

## **KNOWLEDGE AND AWARENESS OF DIABETES MELLITUS: A CASE STUDY OF A LARGE PRIVATE UNIVERSITY IN BOTSWANA.**

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**ABSTRACT:** *This study sought to evaluate awareness and knowledge of diabetes mellitus, an important global disease, among staff at a large private university in Botswana. Findings point to a general lack of awareness and knowledge about the disease among the university staff. Respondents consisted of 63% lecturing and 37% non-lecturing staff. The distribution by gender was roughly 50-50. Overall awareness of diabetes mellitus was 66% of respondents awareness being higher for females at (34%) compared to men's 32%. Knowledge about the important risk factors for diabetes was low. Knowledge about the important symptoms of the disease was not impressive. This is an important factor in early diagnosis and onset of management. Lack of knowledge about curability of the disease was very high at 85% of respondents. Of the possible pathological effects of the disease, respondents seemed to be more aware of the development blindness than others. These statistics may be indicative of a more distributed problem in country given the fact that such results came from "enlightened" members of the community.*

**KEYWORDS:** Diabetes Mellitus, Awareness, Knowledge, Symptoms

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### **INTRODUCTION**

Diseases which results from unhealthy way of living are termed life style related diseases. There are many such diseases including diabetes also known as diabetes mellitus.

Developed nations are dominant in this where people choose to follow fast food, avoid exercising regularly and also smoke and drink. Common lifestyle diseases are Alzheimer's disease, asthma, cancer, diabetes, heart problems, liver problems, osteoporosis, Stroke etc.

The development of these diseases depends on type of work the person does, work environment, physical activity and management of stress. Other influencing factors are poor posture, food habits and lack of sleep. But this conditions can be prevented by making small changes in daily routine and opting a healthy lifestyle. One has to quit smoking, avoid alcohol, and include a green diet in daily life. Importance should be given also for physical activity and a stress-free life.

### **Problem Statement**

Diabetes is recognized as a growing problem in the African region including Botswana. The problems that the disease creates are widespread and far reaching, having an impact at every level of society. One of the critical inputs to the strategies for combating this diseases is to create awareness and build knowledge about it within a population. There is therefore a need

to evaluate the status quou with regard to knowledge and awareness so as to help inform the degree of intervention required. This in turn informs resource allocation in terms of time, finances, labour to name a few.

### **Objectives**

To carry out a pilot study that evaluates the state of awareness and knowledge about diabetes at an institute of higher learning in Botswana.

Make recommendations based on the findings of the research.

### **Research Questions**

1. What is the level of awareness and knowledge about diabetes mellitus among the staff of a private university in Botswana?
2. What interventions, if any, may be required to address any gaps picked during the study?

### **METHODOLOGY**

The survey was conducted among university staff members of a private University, Gaborone, Botswana. About 200 questionnaires for survey was disseminated among the staff members. About 140 staff members participated in the survey, which includes teaching and non-teaching. Age difference was not a criteria because all of the participants were adults above 20. None of the participants were into any physical hard coreworks and were mainly depending on carbohydrate based diet and also carbonated drinks. The work environment demanded less physical activity. None of these studies about life style, till date, was conducted here, even though this condition can affect the productivity of the staff members in a large scale.

The survey consisted of questions about awareness, symptoms, risk factors, self-care practices and also knowledge about complications resulting from diabetes. The awareness section was mainly targeting the questions about the general factors related to diabetes, which tests the knowledge about the connection of diabetes to the daily routine and diet and also about the contagiousity of diabetes.

The main challenge in this survey was to make the participants understand the significance of DM, and this became more difficult with the participants who were not even heard about DM. The participants were equally worried about the confidentiality of the questionnaire, and it was clearly informed that their names will not be disclosed or published. The survey was conducted based on the gender and the official positions.

Spss version 16.0 was used to interpret the data and analyze the results.

## LITERATURE REVIEW

### Definition

The World Health Organisation (WHO) define diabetes mellitus as “a metabolic disorder of multiple aetiology characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both.”

### Prevalence & Importance of Disease

Type 2 diabetes is recognized as the sixth leading cause of death in the United States, the leading cause of kidney failure and new cases of blindness as well as being a significant cause of lost workforce productivity (Ripsin *et. al*, 2009). The International Diabetes Federation (2013), states that obesity and diabetes have become a new health priority for Africa due to urbanization and older populations. It further points out that the African region has the highest proportion of undiagnosed diabetes and about 63% of cases died from diabetes-related causes in 2013. The IDF notes that about 19.8 million adults in Africa have diabetes. This represents a prevalence rate of 4.9%. In 2013, 76.4% of all the deaths attributable to diabetes occurred in people under 60, which is a significant blow to the continent’s productivity.

Although not among the worst affected, the prevalence of diabetes in Botswana, according to IDF (2013), was 2.5-4%. The steady increase in diabetic cases, according to the Diabetes Association of Botswana (DAB), is due to an increased urbanization, unhealthy diet and increased sedentary lifestyle. The DAB states that this increase will put a lot of pressure on the economy and may lead to resource constraints as more resources will be channeled towards the interventions of the diabetic complications. It also notes that half of the people with diabetes do not know that they have it. So it is a necessity to create awareness among people about this silent killer.

From these articles it is very clear that there is need for Botswana to intensify their preventive strategies against diabetes. Since the condition is recognized as a growing problem in the region, it is prudent to keep a finger on its pulse in every nation in the region including Botswana.

### Nature of Disease

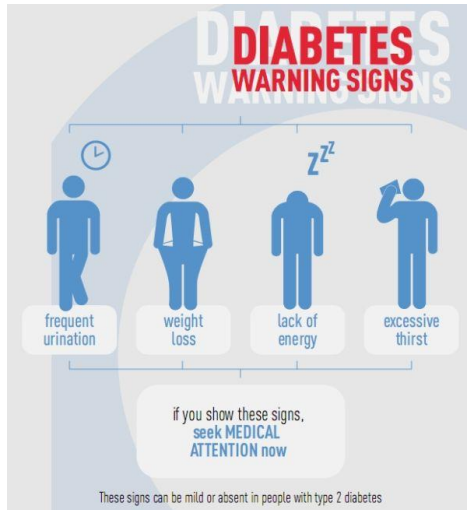
Diabetes is of three types: Type 1 Diabetes- Insulin production is stopped, result is increased blood glucose. Insulin shots are needed, and also regular blood tests should be done to ensure the glucose levels. A proper diabetic diet should be followed. This condition normally occurs in middle aged people.

Type 2 Diabetes-Body is not able to use the insulin produced (insulin resistance), results in high blood glucose. Pills or insulin shots are needed. 90% of the diabetic cases belongs to type-2 diabetes. Following a healthy life style can help to an extent. Obese people are in more risk than the people maintaining normal weight. The chance of developing type 2 diabetes is more with years, and it is hereditary. Studies have found that men with their testosterone levels low also have a high risk of developing type 2 diabetes.

