ENSIGN COLLEGE OF PUBLIC HEALTH,

GHANA

KNOWLEDGE ON DIABETES AND ITS PSYCHOSOCIAL EFFECTS

AMONG ADULTS IN THE TEMA METROPOLIS OF GHANA

BY

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2020

DECLARATION

I do declare that except for references to other people's work which have been cited, this work submitted as a project report to the Ensign College of Public Health, Ghana for the award of degree in Master in Public Health is the result of my own investigation and has not been presented for any other degree.

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DEDICATION

This work is dedicated to my family and friends and all those who helped me in cash and kind throughout the programme.

ACKNOWLEDGEMENT

My heartfelt gratitude goes to The Father Almighty God for the free gift of life and the wisdom to complete this project work.

I also extend my deepest appreciation to the lecturers of the college and my supervisor. I do not have silver and gold. However, I say 'God richly bless you' for your acceptance, patience, support and for sharing your rich experiences and insight with me throughout the study. You have always been there for me with technical and insightful advice and guidance.

To my family I say thank you for the prayers, care, love, acceptance, trust, support and for the discipline they have always instilled in me.

DEFINITION OF TERMS

Diabetes mellitus

A group of metabolic diseases of multiple aetiology which is characterized by chronic high blood sugar that is caused by either defect in insulin production, insulin action or both.

Knowledge on diabetes

Being aware or informed about diabetes

Hypoglycemia

Low blood sugar

Hyperglycaemia

High blood sugar

Hyperosmolar Hyperglycemic State (HHS)

Acute complication of diabetes. It is a state of altered consciousness when coma is not present. In HHS, there is severe hyperglycaemia and hyperosmolarity than DKA.

ABBREVIATIONS

ADA   The American Diabetes Association

DM   Diabetes Mellitus

FPG   Fasting Plasma Glucose

HHNS   Hyperosmolar Hyperglycaemic Non-Ketotic Syndrome

IDF   The International Diabetes Federation

KAP   Knowledge Attitude Practices

NIDDM   Non-Insulin-Dependent Diabetes Mellitus

OPD   Out Patient Department

RPG   Random Plasma Glucose

WHO   The World Health Organization

WHO   The World Health Organization

ABSTRACT

According to the World Health Organization (WHO) there are about 350 million people suffering from diabetes mellitus (DM) and by 2030, diabetes will become the seventh leading cause of death worldwide with diabetes deaths expected to increase by 50% during the next 10 years. In the Tema Metropolis, Tema General Hospital records diabetes as one of the leading diseases that bring people to the hospital. The purpose of the study is to assess the knowledge and psychosocial effects of Diabetes among adults in the Tema Metropolis in the Greater Region of Ghana. A convenience sampling was used with a sample size of 356 respondents. Open and closed ended questionnaires were used and analysis done with Stata 14. The study indicated majority of the respondents 179 (50.3%) were females and most (64.3%) of the respondents were less than 40years. Christians (69.1%) were majority of the respondents and had education till tertiary level (40.7%). The study indicated that majority (83%) had heard about diabetes and had heard it from their various health facilities (40.3%). The main risk factor of diabetes identified was high intake of sugar (73.3%) and also indicated the most recognized sign and symptom for diabetes was blurred vision (74.2%). The study indicated respondents knew that healthy diet (64.9%) and regular exercise (50.8%) can help prevent diabetes. The study indicated that the most psychosocial effect identified by respondents was burden of diabetes and its treatment (70.8%) and the least was emotional instability (47.8%). In conclusion, the study recommended that hospitals and clinics in-service training should be given to health workers especially nurses to give accurate information.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This chapter is composed of the background study, the problem statements, the rational of the study, the research questions, the objectives, scope of the study and the organization of the study.

1.1 BACKGROUND OF THE STUDY

''Most African countries are experiencing a demographic change and are increasing coming under European influence, leading to the adoptions of cosmopolitan lifestyle and a Western food culture, thus giving rise to an increase in consumption of fat, sugar and salt. Rural African communities have maintained their traditional diet. However, an increase in nutritional deficiencies has occurred which appears to be related to drought, poverty, war and socioeconomic deprivation rather to culture or religion. These lifestyle changes and a rapid increase in the urban population of African have led to an increase in nutritional deficiencies and subsequently, a rise in the occurrence of diabetes mellitus'' (Mbanya et al, 2012).

Diabetes, without qualification, usually refers to Diabetes Mellitus (DM), ''a group of metabolic diseases of multiple aetiology which is characterized by chronic hyperglycaemia (high blood sugar) that is caused by either defect in insulin production, insulin action or both. These defects in insulin result in disturbances in carbohydrate, protein and fat metabolism'' (Alberti et al, 2011). The clinical manifestations of diabetes mellitus were identified to be blurred vision, dehydration, sugar in urine (glycosuria), increased hunger, frequency in urination (polyuria), and excessive thirst (polydipsia) (Rothe et al, 2013).

According to the World Health Organization (WHO) ''there are about 350 million people suffering from diabetes mellitus (DM) and by 2030, diabetes will become the seventh leading cause of death worldwide with diabetes deaths expected to increase by 50% during the next 10 years'' (World Health Organization, 2012). There is increasing rise of diabetes in every country and most of the people suffering from the condition do not know they are suffering from it. (Fauci et al,2013). ''This global epidemic could be largely attributed to the rapid increase in the rates of overweight, obesity and physical inactivity'' (WHO,2012). Diabetes is categorized into three common types which are the type 1, type 2 and gestational diabetes and they are all characterized by a rise in blood sugar levels which comes about as a result of environmental and genetic factors (Fauci et al,2008). ''Type 1 diabetes result from the complete or near-complete lack of production whereas type 2 diabetes ''results from insulin resistance, impaired insulin secretion and increased glucose production which could take place in various degrees'' (Fauci et al, 2011). Gestational diabetes occurs in nearly 4% of pregnancies in United States and, even though in most cases the glucose tolerance is back to normal, these women face an increased risk of developing DM later in life (Routh et al, 2013). DM is diagnosed by measuring the plasma glucose. The American Diabetes Association suggested the following thresholds of fasting plasma glucose (FPG) for distinguishing between normal, pre-diabetic and diabetic state: up to 100 mg/dL-normal glucose tolerance; 100-125 mg/ dL-impaired glucose tolerance (pre-diabetes) and >125 mg/dL-diabetes mellitus, and the following 2-hours plasma glucose (2-h PG) levels: up to 140 mg/dL-normal glucose tolerance; between 140-199 mg/dL- impaired glucose tolerance and more than 200 mg/dL-diabetes mellitus. Type 2 diabetes accounts for 90% of all diabetes cases, but recently its incidence is increasing steadily among children and adolescents (WHO,2012). Aging, geographical predisposition as well

as ethnicity increase the risk of diabetes occurrence in population, however, gender has not been known to be of significant relevance (American Diabetes Association,2010).

The incidence of diabetes is rising in every country and diabetes is now recognized as one of the most widely occurring long standing disease worldwide. Yet, population know very little about the disease condition (Aljoudi et al., 2009; Tessaro et al., 2009; Rosal et al., 2011; Maina et al., 2010). Global prevalence of the condition is estimated to be 8.3%, but varies from 10.9% in the Middle East and North Africa to 4.3% in Southern Africa (International Diabetes Federation (IDF), 2011). ''Unfortunately, a disproportionate amount of this increase in Diabetes prevalence is expected to occur in low and middle income countries like Ghana (Woodward et al., 2013). Approximately, 6% of adults in the Greater Accra Region of Ghana are affected by this disease condition (Amoah, et al., 2012).

The debilitating effect of diabetes on health has made it a major health issue in middle-income countries and other parts of the world. To help reduce the chances of people getting the disease they should have knowledge about diabetes, because the knowledge would affect their attitudes and uptake of health services (Baradaran et al, 2011).

''Hyperglycaemia can result from defects in insulin secretion, insulin action or both'' (Scobie,2012). Failure or damage to the eyes, kidneys, heart, nervous system, and blood vessels may result from long-standing diabetes (Curtis *et al*,2012). ''It is associated with substantial morbidity and mortality, and has significant impact on individuals and their families'' (Fonseca *et al*, 2010). ''The onset of macrovascular and microvascular complications lowers quality of life with an increased burden of illness and the costs of managing the specified complications of diabetes over time'' (Saqf *et al*, 2013).

''Diabetes Mellitus may result in acute complications such as Diabetic Ketoacidosis (DKA), Hyperosmolar Hyperglycaemic State (HHS), hypoglycaemia and Lactic Acidosis. Chronic complications of Diabetes include macrovascular and microvascular diseases with progressive development of conditions such as; retinopathy which leads to blindness, nephropathy that leads to renal failure, peripheral neuropathy with risk of foot ulcers, amputation, charcot joints and autonomic neuropathy causing gastrointestinal, genitourinary, cardiovascular symptoms and sexual dysfunction'' (Stratton et al., 2010).

Disorders associated with diabetes cause complications in the organs of the body leading to a heavy burden on the individual's health (Fausi et al, 2008) and societal costs (American Diabetes Association,2007). ''The societal costs of diabetes are far from being negligible. For example, in 1997 the costs attributable to diabetes in United States were almost 100 billion dollars, counting for direct and indirect costs'' (Funnell et al, 2012). ''The total cost for a diabetic person in US in 1997 was 10071 dollars compared to 2669 dollars for a person without diabetes (Garber, 2012). ''In 2012, nearly 5 million deaths occurred due to diabetes and almost 500 billion USD were spent on diabetes worldwide'' (WHO, 2012)

1.2 PROBLEM STATEMENT

- ''The number of diagnosed cases of diabetes in Africa has increased over the years from 7 million in 2000, to 15 million in 2011'' (International Diabetes Federation, 2011).

