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## Knowledge On Diabetic Foot Ulcer Prevention And Management Among Diabetic Patients Admitted In A Tertiary Care Hospital

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### Article Details

### ABSTRACT

**Keywords:** Diabetic Foot Ulcer, Knowledge, Prevention, Management

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**Background:** Diabetes mellitus, a chronic metabolic disorder, can impair insulin production or action, with diabetic foot complications posing a major health risk. This study at Arif Memorial Teaching Hospital, Lahore, assessed patients' knowledge of and adherence to foot care routines.

**Methods:** In a descriptive cross-sectional design, 150 participants were recruited via convenient sampling. Data were analyzed with SPSS Version 23.

**Results:** Of participants, 69 were male (46%) and 81 female (54%), with 51% aged 58–67. A substantial portion exhibited inadequate knowledge and poor foot-care practices. Age was negatively associated with awareness scores ( $r = -0.353$ ,  $p < 0.01$ ), while age and gender ( $r = -0.040$ ,  $p = 0.626$ ) and gender and awareness ( $r = -0.032$ ,  $p = 0.699$ ) showed no significant relationships. Notably, inadequate knowledge and poor foot care were more frequent in females (81%) than males (46%). Other findings suggested distributions in etiologies (insulin insufficiency/dysfunction 28.7%; hyperinsulinemia 47.3%; hypoglycemia 15.3%; dyslipidemia 8.7%) and varied self-care behaviors, symptoms, and lifestyle factors. Foot-care awareness of risks to kidney, eye, heart, vascular, and foot health stood at 33.3%. Dietary patterns indicated 31.3% high-fat intake and 30% fruit consumption.

**Conclusion:** Overall, knowledge and foot-care practices were inadequate, with greater deficits among women. Targeted, culturally tailored educational interventions are warranted to enhance knowledge and self-care behaviors and reduce diabetic foot complications.

## **INTRODUCTION:**

### **BACKGROUND**

Hyperglycemia is a common metabolic condition associated with diabetes mellitus. Diabetes has an impact on nearly every system in the body because of its numerous, long-lasting effects. In 2013, diabetes resulted in 56 million disability-adjusted life years (DALYs) and 1.3 million deaths (2.4% of all fatalities). From 589.9 per 100,000 people in 1990 to 883.5 per 100,000 people in 2013, the diabetes DALY rate rose. Between 1990 and 2013, the overall number of diabetes-related DALYs increased by 148.6%; population growth was responsible for 62.9% of this rise, while aging and rising age-specific DALY rates accounted for 31.8 and 53.9% of the increase, respectively. In the EMR, diabetes prevalence differs between nations. Diabetes was found to be prevalent in 13.4% of Saudis aged 15 or older and in 12.1% of men in Pakistan (Pourkazemi et al., 2020)

In the current era of medicine, diabetes mellitus is one of the greatest prevalent, irrepressible, and however treatable conditions. In particular, people with type 2 diabetes mellitus can prevent a number of theoretically fatal consequences by appropriately controlling their blood sugar levels. The prevalence of type 2 diabetes has been increasing in Pakistan, despite the lack of a comprehensive analysis of the numerous studies on the connection between patients' awareness of their illness and type 2 diabetes. Data demonstration that patients with diabetes who are knowledgeable about their condition have higher disease control and are, thus, less possible to experience abiding complications. The majority of diabetes individuals who end up in the hospital do so due to foot-related issues. The danger of limb ulcers and foot ulcers (Asim et al., 2023).

People with diabetes mellitus should take good care of their feet by examining them every day for redness, ulcers, cuts, and bruises. They should also wash and dry their feet, giving special care to the area in the middle of the toes, moisturize their feet, check the inside of their shoes before wearing them, keep their feet safe from extremely hot and cold temperatures, trim their toenails, seek early treatment for any lesions on their feet, and have consistent foot assessments accomplished by a medical specialized (Manickum et al., 2021).