Gestational Diabetes- In pregnancy, the placental hormones prevents insulin, and this result in insulin resistance. This condition can be brought under control by making changes in diet and

also exercising regularly. Studies have found that gestational diabetes is related to the diet of the woman before pregnancy.

### Symptoms of Diabetes Mellitus



**Figure 1.** An illustration from the International Diabetes Federation (adapted from <http://www.idf.org/signs-and-symptoms-diabetes>)

The IDF lists the following as the most common symptoms of diabetes:

- Frequent urination
- Excessive thirst
- Increased hunger
- Weight loss
- Tiredness
- Lack of interest and concentration
- A tingling sensation or numbness in the hands or feet
- Blurred vision
- Frequent infections
- Slow-healing wounds
- Vomiting and stomach pain (often mistaken as the flu)

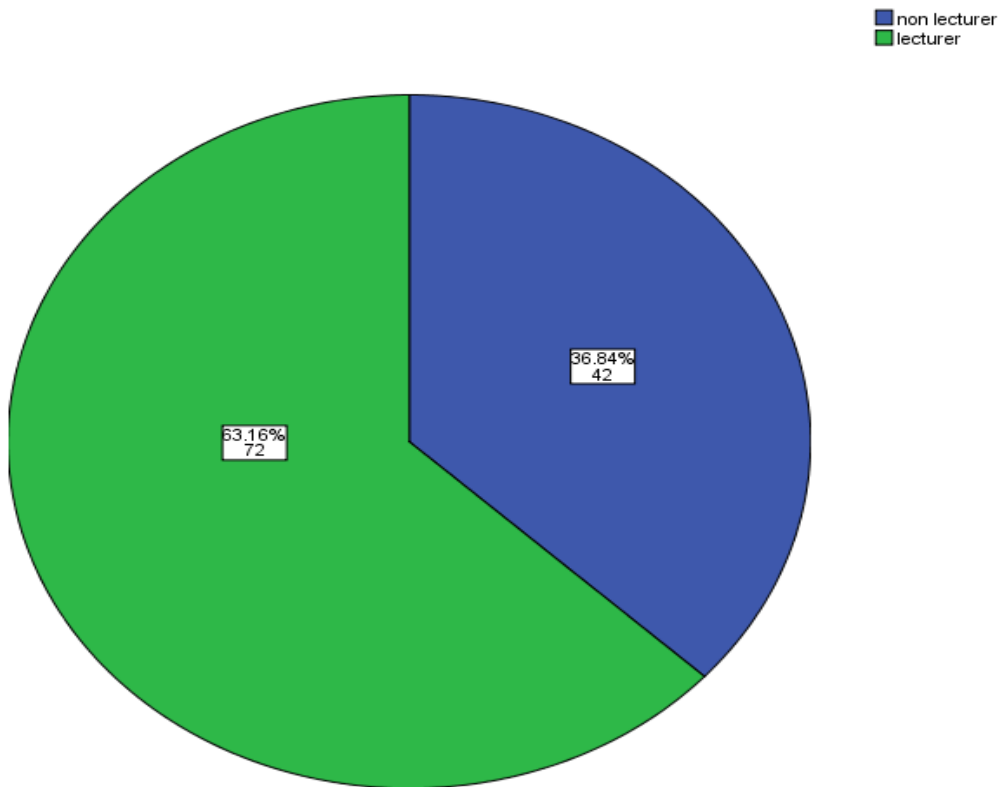
The symptoms for Type 1 diabetes are often sudden and severe whereas those for Type 2 diabetes are usually slow in development and less obvious.

## RESULTS

### Demographics of Research Participants

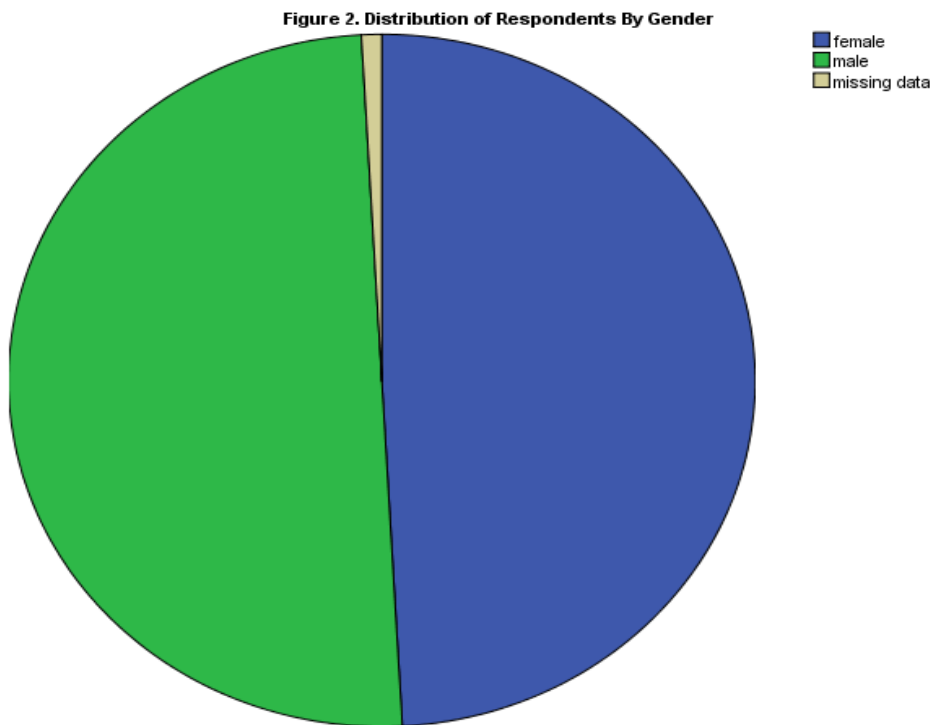
#### Distribution by employment type

Figure 1. Distribution of Participants By Employment Type



- The majority of respondents to the survey were lecturing staff (~63%) and the rest were non-lecturing staff (~37%).

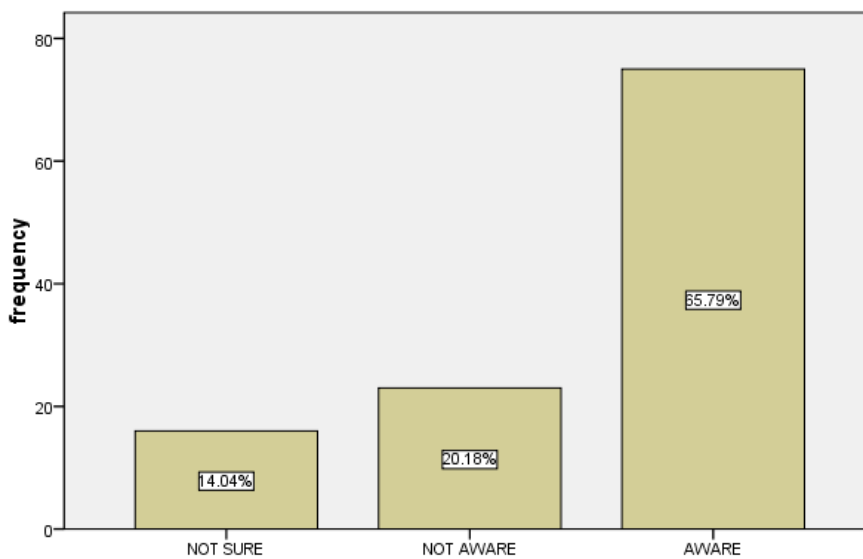
### Distribution by gender



- The proportion of respondents by gender were roughly 50-50.