- At the Tema General Hospital in the Tema Metropolis, Diabetes accounted for a significant proportion of OPD attendance from 2009 to 2011.

- A study conducted in the Metropolis reported complications such as background retinopathy (23.94%), leg amputation (1.01%), neuropathy (38.2%) and stroke (5.23%) in diabetics (Novo Nordisk, 2015).

- While there is increased prevalence of Diabetes in the district, it is unclear as to the level of knowledge on Diabetes among the people as most studies on Diabetes in the country have focused mainly on prevalence, risk factor assessment and management of the condition.

1.3 RATIONAL OF THE STUDY

This study seeks to find what adults in Tema Metropolis know about diabetes and its psychosocial effects since their knowledge on the condition is not determined by any study. The findings of the study will help in conducting health education programs on diabetes on radio and television stations that which give the individuals insight about diabetes thus, engendering healthy lifestyle towards prevention of diabetes and its associated complications.

1.4 HYPOTHESIS/CONCEPTUAL FRAMEWORK

KNOWLEDGE ON DEFINITION OF DIABETES

KNOWLEDGE ON RISK FACTORS
- Age greater than 45
- Excessive alcohol consumption
- Family history of diabetes
- Not being physically active
- Smoking
- High intake of fat or cholesterol diet
- Excess weight
- High intake of sugar

KNOWLEDGE
ON DIABETES

PSYCHOSOCIAL EFFECTS OF DIABETES
- Depression
- Stress
- Fear
- Burden

KNOWLEDGE ON PREVENTION OF DIABETES
- Healthy diet
- Regular exercise
- Weight reduction
- Not smoking
- Moderate alcohol consumption

KNOWLEDGE ON THE SIGNS AND SYMPTOMS OF DIABETES
- Excessive thirst
- Tiredness and weakness
- Frequent urination
- Unexplained weight loss
- Wounds that heal slowly
- Blurred vision

SOURCE: YEBUAH, 2019

1.5 RESEARCH QUESTIONS

1. What is the level of knowledge on diabetes amongst adults at the Tema Metropolis in the Greater Accra Region of Ghana?

2. What is the level of knowledge on the psychosocial effects of diabetes amongst adults at the Tema Metropolis?

3. What factors are associated with the knowledge on psychosocial effects of diabetes?

1.6 GENERAL OBJECTIVE OF THE STUDY

The main objective of the study is to assess the knowledge and psychosocial effects of

Diabetes among adults in the Tema Metropolis in the Greater Region of Ghana

1.7 SPECIFIC OBJECTIVES

1. To assess the level of knowledge on diabetes amongst adults at the Tema Metropolis.

2. To investigate the knowledge amongst adults at the Tema Metropolis on the psychosocial effects of diabetes

3. To examine factors associated with knowledge on the psychosocial effects of diabetes.

1.8 PROFILE OF STUDY AREA

Tema Metropolis is in the Greater Accra Region which is situated in the Southeastern part of Ghana. Tema is one of the 16 districts in this region and is virtually a fully-built-up area. It is a vibrant commercial and industrial city, about the only well-planned city in the country. It has a large harbor, one of the world's biggest man-made harbours which is the main sea-port entry to Ghana. The estimated 2015 population of Tema Metropolis was 341,045 (as projected from

the 2010 Census), making it the second largest-populated of the 16 districts in the Greater Accra Region, after Accra Metropolis (Ghana Statistical Service, 2014). The most language spoken are Twi, Ga and Pidgin English. Most of the inhabitants are Christians (80%), Muslims (6%) and Traditionalist (4%). About 70% of the population is composed of business men and women; students and government and private workers. Most of the people in the Metropolis are literate.

The Greenwich Meridian (longitude zero) passes through the Metropolis and situated only about 5^0 N from the Equator. Tema Metropolis is considered as being the city in the center of the world. Tema was commissioned by Ghana's first president, Dr. Kwame Nkrumah, and grew rapidly after the construction of a large harbor in 1961. It is now a major trading center, with numerous industries which produce aluminum, refined petroleum, chemicals, food products, and building materials.

The Metropolis has good communication network and internet services. The available cellular networks in the district include; M.T.N, Vodafone and Airtel-Tigo. All the places under the metropolis are under the national grid for power supply. The metropolis has a good source of water supply which is the pipe. The Metropolis has a lot of private and government schools which helps in proper upbringing of children. The district has access to both government and private health facilities.

1.9 SCOPE OF THE STUDY

The study focuses on the knowledge of diabetes and its psychosocial effects amongst residents above 18 years of age in the Tema Metropolis. A descriptive cross-sectional research design with a sample size of 422 people was use. Questionnaires were used in collection of data and Stata 15 was used in statistical analysis.

1.10 ORGANIZATION OF STUDY

The thesis is divided into six chapters. Chapter one is a description of the context and the general background of the study. Chapter two reviews relevant literature on knowledge on diabetes and its associated psychosocial effects. Chapter three presents the research methodology. While Chapter four presents the findings of the studies in tables and charts and Chapter five presents the discussion of findings. The last chapter (chapter six) includes summary of the major findings, recommendations and topics that need further research

LITERATURE REVIEW

2.0 INTRODUCTION

''A literature review is an evaluative report of information found in the literature related to the selected area of study. The review describes, summarizes, evaluates and clarifies this literature. Also, it establishes a theoretical framework for the chosen topic, identifies studies, models and case studies supporting the topic'' (Aveyard,2010).

This review of literature discusses all literature pertaining to this study; knowledge on diabetes and its psychosocial effects.

2.1 DIABETES

Diabetes mellitus has been described as a group of disease conditions marked by high levels of serum glucose as a result of defects in insulin secretion, insulin action or both (Barber, *et al*. 2014; Shaw and Baker 2013). ''Diabetes can be grouped into three main types and they are: Type 1 diabetes which is an autoimmune condition. It is caused by the body attacking its own pancreas with antibodies. In people with type 1 diabetes, the damaged pancreas does not make insulin. This type of diabetes may be caused by a genetic predisposition. It could also be the result of faulty beta cells in the pancreas that normally produces insulin. It was previously referred to as "insulin-dependent diabetes mellitus' (IDDM) or 'juvenile diabetes' (Choudhry, *et al*. 2014). With type 2 diabetes mellitus, insulin is produced, but the insulin produced does not function properly and this leads to a condition called insulin resistance. Decreased insulin production is a characteristic of patients who have been diagnosed with type 2 diabetes mellitus. The primary cause is excessive

body weight and not enough exercise (Choudhry, *et al*., 2014). As the disease progresses, lack of insulin eventually develops. This form was previously referred to as non-insulin-dependent diabetes mellitus (NIDDM) or "adult-onset diabetes".

The third form of diabetes is the Gestational diabetes which occurs in pregnant women without a history of diabetes (Choudhry, *et al*. 2014). This type of diabetes is mostly diagnosed in the middle or later stage in pregnancy. Due to ''high blood sugar levels in the mother –baby blood circulatory, the baby's growth and development progresses rapidly and has to be controlled to protect it''.

2.2 KNOWLEDGE ON DIABETES

A study was conducted by Simmons et al, (2014) on knowledge of diabetes among people living in South Auckland. The study revealed that they had little knowledge on diabetes from both open and closed diabetes knowledge questions. Also it was found out majority (75%) of the respondents could not determine the nature, symptoms or complications of diabetes but this was unaffected by duration of diabetes, place of birth or time in New Zealand, although insulin treated Pacific Islands patients knew more than noninsulin treated patients (closed score 71 SD (4) % vs 61 SD (2) % p < 0.05).

A research was conducted on knowledge of diabetes in the Chennai Urban Rural Epidemiology Study (CURES) using a systematic sampling method on a representative population in Southern India. The study revealed that 75.5% of the respondents knew about diabetes and had knowledge on the risk factors for diabetes which could cause complications. However, only 22.2% of the whole population and 41.0% of the known diabetic subjects were aware that diabetes could be prevented (Mohan et al.,2015).

A survey conducted in the central region of Thailand revealed a mean knowledge score on diabetes. ''Respondents performed best in the risk factor section with a mean (%) score of 2.88 of 4(72%) and worst in the section on diabetes in women: mean (%) score was 0.82 of 3(27.8%). Factors such as education level, older age, own self having diabetes, and having a family member/relative/friend with diabetes were significantly associated with knowledge of diabetes'' (Pongmesa et al., 2012).

A study was conducted on 50 Saudi Arabian women on knowledge on diabetes. The study had 56.1% of the respondents scoring 100% on knowledge on diabetes. Also, 17.58% scored 100% in the attitude questions and 15.78% scored 100% in practice questions. The overall Knowledge, Attitude and Practices (KAP) score had a mean of 16 and standard deviation (SD) of 6.066. Results revealed good knowledge but poor attitude and Practices towards diabetes (Saadia et al., 2010).

Al Shafee et al., (2014) conducted a study on knowledge and perceptions of diabetes in a semi-urban Omani population. The study using questionnaire revealed a below standard results. ''The respondents indicated on diabetes definition, classical symptoms, and complications were 46.5%, 57.0%, and 55.1% respectively. The study identified obesity (29.5%), physical inactivity (20.8%) and a positive family history (16.9%,) as risk factors for diabetes. A higher level of education, a higher household income, and the presence of a family history of diabetes were found to be positively associated with more knowledge. In another survey conducted on the awareness level about Diabetes Mellitus and associated factors in Tarlai (Rural Islamabad). The survey found out that only 129 (43%) adults had any awareness of Diabetes Mellitus. Awareness of risk factors was present in 42 (14%) while awareness of the complications associated with the disease was 65 (22%)'' (Ulvi et al.,2013).

