they suffer from, which can make the treatment and healing process easier. Based on the level of anxiety experienced by the respondents, acute anxiety is generally experienced by those who work farm laborers, whose job is to help the landowners work on agricultural land for a small wage. If they experience problems with their health, they cannot be admitted immediately to the hospital because of the costs of the initial examination and the expensive treatment [52-54]. This disease requires a long period of treatment. Therefore, people with diabetes usually prefer to treat themselves traditionally. If the disease is not treated for a long time, it will certainly have an adverse effect on the health of these patients who are even at the risk of suffering from chronic diseases. The description of the level of education and employment of the respondents can be seen in Fig. (**1**).

Fig. (**1**) shows that the high level of anxiety and depression felt by the respondents can occur due to work stressing factors that cause depression. The excessive stress will certainly have an impact on the increased level of glucose in the respondents' blood, which results in anxiety. The data show that the largest number of respondents (39 people) are farm laborers, which is a job with a high level of anxiety if they relapse and must be hospitalized. On the other hand, the lowest number of respondents are those who work independently at home as an entrepreneur.

If the anxiety is measured based on the level of education, respondents with primary school education level are more anxious than those with secondary or higher education level. This happens because the respondents with primary school education level do not have sufficient knowledge and understanding of the disease that they suffer from. They consider that the disease they suffer from is an ordinary disease caused by fatigue at work. Therefore, local governments are expected to play an active role in formulating policies on public health patterns that are simple and easy to understand for all the poor people living in urban areas.

Table 5.   Participant categories.

-		n=Participant	Percent
Gender	Male	24	24.05
	Female	74	75.05
Age	45-51	28	28.06
	52-58	32	32.07
	59-65	38	38.08
Level of Anxiety	High	10	10.02
	Moderate	56	57.01
	Low	32	32.07
Education Status	Elementary	34	31.3
	Junior HS	28	27.0
	Senior HS	21	22.7
	No Education	15	19.0
Occupation	Farmer	39	42.00.
	Labour	27	21.05
	Driver	19	16.03
	Security	9	11.07
	Self Employed	4	8.05

4. DISCUSSION

Anxiety is a feeling of concern about the sudden threat that will occur to patients with chronic status. They feel anxious, easily depressed, have sleep disturbance problems and cardio-vascular disorders which will certainly hinder the recovery process and the length of time needed to cure the patients with chronic disease symptoms [54-56] explained that anxiety occurring due to biological response to stress is caused by the duration of recovery from diabetes which results in decreased levels of insulin found in the patients' body.

Based on the length of the treatment process, the decreased insulin level in the body of the people with diabetes mellitus will certainly increase the sugar level. The lack of nutritional intake caused by the lack of sports activities which helps burning fat in the body can also cause excessive pain. Therefore, the impact will reduce the life quality of the patients [57, 58].

In addition to high blood sugar level, this disease is also caused by kinetic factor, age factor, and lifestyle of excessive eating patterns that lead to obesity which is caused by increased calorie intake in the body [59-61]. All of these result in resistance to decreased insulin production which is needed by the body.

Table **5** shows that diabetes is mostly contracted by women aged 59-65 years old (38%). This happens because at that age, women do more activities in the house and rarely do outdoor activities, such as sports. Furthermore, they generally do not live a healthy lifestyle that is balanced by a regular healthy diet.

The low health quality of the patients seen in this study occurs because of the low educational factor, which influences the mindset and understanding of the importance of a healthy living behavior. Although it is often socialized by the local governments through the health department, it is not carried out properly.

CONCLUSION

Diabetes is a chronic disease that requires a long time of treatment provided by health professionals. Diabetes that occurs in the urban areas shows an increase every year because of the unhealthy lifestyle and lack of knowledge of a healthy diet and self-care management. In an effort to overcome the anxiety and depression caused by diabetes, healthy lifestyle behaviors such as eating healthy food with adequate nutrition, exercising regularly and visiting nurses or doctors regularly must be conducted. Local governments are expected to play an active role in formulating effective health policies, especially for the poor people who live in the urban areas, by providing low-cost and quality care as an effort to reduce the social and health inequalities for the whole community.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethics approval and consent to participate was obtained from the ethical committee from Public Health Center of

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