### DIABETES KNOWLEDGE LEVEL AMONGST STAFF

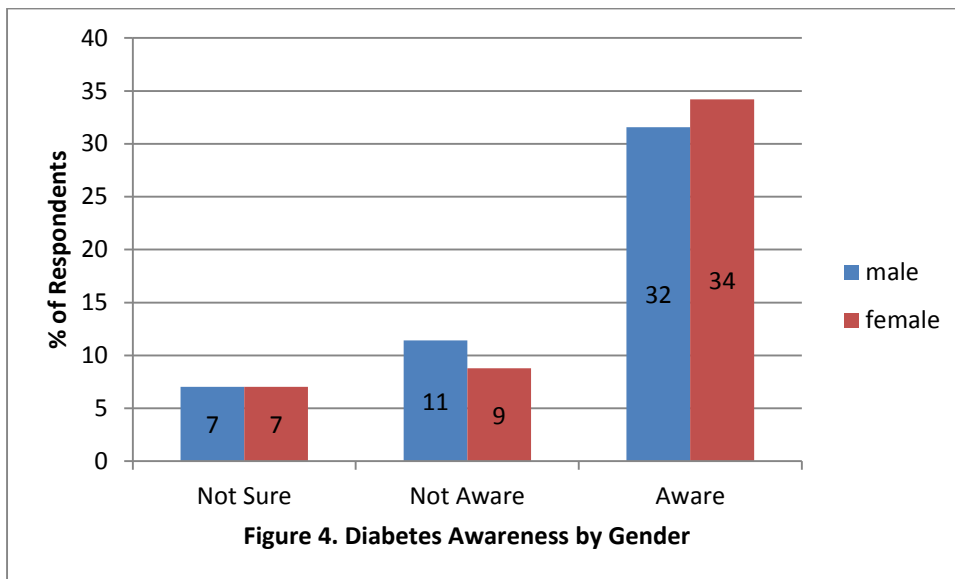
#### Overall awareness of diabetes among staff



**Figure 3. Awareness of the disease diabetes**

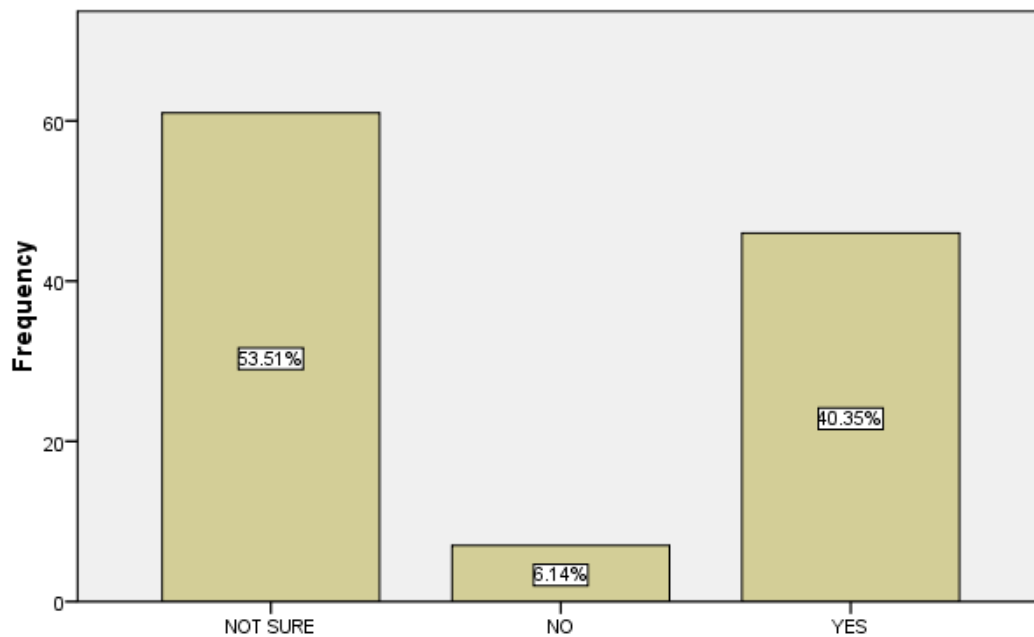
- The majority of respondents (~66%) were aware of the condition known as diabetes mellitus.
- About 34% of respondents were either unaware or unsure about the existence of the condition.

### Awareness of Diabetes by Gender



- Roughly equal proportions of males and females were aware of the disease (32% and 34% respectively).
- Those who were not aware or not sure also constituted roughly equal proportions on gender lines being 18% for males and 16% for females.

### Awareness about the types of diabetes



**Figure 5. Response to the question "Is there more than one type of the disease Diabetes Mellitus?"**

- The proportion of those who were not sure or did not know that there is more than one type of the disease diabetes mellitus was highest at ~60% as compared to ~40% who said they knew.



### Awareness about absence of cure for diabetes

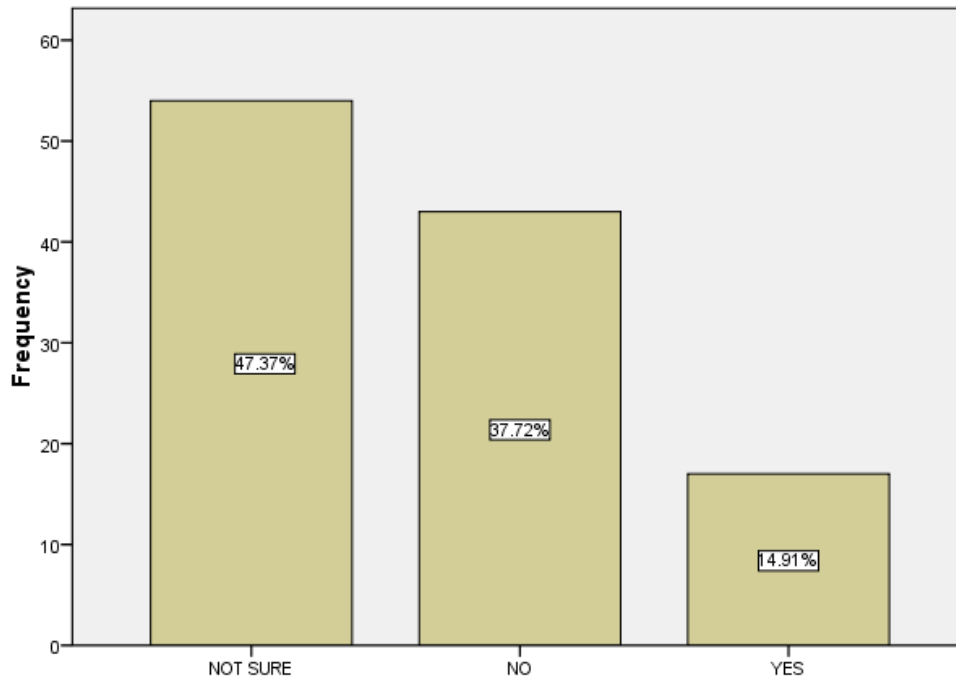


Figure 6. Response to the question "Is Diabetes Mellitus a curable disease?"