In a quantitative research to assess public knowledge on diabetes in Karen ethnic rural residents with 200 respondents, it was found out that half (50%) of the participants knew diabetes was a non-communicable disease needing lifelong treatment. In all, ''35% of the respondents could correctly answer the knowledge assessment questions regarding risk factors and common features of diabetes and the remaining 65% either gave a wrong answer or were 'not sure'. Female participants had poorer diabetes knowledge than the males'' (Lorga et al., (2012).

Rosal et al., (2011) also used ''qualitative research design to assess awareness of diabetes risk factors and prevention strategies among a sample of low-income Latinos with no known diagnosis of diabetes. The respondents had little knowledge on diabetes and most of them identified family history of diabetes, poor diet, emotional distress, and stress associated with the United States as risk factors for diabetes''.

In Africa, a cross-sectional study in Kenya on knowledge, attitude and practices related to diabetes among community members in four provinces reported only 29% of respondents having good knowledge of signs and symptoms of diabetes while 71% of respondents had poor knowledge on what diabetes is. Approximately twenty-six percent (26.1%) of the respondents ''could correctly identify the probable causes of Diabetes Mellitus while 73.4% had very little or no knowledge of complications of diabetes'' (Maina et al., 2010).

''Diabetes awareness in the general population in Cameroon had eighty percent of the respondents scoring more than the total mean score. The highest score obtained by participants (0.10%) was 28/30 and the mean total score was higher in men ($p < 0.02$) and in subjects with a relative having a chronic condition ($p < 0.001$). In multivariate analyses, age classes ($p < 0.01$), educational level

(p < 0.001) and relatives with a chronic condition (p < 0.001) were associated to the global diabetes awareness score'' (Fezeu et al, 2010).

Kiawi et al., (2010) conducted a study in a four urban districts in Cameroun. The study identified the respondents had limited knowledge on causes, clinical manifestation and complications of diabetes. The respondents indicated ''diabetes was caused by excessive intake of sugar rather than excessive energy intake or lack of physical activity.

2.2 PSYCHOSOCIAL EFFECTS OF DIABETES

Ruqiya et al., (2017), conducted a descriptive cross sectional study on the psychosocial aspects of diabetes using sample size of 400 respondents in Norway. The study showed that majority of the respondents (68%) believed that anxiety and depression were psychosocial effects of diabetes. In another study by Sanjay et al., (2018), on the emotional and psychological needs of people with anxiety and depression were again seen effects of the disease.

Bradley et al., (2014), in a descriptive cross-sectional study conducted in Zambia on the psychosocial effects of diabetes, indicated that most (65%) of the respondents said a high cost of living and discrimination by family members were other psychosocial effects.

Mbanya et al., (2011), also used a qualitative research design to assess psychosocial effects of diabetes among a sample of low-income Kenyan's with no known diagnosis of diabetes. The participants had basic knowledge on psychosocial effects of diabetes and many perceived anger, stress, fear and sadness as being associated with diabetes.

A study was conducted by Flower et al, (2013) on knowledge and psychosocial effects of diabetes African region. The study was conducted on thirteen (13) focus groups in 16 counties in West

African. Findings showed that high treatment cost, hyperactivity and emotional immaturity were psychosocial effects of diabetes.

In another quantitative research study to assess public knowledge on psychosocial effects of diabetes in Ghana. A simple random sampling was used with a sample size of 300 respondents. It was found that half of the participants knew the psychosocial effects of diabetes, they indicated the following social support, anxiety, depression and self-efficacy (Pouwer et al,2012).

2.3 FACTORS ASSOCIATED WITH DIABETES

Obirikorang et al., (2016) conducted a cross-sectional study at Sampa Government hospital in Ghana. The study indicated 630 participants with type 2 were assessed. Majority of the participant 378 (60%) did not have knowledge on diabetes complication, 169 (26.9%) had inadequate knowledge on diabetes while 82 (13.1%) had adequate knowledge. Therefore, it was statistically noted that participants lacked an in-depth information on diabetes and its complications.

In a cross-sectional study by Tesfaye et al 2016, in Addis Ababa Ethiopia, there was a high occurrence of undiagnosed diabetes mellitus due to priority given to communicable disease, poor culture of visiting health facility for medical checkups and lack of decentralized health services for chronic non communicable diseases.

In a survey of health settings and availability of diabetes services in Mozambique, Zambia and Mali by Bera et al., colleagues (2005), it was found out that in all heath facilities assessed, 82 % lacked urine glucose testing strips,79% lacked blood glucose meters in Mozambique, whereas in Mali, 46% and 87% and Zambia 39% and 51% respectively. This affects patients seeking for diabetes diagnosis and management (Bera et al., 2005).

According to the Uganda diabetic country profile (2016), it indicates that Uganda does not devise an operational policy or strategic action plan for diabetes, to reduce obesity and overweight, and to reduce physical inactivity; This limits information access on diabetes and a possible risk factor of development of diabetes majorly Type 2.

Age is also a risk factor for diabetes in that people above 45 years are more likely to suffer from diabetes than those below this age group. Adults aged 45 to 65 years old are still at the highest risk for developing type 2 diabetes mellitus (Kibirige et al., 2014).

A study done by Baumann et al., (2010) in Uganda found that; men experienced more regular physical self-care activity than women and on the other hand women were more adherent to recommended diet and as well experienced high concern about diabetes complications. Chio and et al., (2012), similarly established that men are statistically significant adherent to self-care management than women. These differences are relatively small and appear to be accounted for by differences in other risk factors such as obesity and physical inactivity. Additionally, World Health Organization Diabetic Profile (2016), established that the relative risk for obesity was 1.3% and 6.5% for men and women respectively in Uganda as a whole. Furthermore, the relative risk for overweight was 11.3% and 25.9% for men and women respectively (WHO, 2016). This suggested an increased risk factor for developing type 2 diabetes mellitus in females than males (WHO, 2016). In Uganda a national cross-sectional study by Bahendeka et al., (2014), on the prevalence and correlates of diabetes, the occurrence of diabetes mellitus type 2 increased with age from 0.2 % (0.0-0.5) to 2.1% (1.1-3.1) and 2.3% (0.9-3.8) in the 18-29, 30-49 and 50-69 years' age groups. Additionally, abdominal obesity was positively associated with risks for diabetes type 2 (4.3%). In the same study, females were less likely to have diabetes (CI 0.13-0.58) than men.

In a study in Boston USA, the intake of total fat (RR 1.27, Cl 1.64-1.55) and saturated fats (1.34, 1.09-1.66) were associated with a high risk of type 2 diabetes. Furthermore, linoleic acid was associated with a lower risk of type 2 diabetes mellitus in men less than 65 years of age (RR.0.74, Cl 0.600.92) (Hu et al., 2012). In the same study, repeated consumption of processed meats was closely associated with a higher risk for type 2 diabetes mellitus (RR.1.46, Cl 14-1.86 FOR > or = 5/weeks <1/month, p=0.0001) (Hu et al., 2012). Muyer et al., (2017) conducted a cross sectional study in Kampala Uganda, among 200 newly diagnosed type 2 diabetes patients, the study showed a positive association between frequently high carbohydrate diet and body mass index. A high intake of carbohydrates was linked to increase in body mass index above 28 kg/m^2

Obesity is the accumulation of excess body fats, and results when energy intake exceeds energy expenditure by the body cells. Obesity is frequently associated with type 2 diabetes mellitus and in many studies, it has been shown to be a powerful predictor of development of type 2 diabetes mellitus (Lippincott et al, 2015).

According to surgeon's general report 2014, smokers have 35% high risk of diabetes than non-smokers. Cigarette contain nicotine, a substance that injure the cells, causing them to swell and interfere with their normal function, a process known as inflammation. On the other hand, smoking as well causes oxidative stress, a metabolic condition that occurs when nicotine reacts with oxygen in the body, and the resultant effect is damage to cells, including the insulin producing cells, thereby exposing an individual to risk of diabetes (CDC, 2014).

2.5 PREVENTION OF DIABETES

Several clinical trials that have been conducted over the years have shown that Type 1 diabetes cannot be prevented. However, trials have demonstrated that type 2 diabetes can be delayed or

prevented (Alvin et al. 2014). The Da Qing study by Pan et al., in China involving 577 people that lasted for six years had reductions in risk as follows.

31% in the diet only group,

46% in the exercise only group,

41% in the diet and exercise group.

''The Finnish Diabetes Prevention Study lasted for 3.2 years and it involved 522 people with impaired glucose tolerance (IGT), the researchers found out that those in the diet-and-exercise intervention had a 58% decreased incidence of Type 2 diabetes'' (Tuomilehto et al, 2011). Similar findings were observed in the Diabetes Prevention Program comprising 3234 respondents with IGT who were followed for 2.8 years. The researchers recorded 31% risk reduction in the metformin group and 58% in the diet and exercise group'' (The Diabetes Prevention Program Research Group, 2013).