Individuals in the lowest risk category for foot ulcers who do not have peripheral artery disease, diminished sense of protection, or a history of foot complications can follow up with a primary care physician or podiatrist once a year. Individuals with diabetes who are more likely to develop foot ulcers should be taught about appropriate footwear and foot self-care. Individuals who have two or more risk factors peripheral artery disease, loss of protective sensation, and foot deformity should consult a podiatrist, pedorthist, or orthoptist for advice on selecting high-quality footwear that fits properly and may include therapeutic footwear to relieve pressure. Based on expert consensus, American Diabetes Association and International Working Group on the Diabetic Foot suggest that people at moderate risk should see a podiatrist every three to six months for evaluation; individuals with peripheral artery disease might need to see a vascular specialist. Patients diagnosed with diabetic foot ulcers who have ankle pressure ( $< 50$  mmHg), ankle-brachial index ( $< 0.5$ ), toe pressure ( $< 30$  mmHg), or transcutaneous oxygen pressure ( $< 25$  mmHg) would be referred to a vascular specialist right away.<sup>35</sup> Regardless of the findings of the vascular study, patients with peripheral artery disease and a diabetic foot ulcer that does not heal after four to six weeks of evidence-based treatment may also be referred for vascular surgery. The highest risk group includes those who have had a diabetic foot ulcer that has healed or who have had a partial foot amputation due to a diabetic foot ulcer (also called remission). To lower the risk of an ulcer recurrence, they need pressure-relieving shoes or orthoses that fit their foot shape and any deformities that may be present. This may involve having custom shoes made or using insoles in extra-deep shoes. Every one to three months, people with healed foot ulcers are advised to come back for screening and to receive professional foot care (Armstrong et al., 2023).

### **PROBLEM STATEMENT**

Diabetic patients have knowledge about diabetes mellitus and its complications such as diabetic foot ulceration but majority of the people are unaware about the prevention methods of diabetic foot ulceration.

Because they have no knowledge that how would they prevent themselves from acquiring these complications, (diabetic foot ulcer). They should be well known about the ways so that by using that techniques and cautions they will lead a healthy life.

## **SIGNIFICANCE**

Diabetic foot ulceration is a general complication of the diabetes mellitus which leads to infection, amputation, or even death due to septicemia. Identifying and promoting awareness about prevention and management of diabetic foot ulcers among the diabetic patients can improve the overall health and enhance quality of life. This will result in a decrease in the number of hospital cases.

## **OBJECTIVES**

To assess prevention and management of diabetic foot ulcer among type 2 diabetes patients in tertiary care hospital.

To assess patient's knowledge about diabetes and its consequences, including how to take care of their feet, through a questionnaire.

To reduce the risk of infection and amputation

## **LITERATURE REVIEW**

Literature can be searched using different search engines. For this study, the relevant literature review is search from online data bases Google scholar, Pub-med, Sci-hub and CINAHL. Diabetes affects over 550 million of people at globally level and 37 million people in the United States, with 18.6 million people developing foot ulcers annually. In their lifetime, up to 34% of individuals with type 1 and type 2 diabetes experience foot ulcers. Approximately 20% of diabetic foot ulcers resolve need amputation of the lower extremities, with infection and progressive gangrene being the primary causes. Every 150,000 non-traumatic lower extremity amputations are carried out on diabetic patients in the United State. An estimated 1.6 million amputations occur annually worldwide, of which 33% are serious amputations (Armstrong et al., 2023).

A cross sectional study was conceded in university of medical science Kermanshah, Iran in 13 march 2020. 109 people, or 57.4%, were female. Along with DFU, 26 patients also suffered other issues related to their diabetes. Patients had an average awareness score of  $6.99 \pm 2.76$  and a function score of  $62.22 \pm 9.92$ . According to the findings, there is a direct correlation between the patient's awareness score and age and disease duration ( $P=0.008$ ,  $P=0.000$ ). The findings of the statistical analysis revealed that there was no correlation between the purpose in self-care of patients with the severity of DFU ( $P>0.05$ ), but there was a clear relationship between the level of education and the awareness and function scores ( $P=0.000$ ,  $P=0.000$ ) (Ghobadi et al., 2020b).

A cross-sectional study was conducted on 375 individuals with type 2 diabetes mellitus who had the condition documented in their medical records in Guilan Province, in the north of Iran. In frontal interviews, the researcher collected the participants' demographics, knowledge, and practices on a questionnaire. The majority of participants (84.8%) exhibited low understanding, as indicated by the mean score of  $8.63 \pm 2.5$  out of 15. Out of 15, the average practice score was  $7.6 \pm 2.5$ , meaning that 49.6% of them performed poorly. Knowledge and practice were significantly and directly correlated. Knowledge level, place of residence, marital status, and history of diabetic foot admission all predicted the practice score (Pourkazemi et al., 2020b).