- The bulk of respondents were either not sure (~47%) or thought that there is a cure for diabetes (~15%).

### Awareness of the role of lifestyle in the development of diabetes

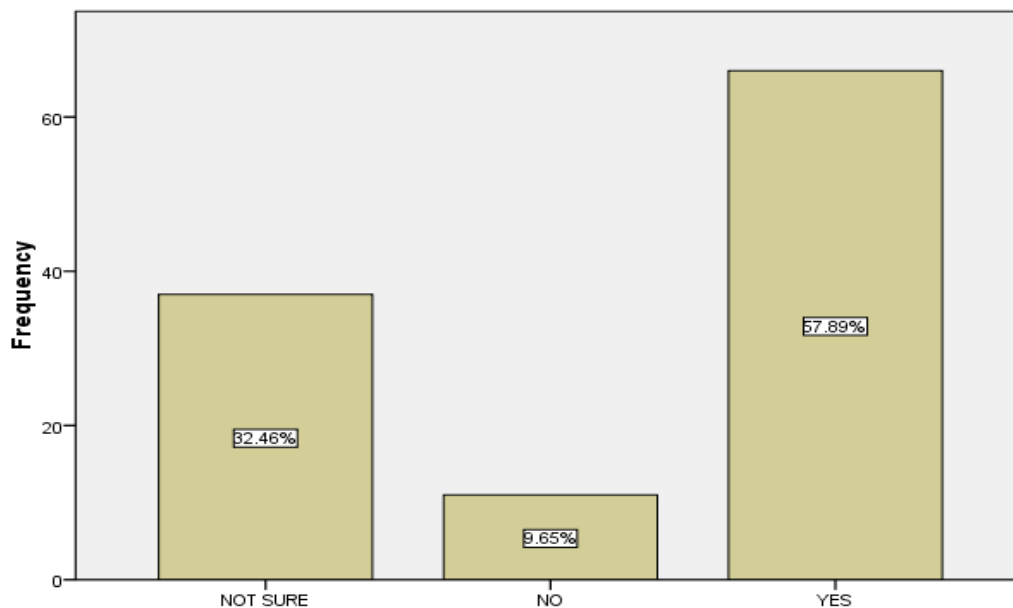


Figure 7. Response to the question "Is Diabetes Mellitus a lifestyle related disease?"

## KNOWLEDGE OF DIAGNOSIS OF DIABETES

### Use of Sugar Level/Concentration

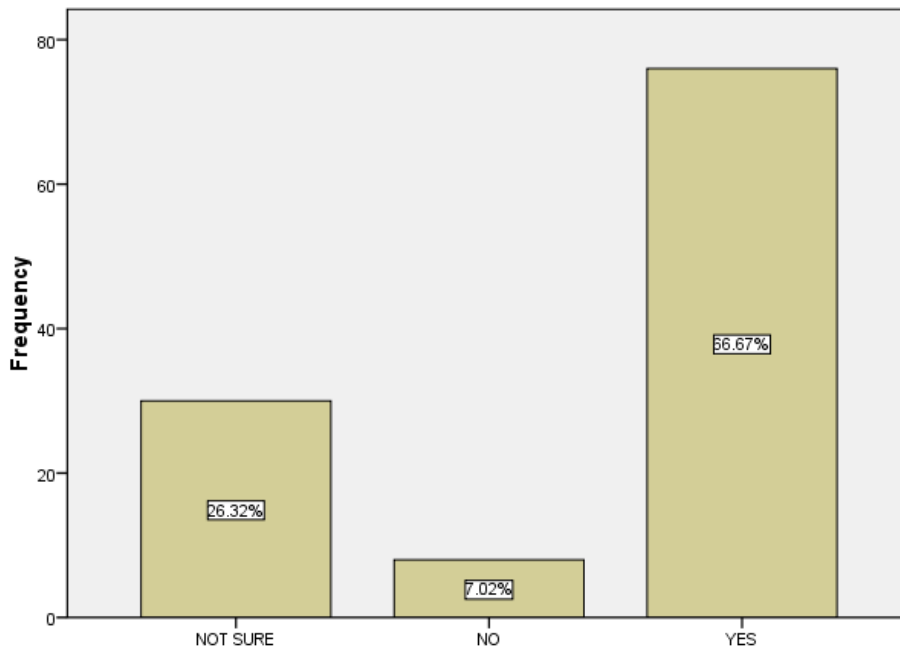


Figure 8. Response to the question "Can the amount of sugar in the urine be used to diagnose diabetes?"

## KNOWLEDGE OF THE SYMPTOMS OF DIABETES

### Awareness that frequent urination is a symptom of diabetes

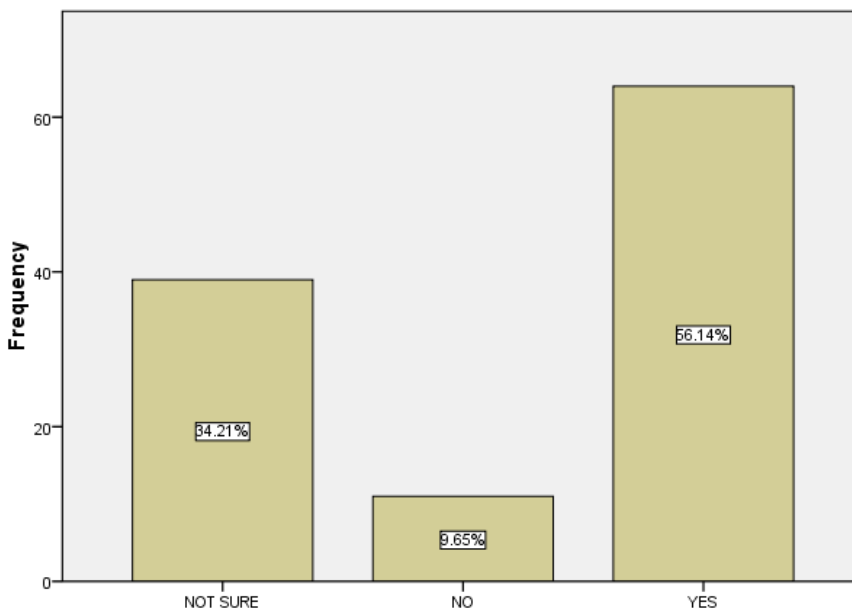


Figure 9. Response to the question "Is frequent urination a symptom of Diabetes Mellitus?"