''The Diabetes Prevention Program (DPP) ''proved that people with prediabetes were able to sharply reduce their risk of developing diabetes during the study by losing 5 to 7 percent of their body weight through dietary changes and increased physical activity. A follow-up study, the Diabetes Prevention Program Outcomes Study (DPPOS), showed losing weight and being physically active provide lasting results. Ten years after the DPP, modest weight loss delayed onset of type 2 diabetes by an average of 4 years'' (The Diabetes Prevention Program,2013).

2.6 MANAGEMENT OF DIABETES

The main goal of diabetes management is to maintain blood sugar levels within the normal range without causing hypoglycemia or hyperglycemia. Diabetes management also, involves measures to control blood pressure and cholesterol levels and it also includes diet, exercise, and use of

appropriate medications (insulin in the case of type 1 diabetes, oral medications, as well as possibly insulin, in type 2 diabetes). Pancreas transplants have been tried with hardly much success in Type 1 diabetes. Gastric bypass surgery has showed to reverse type 2 diabetes in high proportion of patients but the disease recurs in approximately 21% of patients within three to five years after the surgery. Gestational diabetes most of the times resolves after childbirth (Colditz ,2011).

2.7 FACTORS ASSOCIATED WITH KNOWLEDGE ON DIABETES AND ITS PSYCHOSOCIAL EFFETS

Shrestha et al., (2017) conducted a research study on diabetes knowledge and associated factors among diabetes patient in Nepal. A cross-sectional design with a sample size of 132 patients with history of diabetes for more than 3 months were used for the study. The study showed that the factors associated with knowledge on diabetes were age, marital status, family history and educational level.

Another study by Eva et al., (2013), on factors associated with knowledge of diabetes. The participant knowledge was assessed using diabetes knowledge test which was psychometrically validated using Rasch analysis. One hundred eighty-one respondents were included in the study. The study concluded sociodemographic, clinical and service were independently associated with diabetes knowledge bases on the Rasch analyses.

Achenef et al., (2015), conducted a community based cross-sectional study design among people age 18 years and above in Debte Tabor town in Ethiopia. A total of 832 participants were selected using a systematic random sampling technique. The data collected was analysed using SPSS. The found out educational level, family income and family history of diabetes were associated with factors on knowledge on diabetes.

Abdu et al., (2019), conducted a cross-sectional study on diabetic patient at the University of Gondar Hospital. The data was collected using questionnaire and SPSS was used for logistic and descriptive analysis. A sample size of 403 was used. Majority (67.2%) of the respondents showed that occupational status and marital status are factors associated with knowledge on diabetes.

Ali et al., (2018), conducted a cross-sectional in five districts in Punjab. A sample size of 300 respondents were involved in the study. Data was collected through a face to face interview using a semi-structured questionnaire. Descriptive statistics, chi-square tests and binary logic regression were used for the analyses. The result showed marital status, occupation and level of education to be factors associated with knowledge on diabetes.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

Chapter three is composed of the research design and methods, data collection techniques and tools, study population, study variables, sampling, pre-testing, data handling, data analysis, ethical considerations and limitations of the study.

3.1 RESEARCH METHOD AND DESIGN

''A research design is a framework of methods and techniques chosen by a researcher to combine various components of research in a reasonably logical manner so that the research problem is efficiently handled'' (Adi Bhat, 2018). A descriptive, cross sectional research design was used. The descriptive design was preferred because it provides further insights into the research problem by unfolding the variables of interest, estimating, predicting and examining associative relationships

3.2 DATA COLLECTION TECHNIQUES AND TOOLS

In data collection, three (3) research assistants with at least a diploma in any health-related field were employed. These research assistants were trained on the purpose of the study and the process of administering the questionnaire to avoid bias. Primary data was collected using structured questionnaires. This instrument was developed based on the research literature review and the research objectives. The questionnaire comprised of closed and opened ended questions to enable as much information as possible. The items on the questionnaire was based on the variables to help determine knowledge on diabetes and its psychosocial effects among adults. The questionnaire

was handed out to respondents to fill out their responses. Those who could not read nor write were explained to in local language and were helped to give their responses with the help of a research assistant. This approach was preferred among other means of data collection methods because it required less time and energy to administer. It also offered the possibility of making respondents anonymous when the data was being analyzed.

3.3 STUDY POPULATION

The Tema Metropolis is made up of four districts (Tema East, Tema West, Tema North, Tema South). The metropolis is grouped into twenty-six communities (GhanaDistricts.com). A non-probability convenience sampling was used to select Tema community seven, community nine and community five from Tema Metropolis. Adults aged 18 years and older resident in the communities above constituted the study population. Three hundred and fifty-four (354) households were selected based on the sample size estimation from a total of 2000 households in the three communities chosen.

3.4 STUDY VARIABLES

''It is an informal term that means any variable used in research that has some kind of cause and effect relationship. A study variable can be one of a wide variety of variables used in study, including independent variables, dependent variables and intervening variables. The dependent variable is the variable being tested and measured in a scientific experiment. Independent variable is a variable that is changed or controlled in a scientific experiment'' (Bellary et al., 2014).

TABLE 1: STUDY VARIABLES

VARIABLE	OPERATIONAL DEFINITION	HOW TO MEASURE	SCALE OF MEASUREMENT
Independent Variable			
SEX	Depends on what the respondents say	Male Or Female	Binary
AGE	At the time of the study	Age in years	Nominal
MARITAL STATUS	Legally married	Single, married or widow	Categorical
EDUCATIONAL LEVEL	Highest level of education	None, basic, Secondary, Tertiary	Categorical
OCCUPATION	The job of the respondent	Employed, not employed and self-employed	Categorical
RELIGION	As indicated by the respondent	Christian, Muslim, Traditionalist and Others	Categorical

3.5 SAMPLE SIZE

Sample size is the number of observations taken from a population through which statistical inferences for the whole population are made. A sample is representative of the population. Because of limited time and large nature of the population, a sample size of 356 respondents was randomly selected. In the three communities chosen 356 households were selected from the communities.

The sample size was determined using the Cochran formula (Cochran,1977)

$$N = \frac{Z^2 \times p * q}{e^2}$$

Where,

n = sample size (Cochran, 1977)

Z = the z-score that corresponds with 95% confidence interval which is 1.96

p = knowledge on diabetes which is 70% which is equals to 0.70 (Okonofua,2011)

q = 1-70% = 0.3

e = Margin of error set at 5% (0.05)

Therefore,

$$n = \frac{(1.96)^2 \times (0.70 \times 0.3)}{(0.05)^2} \cong 322$$

A non-response rate of 10% was added to the sample size to get 354.2.

Sample size of 356 was used

3.6 PRE-TESTING

''Pretesting is a dress rehearsal for a survey and these tests are extremely useful tools, allowing researchers to identify potential problems with survey items and/or data collection protocols prior to fielding a study'' (Michael et al.,2014). The structured interview guide was pre-tested on 10

selected individuals' population at Kpone Katamanso district. The necessary corrections were then effected on all identified ambiguities and errors of the items on the interview guide prior to administration.

3.7 DATA HANDLING

Data was coded and entered into a predesigned software SPSS version 16.0 using double entry technique by 2 independent data entry clerks. Data was verified and cleaned to ensure good quality, and then exported to STATA Statistical software package (StataCorp,2007. Stata statistical software Release 14, Statacorp LP, College Station, TX, U.S.A).

3.8 DATA ANALYSIS

The researcher used a STATA VERSION 14 and the findings were presented using charts, graphs and tables. Chi-square tests were used to determine the level of association between the dependent and independent variables.

3.9 ETHICAL CONSIDERATION

The following ethical considerations were employed:

- Participants were informed about the study and their consent were sought before administration of questionnaire.

- Participants were made to know that they could withdraw from the study at any time they wished.

- There were no direct identifiers to the data and the confidentialities of the participants were rest assured.

- Ethical clearance was sought from the Ensign College of Public Health Institutional Review Board.

3.10 LIMITATIONS OF THE STUDY

Some difficulties that were encountered during the research included:

- Unwillingness of some respondents to answer the questions to their satisfaction.

- Time factor on the part of the researcher was a problem.

- The cost involved in the study was high.

- Due to the pandemic the researcher used a limited sample size

3.11 ASSUMPTIONS.

It was assumed that the sample size was a true representation of the study population and that responses from the respondents will be the true situation in the Metropolis.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

Chapter four summarizes the results of the analyzed data. A total of 356 respondents were interviewed in the study. The responses rate to the question was 100%. The results of the study are presented in tables and charts.

4.2 DEMOGRAPHIC DATA OF RESPONDENTS

Table 4.1: The demographic data of respondents

Variables	Frequency	Percentage
Gender		
Male	177	49.7
Female	179	50.3
Age		
Greater than 45	127	35.7
Less than 45	229	64.3
Marital status		
Married	173	48.6
Single	137	38.5
Widowed	46	12.9
Education		
None	44	12.4
Basic	68	19.1
Senior High	99	27.8

Tertiary	145	40.7
Occupation		
Employed	126	35.4
Not employed	115	32.3
Self-employed	115	32.3
Religion		
Christian	246	69.1
Muslim	92	25.8
Traditionalist	16	4.5
Others (no religion)	2	0.6
TOTAL	**356**	**100**

Source: Yebuah, 2020.

The table above shows the demographic characteristics of the respondents, 179(50.3%) were females and most (64.3%) of the respondents were less than 45years. Majority of the respondents were married (48.6%) and employed (35.4%). Christians (69.1%) were also in the majority of the respondents and also majority (40.7%) had tertiary level education.

The bivariate analysis of the socio-demographic data yielded the results shown in table 4.2.