A descriptive cross-sectional study was carried out in 23 May 2023 at the public hospital in Lahore, Pakistan. Of the 153 patients, 85 (55.5%) had inadequate information, 48 (31.3%) had ordinary knowledge, and 20 (13.2%) had virtuous understanding regarding diabetic foot care. Approximately 79 people (51.6%) had inadequate diabetic foot care behaviors, 49 participants (32%), had adequate practices and 25 participants (16.4%) had good practices. Patients with college degrees had a high degree of foot care

expertise. Participants' age and educational attainment are strongly correlated with their level of knowledge and self-care habits (Asim et al., 2023b).

A cross-sectional study was conducted at the outpatient clinics of the Akbar Khan Niazi Teaching Hospital and the PIMS hospital between June and December 2018. A whole of 196 patients were involved; 116 (59.18%) of them were between the ages of 41 and 60, with 105 (53.57%) of the participants being male. Additionally, 76 (38.78%) of the patients lacked literacy, and 93 (47.45%) were either retired or unemployed. The majority of the 109 participants (55.61%) made between \$25,000 and \$50,000 per month. Of the patients, 88 (44.90%) were overweight, and 32 (16.33%) were obese. 113 people (57.65%) had diabetes between the ages of 5 and 10. Of the patients, only 58 (or 29.59%) had an HbA1c level <7.0%. A significant percentage of patients (41.3%) and practice level (39.8%) reported having insufficient understanding about foot care (Nasir et al., 2019).

## GAP ANALYSIS

The study had other drawbacks as well. Firstly, because of its cross-sectional design, it was impossible to ascertain the direction of associations or their causal connections. Second, because this was a clinic-based study with data from a single center, the study's findings should be evaluated cautiously. Studies conducted in hospitals are unable to give a complete picture of community knowledge and practice. The sample used for this study did not accurately reflect the diverse Iranian population. In this study, incorrect responses and "I don't know" responses have been combined to provide more thorough analysis.

Diabetes affects over 550 million people globally and 37 million in the US, with 18.6 million developing foot ulcers annually. 34% of people with type 1 or 2 diabetes develop foot ulcers, with 20% requiring amputation. Studies show a correlation between patient awareness, knowledge, and practice. However, drawbacks include cross-sectional design, lack of community knowledge, and a sample that doesn't accurately reflect the Iranian population.

## METHODOLOGY

A descriptive cross-sectional study was conducted at Arif Memorial Teaching Hospital, Lahore, targeting patients diagnosed with diabetic foot ulcers. The study period spanned August 2023 to March 2024. A total of 150 participants were recruited using stratified sampling.

## SAMPLE SIZE AND FORMULA

The sample size calculation employed the following formula:

$$n = \frac{z^2 \cdot p \cdot (1 - p)}{d^2}$$

Confidence level  $1 - \alpha = 95\%$

Anticipated population proportion  $p = 0.11$

Absolute precision required  $d = 0.05$

Sample size  $n = 150$

## INCLUSION CRITERIA

Adults (18–≥68 years) with diabetes mellitus presenting or diagnosed with foot infections or ulcers, including cases of gangrene associated with diabetes.

## EXCLUSION CRITERIA

Non-diabetic individuals, feet gangrene unrelated to diabetes, non-foot infections, incomplete treatment, or age <18 years.

## **PARTICIPANTS AND RECRUITMENT**

Eligible patients with diabetic foot ulcers at Arif Memorial Teaching Hospital were invited to participate. Recruitment employed random data collection, ensuring equal time and participation allocation per participant. All 150 approached individuals consented and enrolled.

## **DATA COLLECTION TOOL**

A structured questionnaire, developed after a literature review and available in English and Urdu, collected:  
Demographics (age, gender, marital status, occupation, religion, residence)  
Diabetes history (years since diagnosis)  
Foot ulcer management and prevention knowledge  
Self-care behaviors  
Awareness (16 items)

## **DATA ANALYSIS**

Data were processed using SPSS v23. Descriptive statistics (mean, standard deviation, frequency, percentages) characterized demographics and key variables. The response rate was 100%.

## **ETHICAL CONSIDERATION**

The rights of the research participants were protected, and the guidelines established by the Rashid Latif Nursing College ethical committee were adhered to during the research process.

All participants provided written informed consent.

Every piece of information and every data set were kept private.

All study participants maintained their anonymity.

The participants were advised that there are no hazards or drawbacks to the study's methodology.

They were told that they could leave the study at any point while it was being conducted.

This research is not known to pose any risks.

This study will assist you control your children violent behavior in the future.

The confidentiality of the participants was maintained. Additionally, no publication arising from this study disclosed your identity.

It is voluntary to participate in this research project. You have the option to withdraw of the activity and to change your mind at any moment. If you choose not to participate in this study or to leave it early, you would not face any penalties.