### Awareness that excessive thirst is a symptom of diabetes

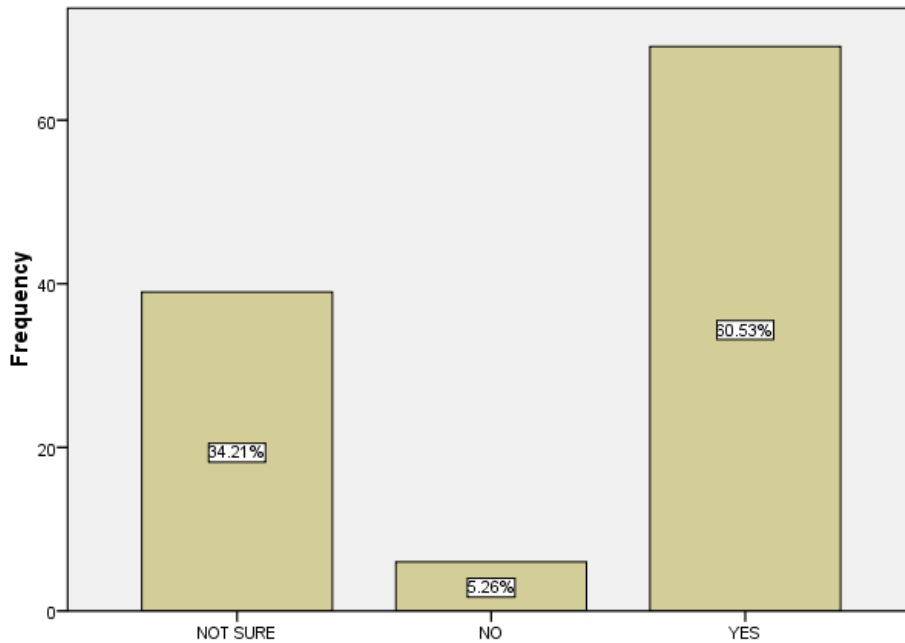


Figure 10. Response to the question "Is Excessive thirst a symptom of Diabetes Mellitus?"

### Awareness of excessive tiredness as a symptom of diabetes

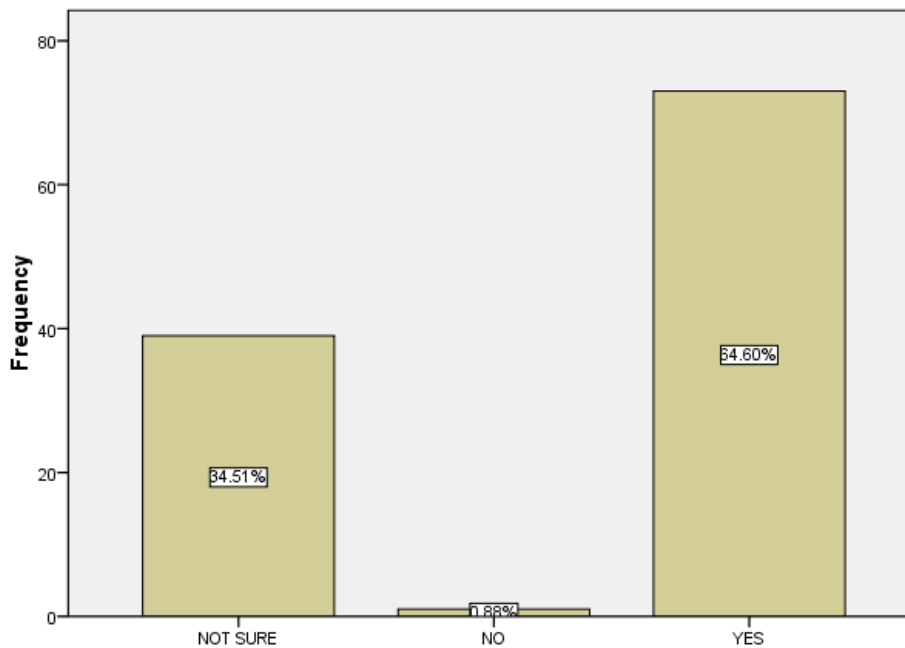


Figure 11. Response to the question "Are Excessive tiredness and weakness symptoms of Diabetes Mellitus?"

### Awareness of weight loss as a symptom of diabetes

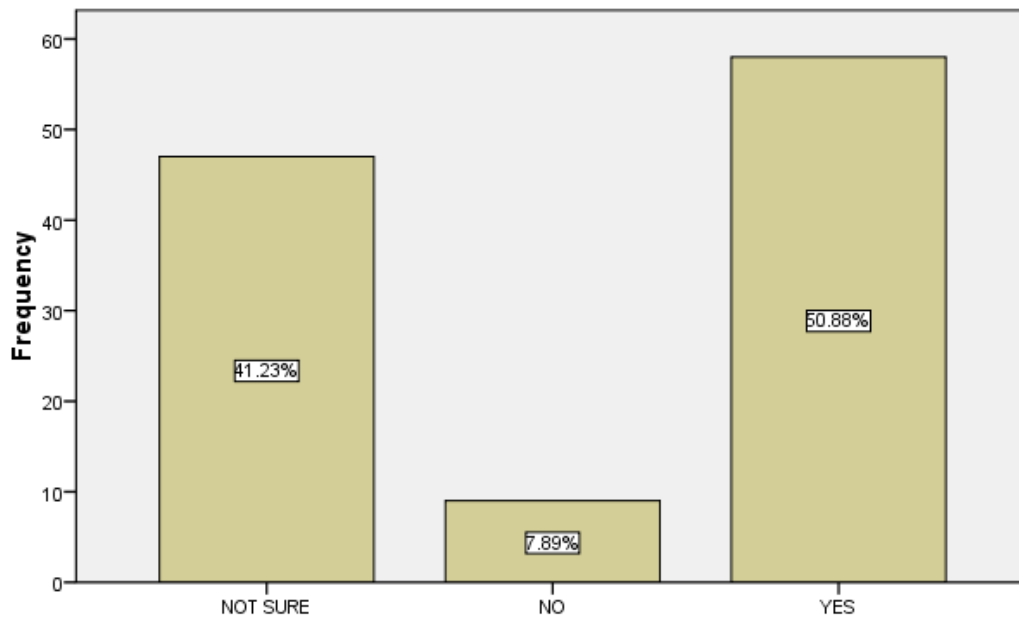


Figure 12. Response to the question "Is unexplained weight loss a symptom of Diabetes Mellitus?"