Table 4.2 Association of demographic factors and diabetes

Variables	People with diabetes	People without diabetes	P-Value
Gender			**0.916**
Male	120 (49.6%)	56 (47.6%)	
Female	122 (50.4%)	58 (52.4%)	
Age			**0.000**
Greater than 45	82 (33.9%)	45(39.5%)	
Less than 45	160 (66.1%)	69(60.5%)	
Marital status			**0.000**
Married	120 (49.6%)	53 (46.4%)	
Single	70 (29.9 %)	57 (50.1%)	
Widowed	42 (20.5%)	4 (3.5%)	
Education			**0.000**
None	40 (16.5%)	4 (3.5%)	
Basic	63 (26.0%)	5 (4.4%)	
Senior High	80 (33.1%)	19 (16.7%)	
Tertiary	59 (24.4%)	86 (75.4%)	
Occupation			**0.712**
Employed	100 (41.3%)	26 (22.8%)	
Not employed	80 (33.1%)	35 (30.7%)	
Self-employed	62 (25.6%)	53 (46.5%)	

Religion		0.000
Christian	200 (82.6%)	46 (40.4%)
Muslim	40 (16.5%)	52 (45.6%)
Traditionalist	2 (0.8%)	14 (12.3%)
Others (no religion)	0	2 (1.8%)

Source: Yeabuah,2020. * variables significant at P<0.05.

Demographic factors such age, marital status, education and religion were significantly associated with diabetes (P<0.05) and Gender and occupation were not significantly associated with knowledge on diabetes and its psychosocial effects.

Figure 4.1
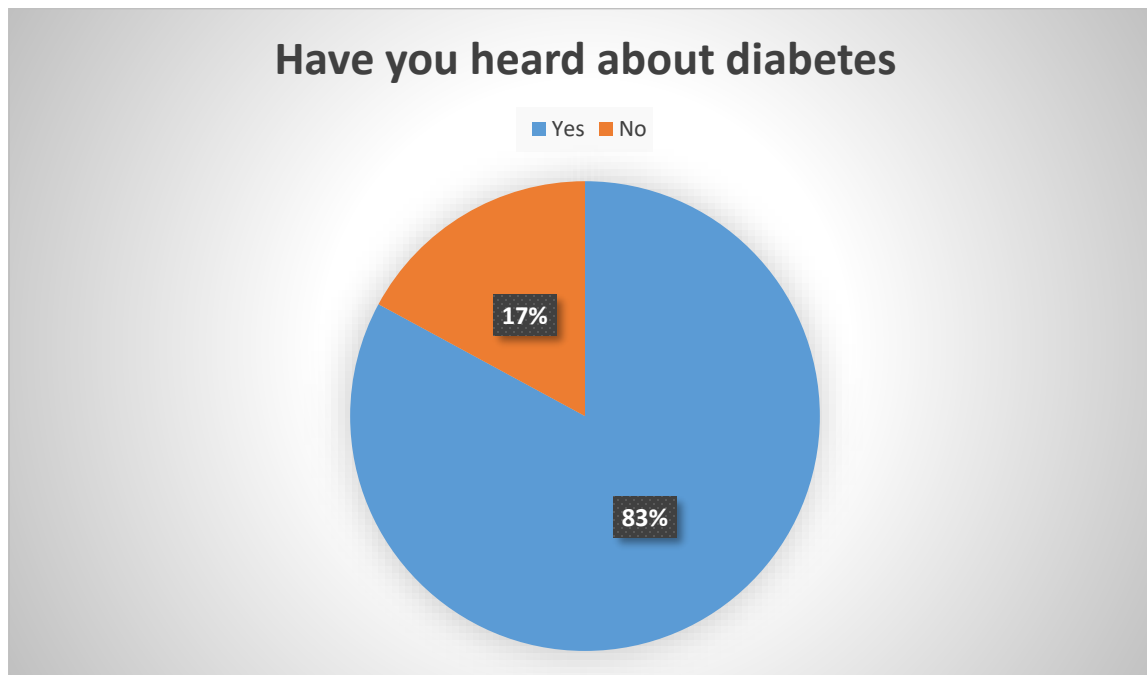
Source: Yebuah,2020

From figure 4.1 above, majority (83%) had heard about diabetes.

Table 4.3: Where did you hear about diabetes

	Frequency	Percent
Health facility	108	40.3
TV/radio	101	30.4
Poster/sticker/leaflet/Newspapers	23	7.5
Friend/relatives	37	11.4
Church/mosque/school	25	7.0
Don't know	11	3.4
Total	305	100.0

Source: Yebuah,2020

From the table 4.2 the respondents who had heard about diabetes, majority (40.3%) had heard about it from the health facility.

Figure 4.2

Do you have diabetes
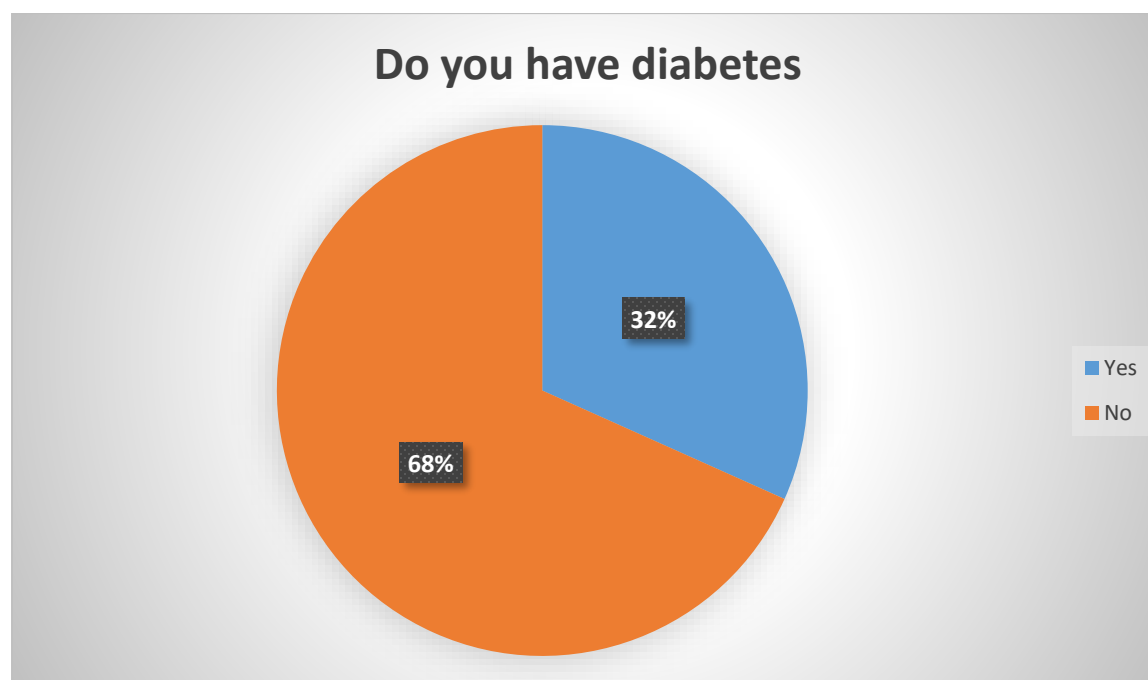
Source: Yebuah,2020

The figure 4.2 above shows 68% of the respondents had diabetes.

Table 4.4: Do you have relatives/ friends with diabetes

	Frequency	Percent
Yes	73	20.5
No	230	64.6
Do not know	53	14.9
Total	356	100.0

Source: Yebuah,2020

The table 4.3 shows majority (64.6%) of the respondents said no none of their relatives or friends have diabetes

4.3 KNOWLEDGE ON DIABETES

The respondents were asked about what diabetes is and they indicated the following;

- It is the inability of the pancreas to produce insulin50(14.0%).

- Is a dysfunction in the body mechanism of handling glucose characterized by hyperglycemia as a result of inadequate insulin secretion, resistance to insulin action and excessive or inappropriate secretion of glucose79(21%).

- It refers to excessive glucose in the blood or excessive sugar level in the blood54(15%).

- Persistent and continuous rise in one's blood sugar level96(30%).

- It refers to excessive glucose in the blood or excessive sugar level in the blood52(13%).

- it is a metabolic disease that causes high blood sugar25(7%).

Table 4.5: Knowledge on factors contributing to diabetes

Variables	Frequency	Percentage
High intake of sugar		
Yes	261	73.3
No	95	26.7
Age greater than 45 years		
No	152	42.7
Yes	204	57.3
Excessive alcohol consumption		
No	167	46.9
Yes	189	53.1
Family history of diabetes		
Yes	202	56.7
No	154	43.3
Not being physically active		
Yes	149	41.9
No	207	58.1
Smoking		
Yes	126	35.4
No	230	64.6
High intake of fat or cholesterol diet		
No	148	41.6
Yes	208	58.4
Excess weight		
Yes	198	55.6

No	158	44.4
TOTAL	**356**	**100**

The main factor indicated by the respondents was high intake of sugar (73.3%). The respondents knew much about factors contributing to diabetes. They answered yes for risk factors such as age greater than 45 years (57.3%), family history (56.7%), excessive alcohol consumption (53.1%), high intake of fat or cholesterol diet (58.4%) and excess weight (55.6%).