## **RESULTS**

This study was conducted at Arif Memorial Teaching Hospital 150 patients took part in the trial gave their consent to take part in the research. Table 1 presents the demographic information pertaining to the participants. 69 male patients (46%) and 81 female patients (54%) were primarily between the ages of 18 and 68. Marital status: Of the participants, 91 (60.7%) were married, 14 (9.3%) were divorced, 36 (24%), were single, and 9 (6%), were widowed. Of the patients, approximately 35.3% had completed primary school, 37.3% had completed intermediate school, 11.3% had completed high school, and 16% had attended a university. 52(34.7) of the participants had private employment, 39(26%) had government employment, 9(6%) were retired, 33(22%) were housewives, and 17(11.3%) were other occupations. The bulk of participants, 104 (69.3%), were from rural areas, and 46 (30.7%) were from urban areas.

**Table 1: Demographic Details of the Participants**

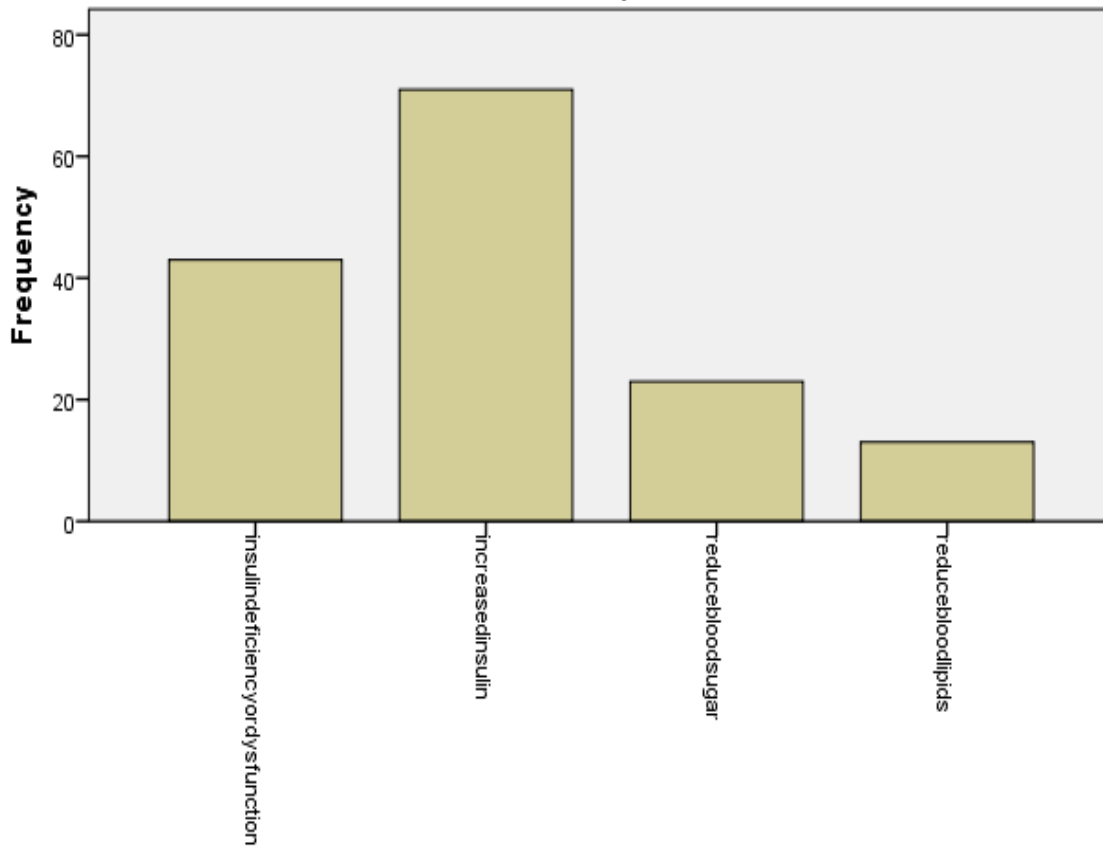
Demographic data	Frequency (n)	Percentage (%)
Age groups		
18-27	6	4

28-37	19	12.7
38-47	19	12.7
48-57	46	30.7
58-67	51	34
68+	9	6
Gender		
Male	69	46
Female	81	54
Education		
Primary	53	35.3
Intermediate	56	37.3
Secondary	17	11.3
University	24	16
Religion		
Muslim	121	80.7
Christian	29	19.3
Marital Status		
Single	36	24
Married	91	60.7
Divorced	14	9.3
Widowed	9	6
Occupation		
Government employ	39	26
Private employ	52	34.7
Retired	9	6
Housewife	33	22
Other	17	11.3
Residence		
Rural	104	69.3
Urban	46	30.7