### KNOWLEDGE OF CAUSES OF DIABETES

#### Awareness of the link between obesity and diabetes

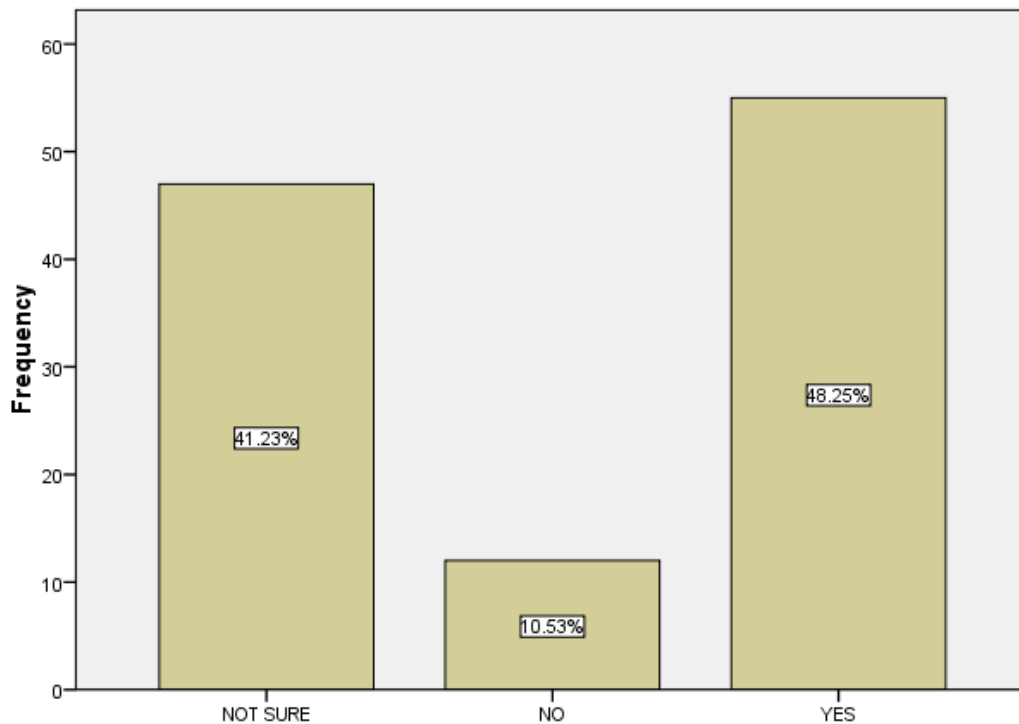


Figure 13. Response to the question "Does obesity cause Diabetes Mellitus?"

### Awareness of the link between genetics and risk of diabetes

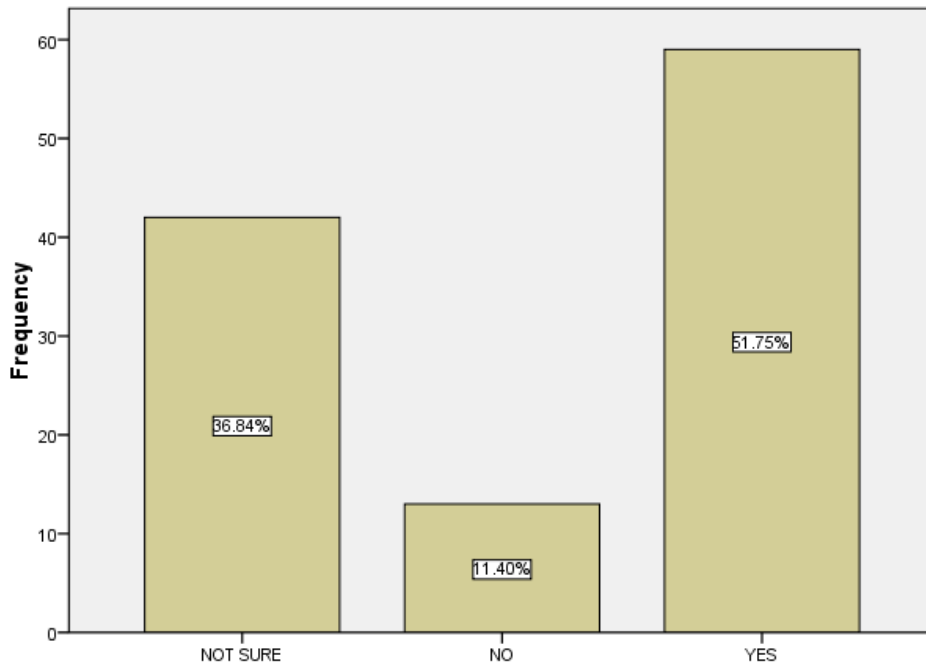


Figure 14. Response to the question "Is Diabetes Mellitus an inherited disease?"

### Awareness of the link between physical activity and diabetes

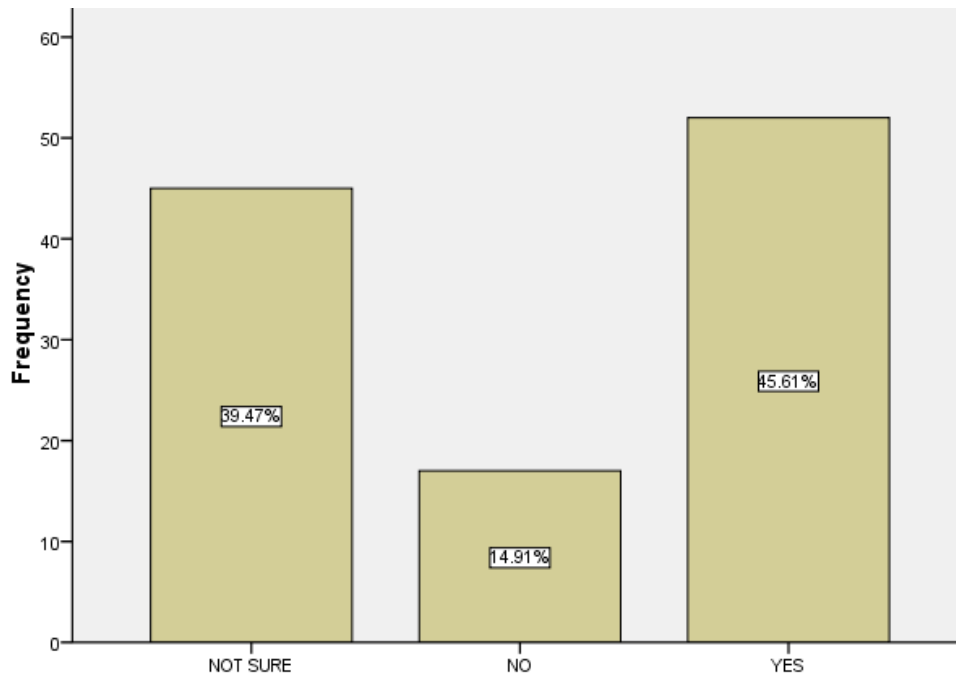


Figure 15. Response to the question "Is Diabetes Mellitus caused by inactivity or lack of exercise?"