Bivariate analysis showing association of factors contributing to diabetes is presented in table below

Table 4.6: Association of factors contributing to diabetes among respondents

Variables	People with diabetes	People without	p-value
High intake of sugar			**0.006**
Yes	190 (78.5%)	71 (62.3%)	
No	52 (21.5%)	43 (37.7%)	
Age greater than 45 years			**0.000**
No	62 (25.6%)	90 (78.9%)	
Yes	180 (74.4%)	24 (21.1%)	
Excessive alcohol consumption			**0.289**
No	100 (41.3%)	67 (58.8%)	
Yes	142 (58.7%)	52 (45.6%)	
Family history of diabetes			**0.008**
Yes	170 (70.2%)	32 (28.1%)	
No	72 (29.8%)	82 (71.9 %)	
Not being physically active			**0.003**
Yes	50 (20.1%)	99 (86.8%)	
No	192 (79.3%)	15 (13.2%)	
Smoking			**0.000**
Yes	70 (28.9%)	56 (49.1%)	
No	172 (71.1%)	58 (50.9%)	
High intake of fat or cholesterol diet			**0.001**
No	52 (21.5%)	96 (84.2%)	
Yes	190 (78.5%)	18 (15.8%)	

Excess weight			0.026
Yes	180 (74.4%)	18 (15.8%)	
No	62 (25.6%)	96 (84.2%)	

Source: Yebuah, 2020 Variable significant at P< 0.05.

Analysis of association of factors contributing to diabetes among respondents revealed that high sugar intake, age greater than 45 years, excessive alcohol intake, family history, not being physically active, smoking, high intake of fat and excess weight were significantly associated with diabetes (*P<0.05*) as shown in the table above

Figure 4.3
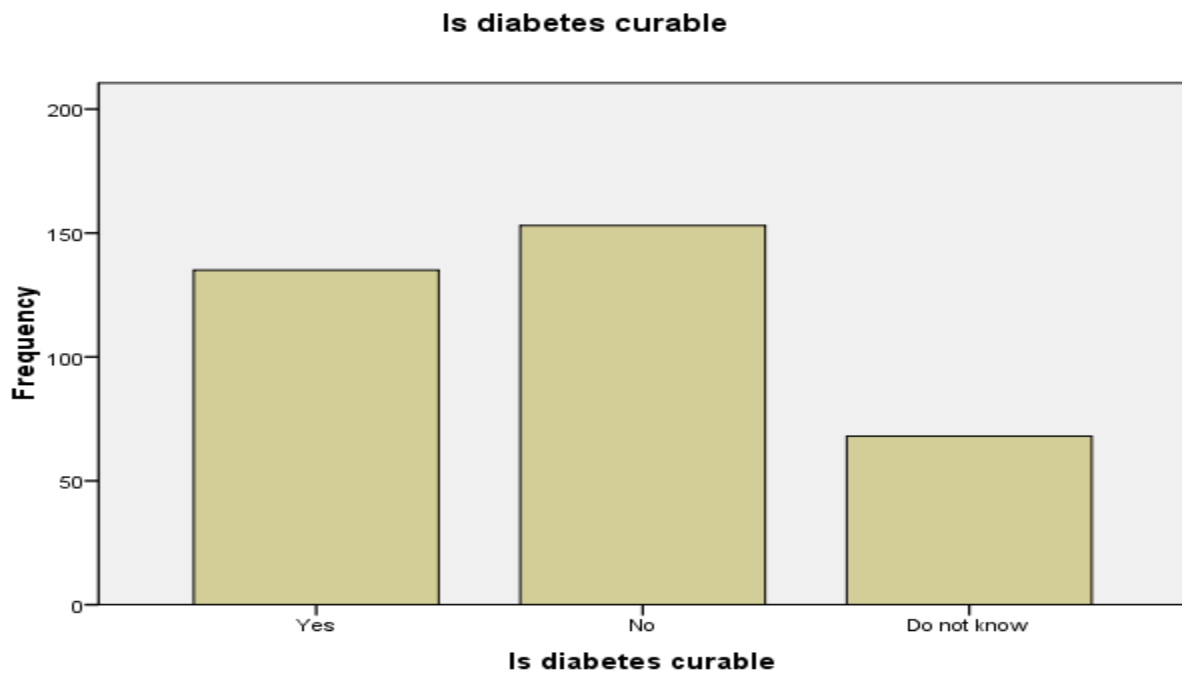
From the chart above, most of the respondents (152) indicated diabetes has no cure.

Table 4.7: Knowledge on signs and symptoms

Variables	Frequency	Percentage
Excessive thirst		
Yes	182	51.1
No	174	48.9
Tiredness and weakness		
Yes	218	61.2
No	138	38.8
Frequent urination		
No	110	39.9
Yes	246	69.1
Unexplained weight loss		
Yes	200	56.2
No	156	43.6
Headache		
Yes	92	25.8
No	264	74.2
Wounds that heal slowly		
Yes	196	55.1
No	160	44.9
Blurred vision		
Yes	264	74.2
No	92	25.8
TOTAL	**356**	**100**

Source: Yebuah, 2020

From the table 4.5 the most indicated sign and symptom was blurred vision (74.2%). The respondents had much knowledge on the signs and symptoms on diabetes. Also, the respondents indicated frequent urination (69.1%), tiredness and weakness (61.2%), unexplained weight loss (56.2%), wounds that heal slowly (55.1%), excessive thirst (51.1%). However, they indicated no to headache (74.2%).

Table 4.8: Respondents' views on whether diabetes could cause a complication

	Frequency	Percent
Yes	197	55.3
No	58	16.3
Do not know	101	28.4
Total	356	100.0

Source: Yebuah, 2020

Out of the 356 respondents, 197(55.3%) indicated diabetes can cause a complication.

Examples of complications of diabetes given by respondents (197) were as follows;

- Kidney failure 38(19.3%)

- Amputation 26 (13.2%)

- Foot ulcers 30 (15.2%)

- Peripheral neuropathy 27(13.4%)

- Hypertension 30 (15.2%)

- Blindness 25 (12.7%)

- Wound healing slows down 21(11%)

Figure 4.4

Can diabetes be prevented
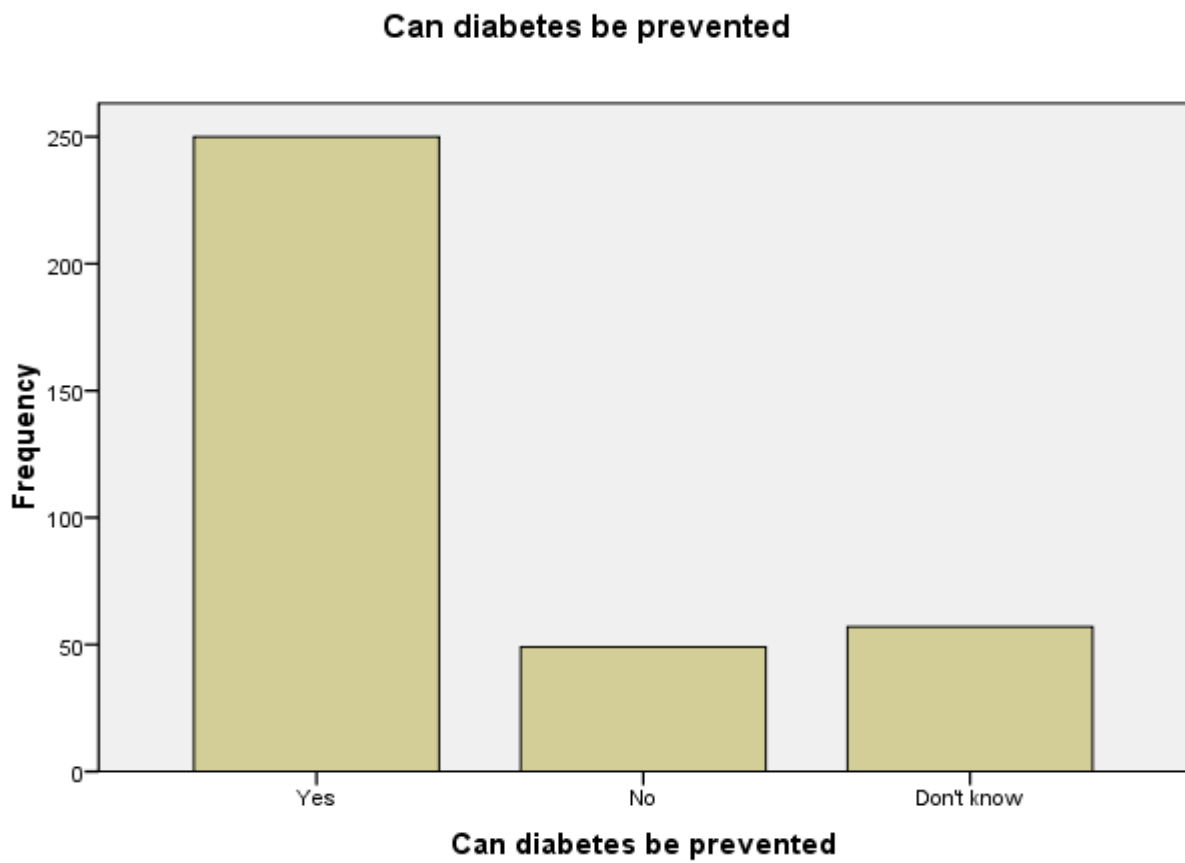
The figure 4.4 indicated 250 respondents representing 70.2% said diabetes can be prevented.