## Q1: What is the most important cause of diabetes?

	Frequency	Percent	Valid Percent	Cumulative Percent
Insulin deficiency or dysfunction	43	28.7	28.7	28.7
Increased insulin	71	47.3	47.3	76.0
Reduce blood sugar	23	15.3	15.3	91.3
Reduce blood lipids	13	8.7	8.7	100.0
Total	150	100.0	100.0	

**insulin deficiency or dysfunction, increased insulin, reduce blood sugar, reduce blood lipids**



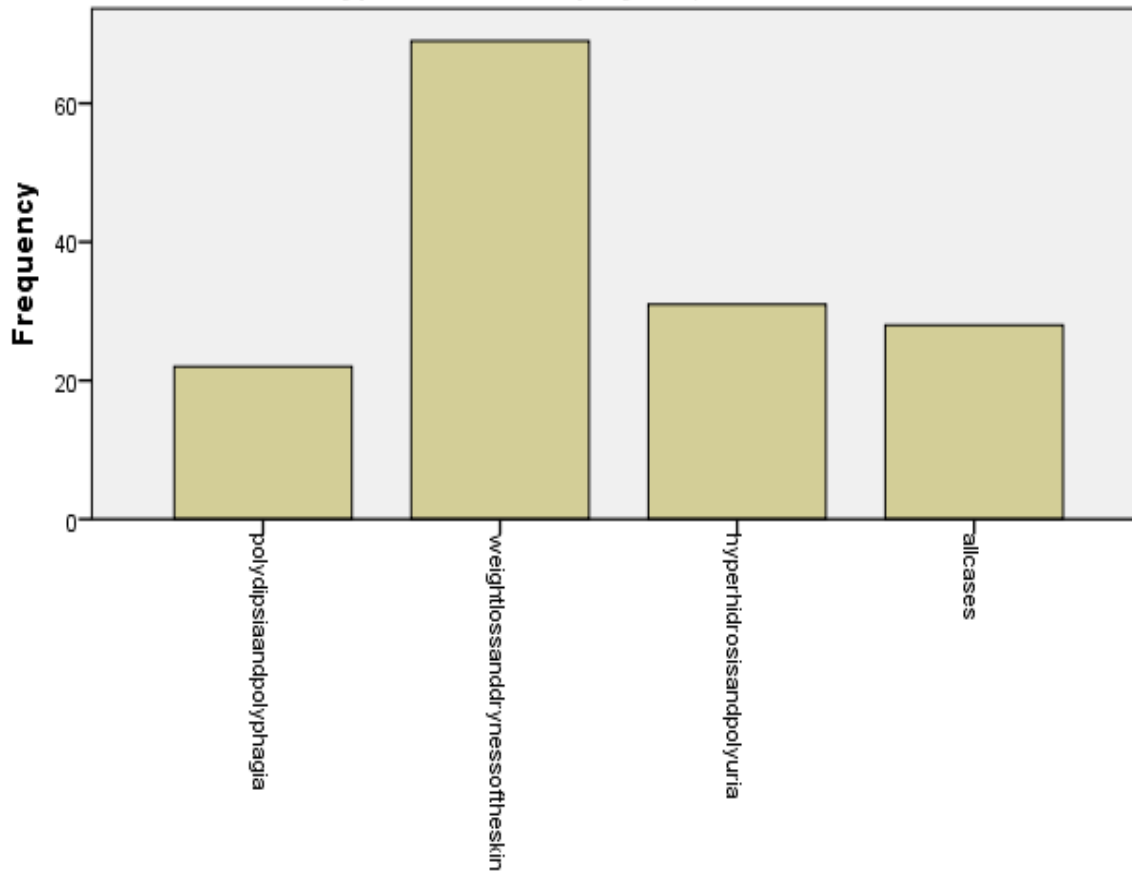
**insulin deficiency or dysfunction, increased insulin, reduce blood sugar, reduce blood lipids**

Data collected from the participants found that 43(28.7%) patients had insulin deficiency or dysfunction, 71(47.3%) had increased insulin, 23(15.3%) had reduced blood sugar and 13(8.7%) had reduce blood lipids.