### Awareness of the link between age and diabetes

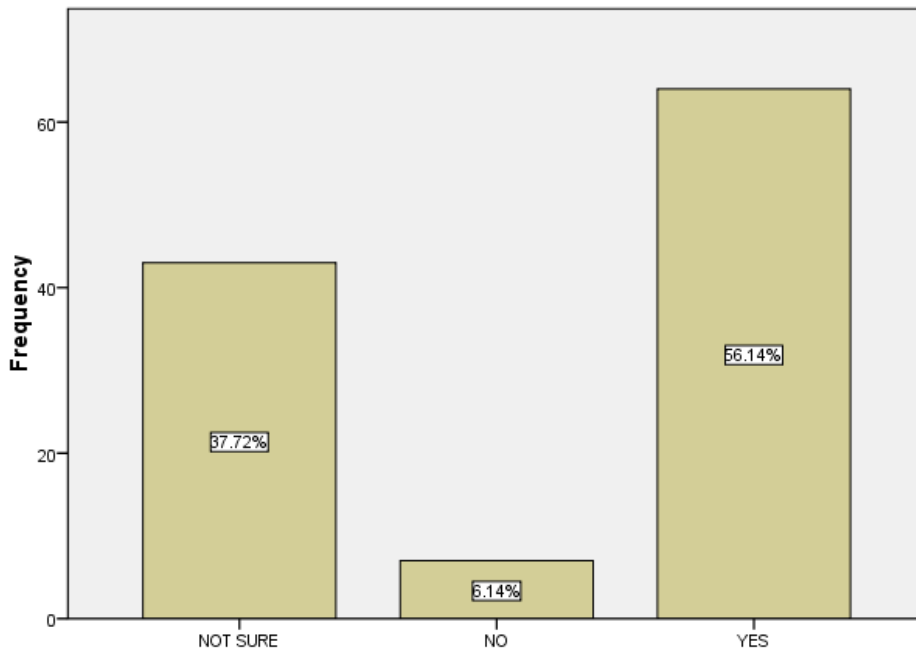


Figure 16. Response to the question "Is the risk of getting Diabetes Mellitus more common after the age of 45?"

### EFFECTS OF DIABETES

#### Knowledge of the effect of diabetes on the kidneys

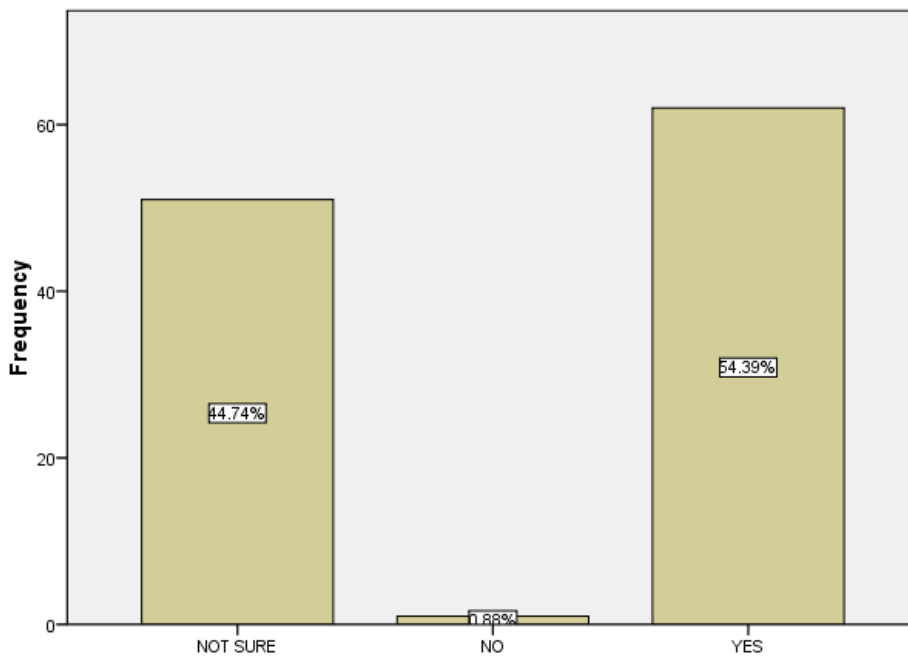


Figure 17. Response to the question "Does Diabetes Mellitus give rise to kidney problem?"

### Awareness of the effects of diabetes on the eyes

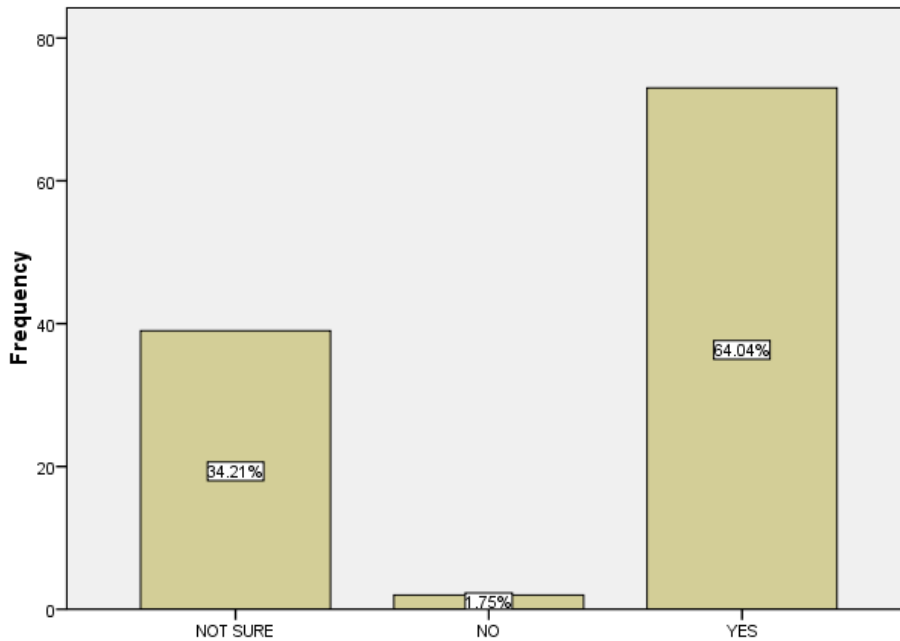


Figure 18. Response to the question "Can uncontrolled Diabetes Mellitus cause eye problems or blindness?"