Table 4.9: Prevention of diabetes

Variables	Frequency	Percentage
Healthy diet		
Yes	231	64.9
No	125	35.1
Regular exercise		
Yes	181	50.8
No	175	49.2
Taking herbs		
No	261	73.3
Yes	95	26.7
Weight reduction		
Yes	196	55.1
No	160	44.9
Not smoking		
Yes	150	42.1
No	206	57.9
Moderate alcohol consumption		
Yes	109	30.6
No	247	69.4
TOTAL	**356**	**100**

Source: Yebuah, 2020

From the table 4.9 most of the respondents (64.9%) indicated health diet can help prevent diabetes

Bivariate analysis showing association of prevention of diabetes among the respondents is presented in table below

Table 4.10: Association of prevention diabetes among the respondnets

Variables	People with diabetes	People without diabetes	p-value
Healthy diet			**0.000**
Yes	190 (78.5%)	40 (35.1%)	
No	52 (21.5%)	74 (64.9%)	
Regular exercise			**0.750**
Yes	122 (50.4%)	59 (51.8%)	
No	120 (49.6%)	55(48.2%)	
Taking herbs			**0.000**
No	200 (82.6%)	61(53.5%)	
Yes	42(17.4%)	53 (46.5%)	
Weight reduction			**0.560**
Yes	122 (50.4%)	74 (64.9%)	
No	120 (49.6%)	40 (35.1%)	
Not smoking			**0.003**
Yes	80 (33.1%)	70 (61.4%)	
No	162 (66.9%)	44 (38.6%)	
Moderate alcohol consumption			**0.000**
Yes	70 (28.9%)	39 (34.2%)	
No	172 (71.9%)	75 (65.8%) .	

Source: Yebuah, 2020 Variable significant at P< 0.05

Analysis of association of prevention of diabetes among respondents revealed that healthy diet, taking herbs, not smoking and moderate alcohol consumption were significantly associated with diabetes (*P<0.05*) as shown in the table above

Table 4.11: Psychosocial effects on diabetes management

Variables	Frequency	Percentage
Depression		
Agree	244	68.5
Disagree	68	19.1
Don't know	44	12.4
Burden of diabetes and its treatment		
Agree	252	70.8
Disagree	38	10.7
Don't know	66	18.5
Lack of economic resources		
Agree	247	69.4
Disagree	49	13.6
Don't know	60	16.9
Worries about adverse consequences		
Agree	233	65.4
Disagree	47	13.2
Don't know	76	21.3
Emotional instability		
Agree	170	47.8
Disagree	96	27.0

| Don't know | 90 | 25.3 |
| **TOTAL** | **356** | **100** |

The table 4.8 indicated that the most recognized psychosocial effect the respondents indicated was burden of diabetes and its treatment (70.8%) and the least was emotional instability (47.8%)

Figure 4.5 Factors associated with knowledge on diabetes and its psychosocial effects

Factors assocaited with knowledge on diabetes and its psychosocial effect
- Age 13%
- Marital status 8%
- Family history 25%
- Educational Level 29%
- Occupation status 17%
- Family income 8%
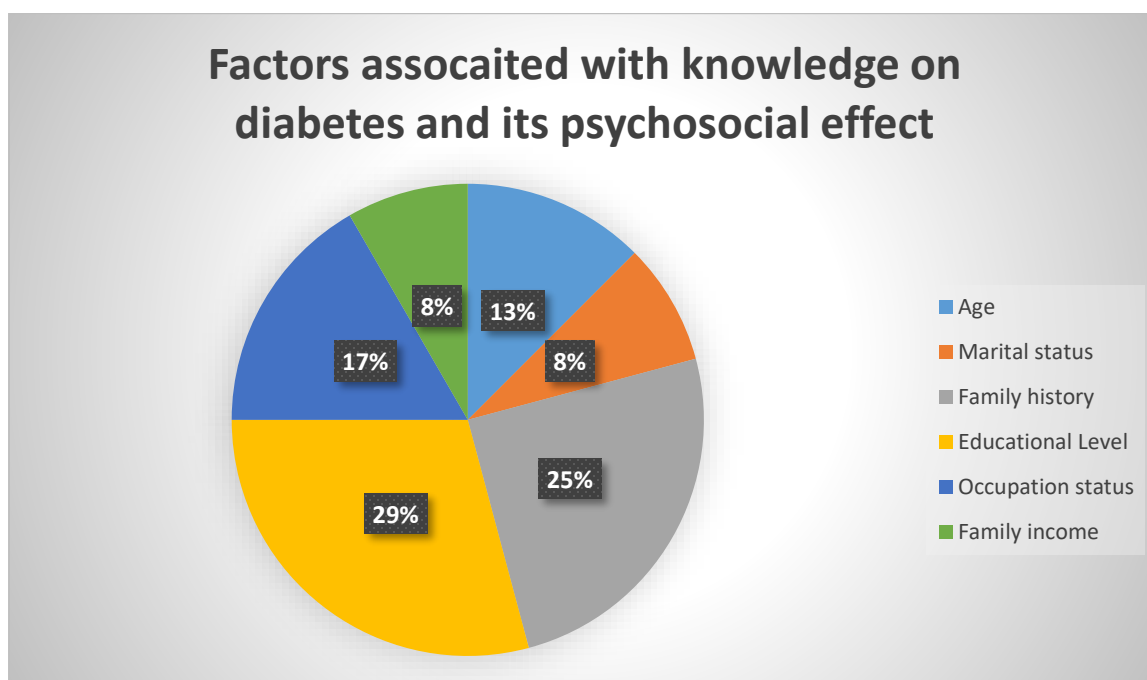
The figure 4.5 shows majority (29%) of the respondents identified educational level to be a factor associated with knowledge on diabetes and its psychosocial effects. The respondents also indicate age, marital status, family history, and occupational status.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

The study was conducted in the Tema Metropolis among the adults living there. The study sought to know the knowledge and psychosocial effects of diabetes. This chapter talks about the findings of the study compared with existing studies.

5.2 Knowledge on diabetes

The results of the study indicated that majority of the respondents (83%) had heard of diabetes. The finding was in line with the findings of Mohan et al., (2015), whose study indicated 75.5% of the respondents had heard about diabetes. A study by Simmons et al, (2014) in Auckland disproves the studies above which indicated 75% of the respondents have not heard about diabetes. From the study most of the respondents heard about diabetes from the health facilities (40.3%) and T.V/ Radio (30.4%).

On definition of diabetes, from the study majority (30%) of the respondents indicated it is the persistent continuous rise in one's blood sugar level. The rest of the respondents also identified the definition of diabetes with blood sugar level and also malfunction of the pancreas to produce insulin. From the study it can be said that the respondents had good knowledge on the definition of diabetes. This study was not in line with a study by Maina et al., (2010), where 71% of the respondents had poor knowledge on the definition of diabetes. The difference in the studies was due to less education on diabetes and also less people attending health facilities for check-ups.

Also, with knowledge on risk factors contributing to diabetes, the study indicated high intake of sugar (73.3%) and age greater than 45 years (57.3%), as risk factors of diabetes. This was

consistent with a study by Kibirige et al., (2014), which revealed that people with ages more than 45years are at risk of having diabetes. From the study respondents indicated excess weight (55.6%) was a risk factor. This was in line with a study by Chio et al., (2012), in which respondents also indicated obesity and physical inactivity as a risk factor. High intake of fat or cholesterol diet (58.4%) was also identified as a risk factor by the respondents. This was similar to a study by Hu et al., (2012), which also indicated high intake of cholesterol as a factor.

From the study the respondents indicated smoking (64.6%) was not a risk factor for diabetes. This was not consistent with the surgeon's general report 2014, which indicated smokers have 35% high risk of diabetes than non-smokers. On family history being a risk factor 56.7% of the respondents indicated so. This was consistent with a study by Rosal et al., (2011), which also indicated family history as a risk factor. From the study, it indicated the respondents had enough knowledge on risk factors contributing to diabetes because of most the respondent knew what contributed to diabetes.

The study indicated that most of the respondents knew about the signs and symptoms of diabetes which were blurred vision (74.2%), frequent urination (69.1%), tiredness and weakness (61.2%), unexplained weight loss (56.2%), wounds that heal slowly (55.1%), excessive thirst (51.1%). This indicated the respondents had good knowledge on signs and symptoms of diabetes this was not in line with a study by Maina et al., (2010) where the respondents (29%) had good knowledge on the signs and symptoms of diabetes.

From the study majority (43%) of the respondents indicated diabetes cannot be cured and 40% indicated it can be cured. Those who indicated it can be cured said it could be cured by using medical treatment or traditional treatment. Which indicates some adults in the metropolis are likely

add herbs to medical treatment of diabetes. The study also found out that diabetes has complication as indicated by the respondents (55.3%). The complications they indicated were kidney failure, amputation, foot ulcer, blindness and hypertension. This was similar to a study Ulvi et al.,2013 on the complications of diabetes, in which the respondents indicated hypertension, blindness and kidney failure to be complications of diabetes.

The findings of the study indicated majority (70.2%) of the respondents indicated diabetes can be prevented. This was similar to a study by Alvin et al., (2014) who indicated diabetes can be prevented. The findings indicated diabetes can be prevented by healthy diet (64.9%) and regular exercise (50.8%). This was consistent with a study by Tuomilehto et al, (2011) which indicated

 diet (31%) and exercise (46%) as a way of preventing diabetes.

5.3 Knowledge on psychosocial effects of diabetes

The study indicated majority (70.8%) of the respondents identified burden of diabetes and its treatment as a psychosocial effect. This was similar to a study by Flower et al, (2013) on knowledge and psychosocial effects of diabetes in the African region, in which the respondents showed that high treatment cost, hyperactivity and emotional immaturity were psychosocial effects of diabetes.