**Q2: Which one of the following is a symptom of diabetes?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Polydipsia and polyphagia	22	14.7	14.7	14.7
Weight loss and dryness of the skin	69	46.0	46.0	60.7
Hyperhidrosis and polyuria	31	20.7	20.7	81.3
All cases	28	18.7	18.7	100.0
Total	150	100.0	100.0	

**polydipsiaandpolyphagia,weightlossanddrynessoftheskin,  
hyperhidrosisandpolyuria,allcases**



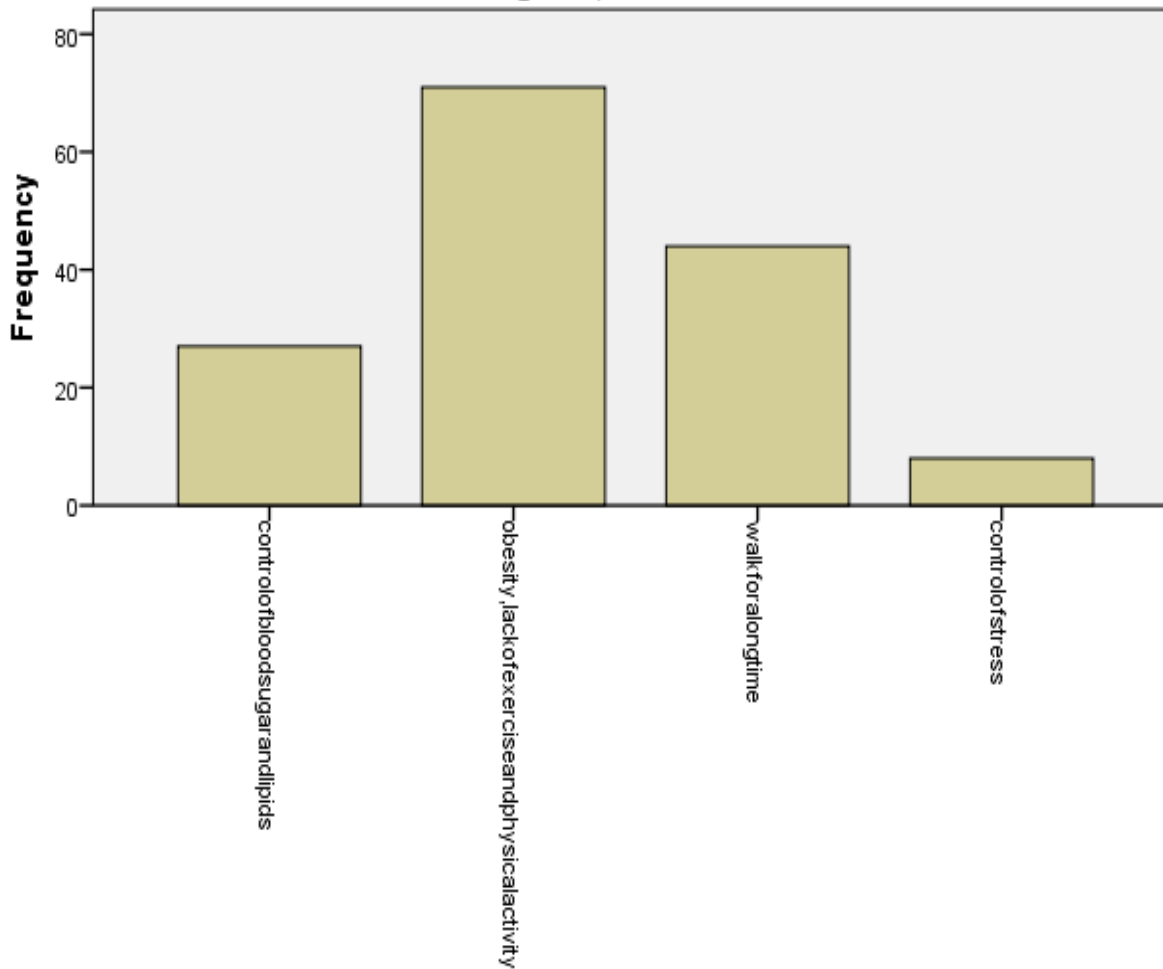
**polydipsiaandpolyphagia,weightlossanddrynessoftheskin,  
hyperhidrosisandpolyuria,allcases**

Data collected from the participants found that 22(14.7%) patients had polydipsia and polyuria, 69(46%) had weight loss and dryness of the skin, 31(20.7%) had hyperhidrosis and polyuria, 28(18.7) had all cases.