### Awareness of the effect of diabetes on wound healing

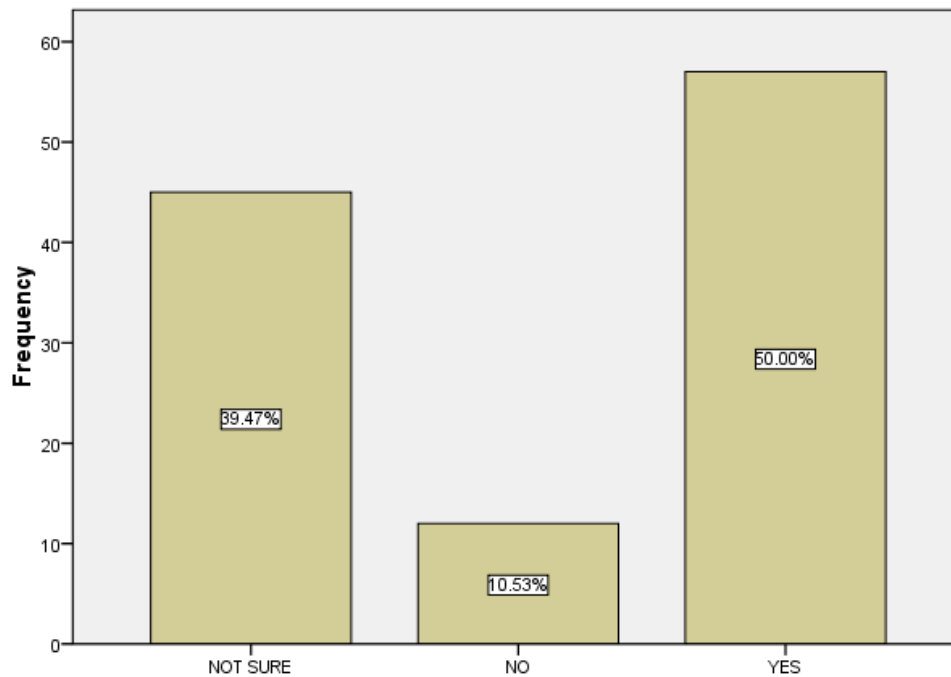
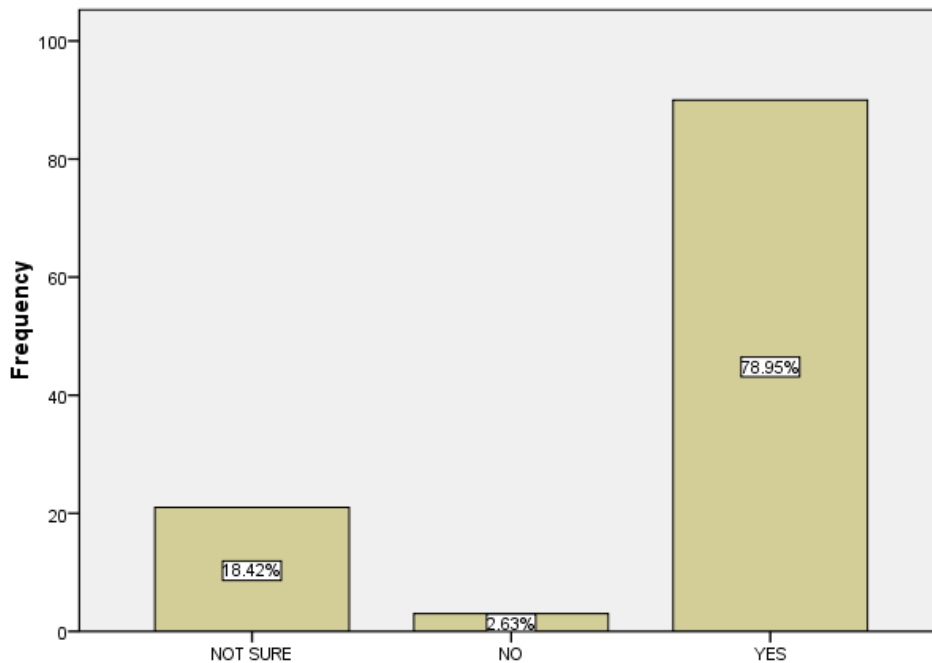


Figure 19. Response to the question "Does Diabetes Mellitus prevent wound healing?"

**KNOWLEDGE OF THE MANAGEMENT OF DIABETES****Awareness that diabetes can be self-monitored**

**Figure 20. Response to the question "Can diabetic patients self-monitor their blood glucose levels?"**

**DISCUSSION**

The majority of respondents to the survey were lecturing staff who constituted about 63% of respondents and the remaining 37% were non-lecturing staff. The distribution by gender was roughly 50-50. This scenario may have implications for results interpretation.

With respect to overall awareness about diabetes mellitus as a disease, 66% of respondents were aware of the condition and the remainder was either unaware or unsure about the existence of the condition. Awareness was slightly higher for females (34%) when compared to men (32%). Not surprisingly, the proportion of people who did not know or were not sure about the different types of diabetes was uncomfortably high at about 60% among our respondents.

Results on the knowledge of the causes of diabetes were mixed as respondents were more aware of some causes and less aware of others. About 51% of respondents were not aware or did not know that obesity is a risk factor for diabetes. Approximately the same proportion of respondents was positive about the genetic link of diabetes. From a public health point of view, our opinion is that it would be better to be aware of the link between obesity and diabetes because at least one can do something about it.

In response to the question on the curability of the condition, a whopping 85% were either unsure or did not know if the condition was curable or not. It is worrying that 15% of respondents actually thought that diabetes mellitus can be cured. The truth is that the condition is a lifelong illness that one can only manage as best as they can. Furthermore, about 42% of respondents were not sure or did not know that diabetes mellitus is a lifestyle-related illness.



These statistics may have implications in the trends of healthy lifestyles amongst the general population since there may be no motivation to adopt healthier lifestyles.

When asked about knowledge of the signs and symptoms of diabetes mellitus, most respondents, surprisingly, correctly identified them. However, a significant proportion was either unsure or did not know the symptoms of the disease. This is worrying because the ability to notice these signs and symptoms early is critical in its diagnosis and subsequent effectiveness of management strategies. An extension to the question of signs and symptoms of the disease is the question of the pathological effects of the disease. Most respondents (60%) seemed to be aware of the pathological effects of diabetes mellitus on the eyes (blindness) but were less aware of other effects.

## CONCLUSION

Given the prevalence of diabetes mellitus in the region and the country as well as its global trends, it is worrying that a significant proportion of people, especially at an institute of higher education, have demonstrated a lack of adequate awareness and knowledge about the disease. This may be indicative of a more widespread problem in the general population in Botswana which may need to be investigated and addressed in the interests of public health. This is because a lack of awareness and knowledge about this disease may result in higher occurrences of negative outcomes from the condition which may include preventable death occasioned by failure to manage the condition effectively in sufferers.

## RECOMMENDATIONS

1. It is hereby suggested that diabetes awareness campaigns be organised for all staff at the university.
2. A more detailed study be carried out about awareness and knowledge of diabetes at the national level.

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