Also, this study's respondents (68.5%) mentioned depression was a psychosocial effect of diabetes. This was consistent with a study by Pouwer et al., (2012), in which it was found that half of the participants knew the psychosocial effects of diabetes, they indicated the following social support, anxiety, depression and self-efficacy. Another study by Ruqiya et al., (2017), on psychosocial aspects of diabetes in Norway, indicated that, majority of the respondents (68%) mentioned anxiety and depression as psychosocial effects of diabetes. In another study by Sanjay

et al., (2018), on emotional and psychological needs of people with diabetes, in which it was also identified anxiety and depression as psychosocial effects of diabetes.

The respondents of the study identified emotional instability as a psychosocial effect of diabetes from the study. This was in line with a study by Mbanya et al., (2011). The participants had basic knowledge on psychosocial effects of diabetes and many perceived anger, stress, fear and sadness. Also, in the findings of this study, respondents indicated lack of economic resources to be a psychosocial effect. This was consistent with findings by Bradley et al., (2014), in a study conducted in Zambia on the psychosocial effects of diabetes. It was a descriptive cross-sectional study in which most of the respondents (65%) said high cost of living and support by family members were all effects.

5.4 Factors associated with Knowledge on diabetes and its psychosocial effects

The findings of the study indicated respondents identified educational level, age, marital status, family history, and occupational status as factors associated with knowledge on diabetes and its psychosocial effect. This was consistent with a study by Shrestha et al., (2017), in which, it showed that the factors associated with knowledge on diabetes were age, marital status, family history and educational level. Also, a study by Achenef et al., (2015), was in support of the above study which also found out educational level, family income and family history of diabetes were associated with factors on knowledge on diabetes.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The study was carried out to assess the knowledge on diabetes and its psychosocial effects among adults in the Tema metropolis. The specific objectives of the study were to find out their knowledge on diabetes, psychosocial effects on diabetes and factors associated with knowledge on diabetes and its effects. A sample size of 356 respondents was used. Consent was sought from respondents and they also assured of confidentiality and anonymity. Questionnaires were used and Stata 15 was used as data analysis. The study achieved its aim and the findings are summarized below:

The findings of the study indicated majority of the respondents 179(50.3%) were females and most (64.3%) of the respondents were less than 40years. Majority of the respondents were married (48.6%) and employed (35.4%). Christians (69.1%) were majority of the respondents and had education till tertiary level (40.7%).

The study indicated that majority (83%) had heard about diabetes and had heard it from their various health facilities (40.3%). The study also indicated 68% of the respondents had diabetes and of over a year onset. On definition of diabetes, majority 96(30%) of the respondents indicated it is a persistent and continuous rise in one's blood sugar level.

The main risk factor of diabetes indicated by the respondents was high intake of sugar (73.3%). The respondents thus knew much about factors contributing to diabetes. The findings of the study indicated the most recognized sign and symptom for diabetes was blurred vision (74.2%). Also, the respondents indicated headache (74.2%) as not a sign and symptom of diabetes.

The findings of the study indicated majority (55.3%) of the respondents knew diabetes can cause a complication and majority indicated kidney failure (19.3%) and amputation (13.2%) as major complications. The study also indicated the respondents (43%) though diabetes cannot be cured. The findings of the study indicated that diabetes can be prevented (70. 2%). The respondents indicated that healthy diet (64.9%) and regular exercise (50.8%) can help prevent diabetes.

Lastly, the study indicated that the most psychosocial effect identified by the respondent was burden of diabetes and its treatment (70.8%) and the least was emotional instability (47.8%).

6.2 Recommendation

The study revealed that the respondents had enough knowledge on diabetes and its psychosocial effects. The study recommends the following to the Health Directorate in Tema and the hospitals in the metropolis.

6.2.1 Health Directorate

- Though from findings all respondents had enough knowledge on diabetes and its psychosocial effects, more in-service training and refresher courses about diabetes and psychosocial effects should be done for the public health department. This should provide them with up-dated knowledge to understand diabetes and its psychosocial effect which can be translated into practice.

- The study indicated most of the respondents had heard about diabetes from their health facilities which indicates people who do not visit health facilities would not get information about it. It is recommended that the directorate should involve diabetes and its psychosocial effects on their health programs on television and radio to individuals who

cannot read or write. Also design leaflet containing information about diabetes and their psychosocial effects.

- Also, diabetes education should be inculcated in school health by the directorate to create awareness to the young adults in the schools in the metropolis. This is to be done to ensure they understand diabetes at younger age which could control their risk of getting the disease.

6.2.2 Hospital

- Hospital management in the Tema Metropolis should encourage their staff to continue sensitization on knowledge diabetes as well as its psychosocial effects at the OPD clinics.

- Mass media agencies should also continue with sensitization of diabetes and its psychosocial effects with qualified resource persons.

- Posters about the complications of diabetes should be posted at vantage points at the hospital such as the outpatient department, laboratory and pharmacy.

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<u>QUESTIONNAIRE</u>

KNOWLEDGE OF DIABETES AND ITS PSYCHOSOCIAL EFFECTS AMONG ADULTS IN THE TEMA METROPOLIS

Respondent's ID #: ………………………….   Date:/……. /……...

Name of interviewer……………………………….……………...…………….

Dear Respondent,

I am a student of Ensign college of Public Health conducting a research on the above topic at the Tema Metropolis. This is an academic work which could be used for a database in policy formulation. I would be grateful if you could spare some time to answer this questionnaire. You are hereby assured of anonymity and that any information provided will be treated with the utmost confidentiality. If at any point you feel reluctant to participate you have the right to drop out without any offense or hindrance. You may contact me on telephone on 02686663326 or e-mail me at jonathan.yebuah@st.ensign.edu.gh

Thank you.

SECTION 1: DEMOGRAPHIC CHARACTERISTICS

Instruction: Tick where appropriate and answer the necessary question where required

1. Sex of Respondent

 a. Male   [ ]

 b. Female   [ ]

2. Age of respondent ……………………

3. Marital status

 a. Single   [ ]

 b. Married [ ]

 c. Widowed [ ]

4. Educational Level

a. None   [ ]

b. Basic   [ ]

c. Senior Secondary   [   ]

 d. Tertiary [   ]

5. Occupation

  a. Employed   [   ]

  b. Not employed [   ]

c. Self-employed [   ]

7. Religion

  a. Christian   [   ]

  b. Muslim   [   ]

  c. Traditionalist [   ]

  d. others (Specify)..……………………..

8. Do you know about diabetes?

 a. Yes (If yes, move to 9)   [   ]

  b. No   [   ]

9. Where did you first hear about diabetes?

a. Health facility   [ ]

b. TV/radio   [   ]

c. Poster/sticker/   leaflet/ Newspaper   [   ]

d. Friend/relative   [   ]

e. Church/mosque/   School [   ]

f. Don't know

g. Other (specify)........

10. Do you have diabetes?

a. Yes (If yes, move to 12)   [   ]

 b. No (If no, move to 11)   [   ]

11. Do you have a relative/friend with diabetes?

  a. Yes   [   ]

  b. No   [   ]

  c. Do not know   [   ]

12. How many years/months have you had diabetes? ……………………………………

SECTION 2 GENERAL KNOWLEDGE ON DIABETES

Instruction: Tick where appropriate and answer the necessary question where required

13. What is diabetes?

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………..

14. What are some risk factors you think could contribute to the development of diabetes in

people?   (Tick all that apply (√))

a. High intake of sugar   [   ]

b. Age greater than 45   [   ]

c. Excessive alcohol consumption   [   ]

d. Family history of diabetes   [   ]

e. Not being physically active   [   ]

f. Smoking   [   ]

g. High intake of fat or cholesterol diet   [   ]

 h. Excess weight   [   ]

i. Don't know   [   ]

k. Other (specify)..

14.   Is Diabetes curable?

    a. Yes (If yes, move to 15)   [   ]

    b. No (If no, move to 16)   [   ]

    c. Do not know   [   ]

15. How can diabetes be cured?

  a. Medical Treatment   [   ]

  b. Traditional Treatment   [   ]

  c. Medical and Traditional treatment   [   ]

   d. Don't know [   ]

   e. Other (specify)......................................

16. What are the signs and symptoms of diabetes? (Tick (√) all that apply)

a. Excessive thirst   [   ]

b. Tiredness and weakness   [   ]

c. Frequent urination   [   ]

d. Unexplained Weight loss   [   ]

e. Headache   [   ]

f. Wounds that heal very slowly   [   ]

g. Blurred vision   [   ]

h. Don't know   [   ]

i. Other (specify) ....

17. Can diabetes cause complications in other parts of the body?

a. Yes   [   ]

b. No   [   ]

c. Do not know   [   ]

If yes, give one (1) example 1..

18. Can Diabetes be prevented?

a. Yes (If yes, move to 19) [   ]

b. No   [   ]

c. Don't know [   ]

19. How can it be prevented?   (Tick (√) all that apply)

a. Healthy diet   [   ]

b. Regular exercise   [   ]

c. Taking herbs   [   ]

d. Weight reduction   [   ]

e. Not smoking   [   ]

f. Moderate alcohol consumption   [   ]

g Do not know   [   ]

h. Other (specify)   ....

Section III: Psychosocial effects on diabetes management.

Instruction: Tick where appropriate and answer the necessary question where required.

Which of the following are psychosocial effects of diabetes?

Statement	Agree	Disagree	Don't know
20.Depression			
21. Burden of diabetes and its treatment.			

23. Lack of economic resources			
24. Worries about adverse consequences.			
25. Emotional instability			