**Q 3: Which one of the following is effective in diabetes incidence?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Control of blood sugar and lipids	27	18.0	18.0	18.0
obesity, lack of exercise and physical activity	71	47.3	47.3	65.3
Walk for a long time	44	29.3	29.3	94.7
Control of stress	8	5.3	5.3	100.0
Total	150	100.0	100.0	

**controlofbloodsugarandlipids,obesity,lackofexerciseandphysicalactivity, walkforalongtime,controlofstress**

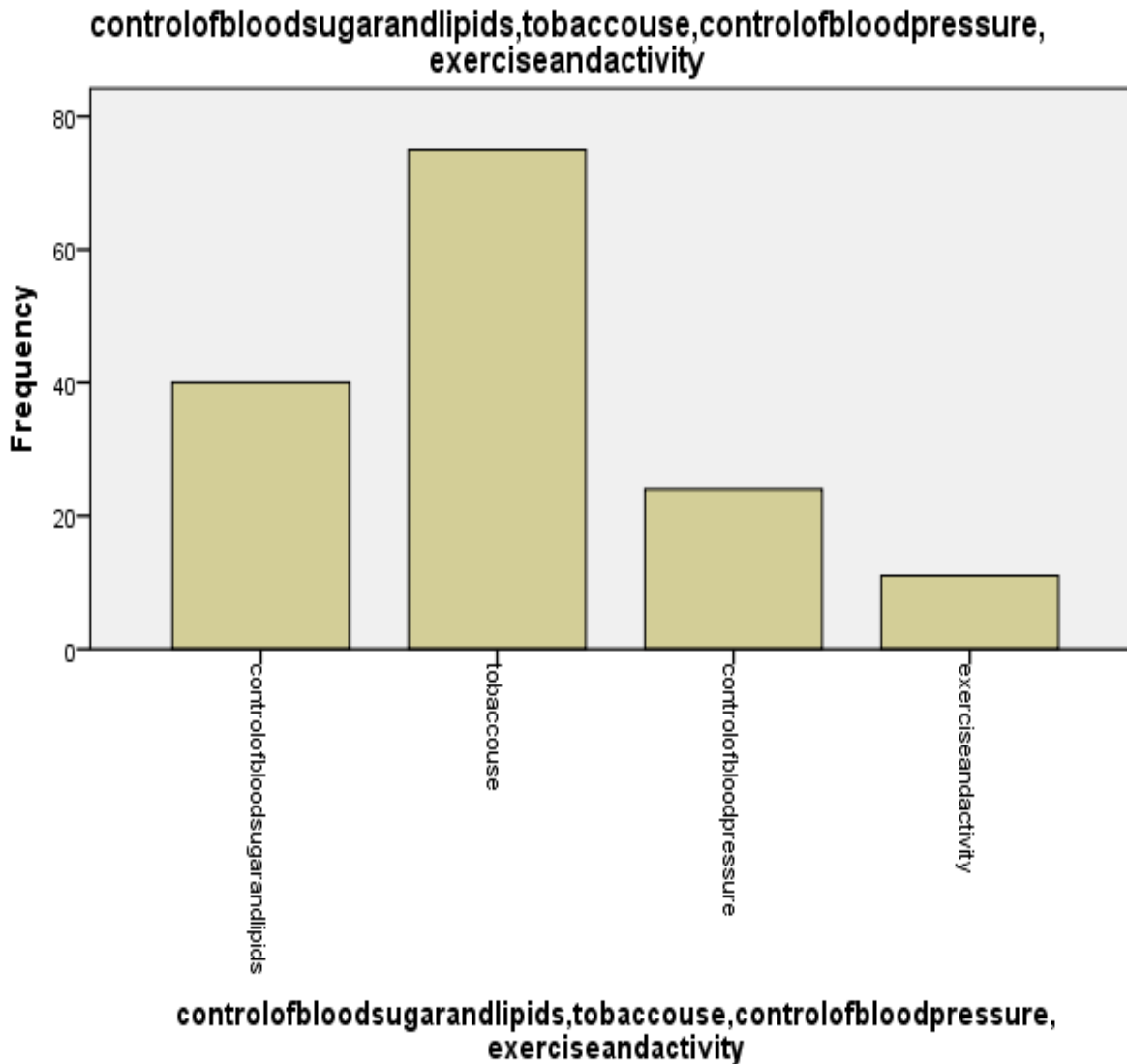


**controlofbloodsugarandlipids obesity lackofexerciseandphysicalactivity**

Data collected from the participants found that 27(18%) patients had control of blood sugar and lipids, 71(47.3%) had obesity, lack of exercise and physical activity, 44(29.3%) had walk for a long time and 8(5.3%) had control of stress (table 3).

**Q4: Which one of the following should be avoided to prevent complications?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Control of blood sugar and lipids	40	26.7	26.7	26.7
Tobacco use	75	50.0	50.0	76.7
Control of blood pressure	24	16.0	16.0	92.7
Exercise and activity	11	7.3	7.3	100.0
Total	150	100.0	100.0	

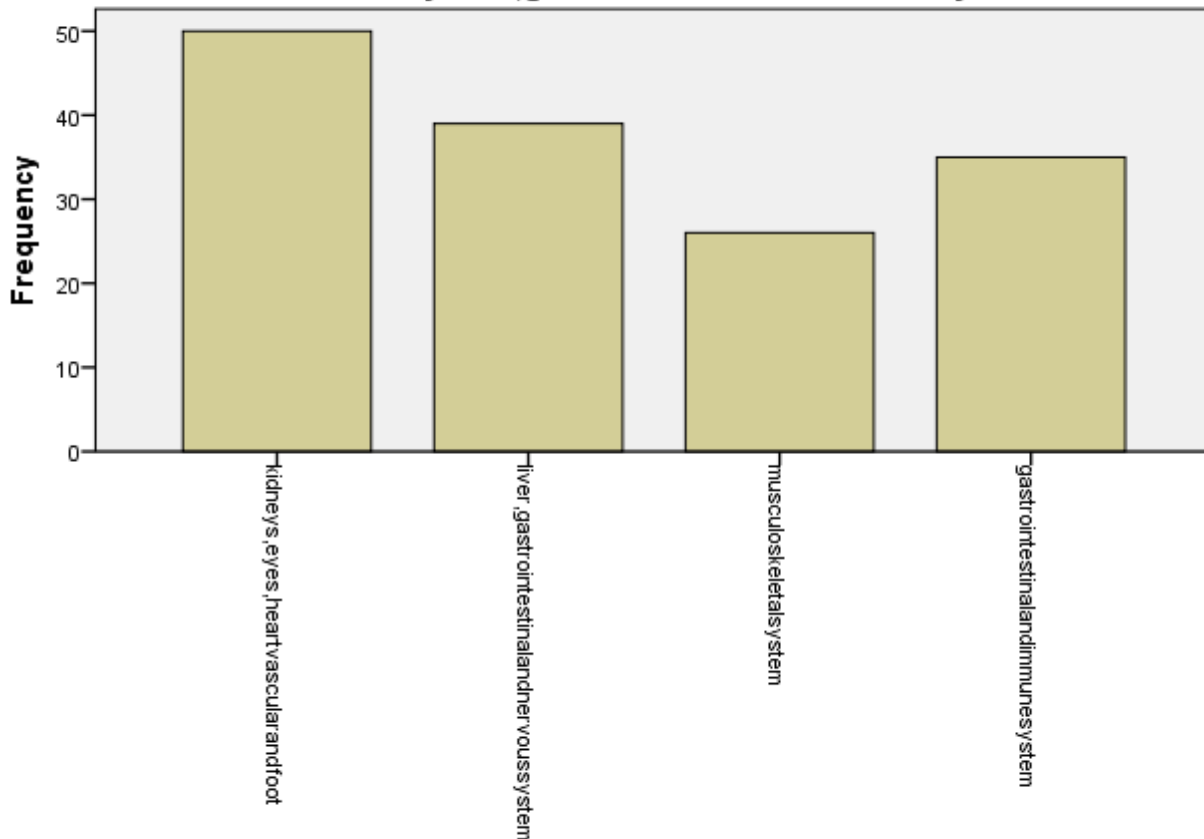


Data collected from the participants found that 40(26.7) patients had control of blood sugar and lipids, 75(50%) had tobacco use, 24(16%) had control of blood pressure and 11(7.3%) had exercise and activity.

**Q5: Which one of the following is most common late complication of diabetes?**

	Frequency	Percent	Valid Percent	Cumulative Percent
kidneys, eyes, heart vascular and foot	50	33.3	33.3	33.3
liver, gastrointestinal and nervous system	39	26.0	26.0	59.3
Musculoskeletal system	26	17.3	17.3	76.7
Gastrointestinal and immune system	35	23.3	23.3	100.0
Total	150	100.0	100.0	

**kidneys,eyes,heartvascularandfoot,liver,gastrointestinalandnervoussystem, musculoskeletalsystem,gastrointestinalanaimmunesystem**



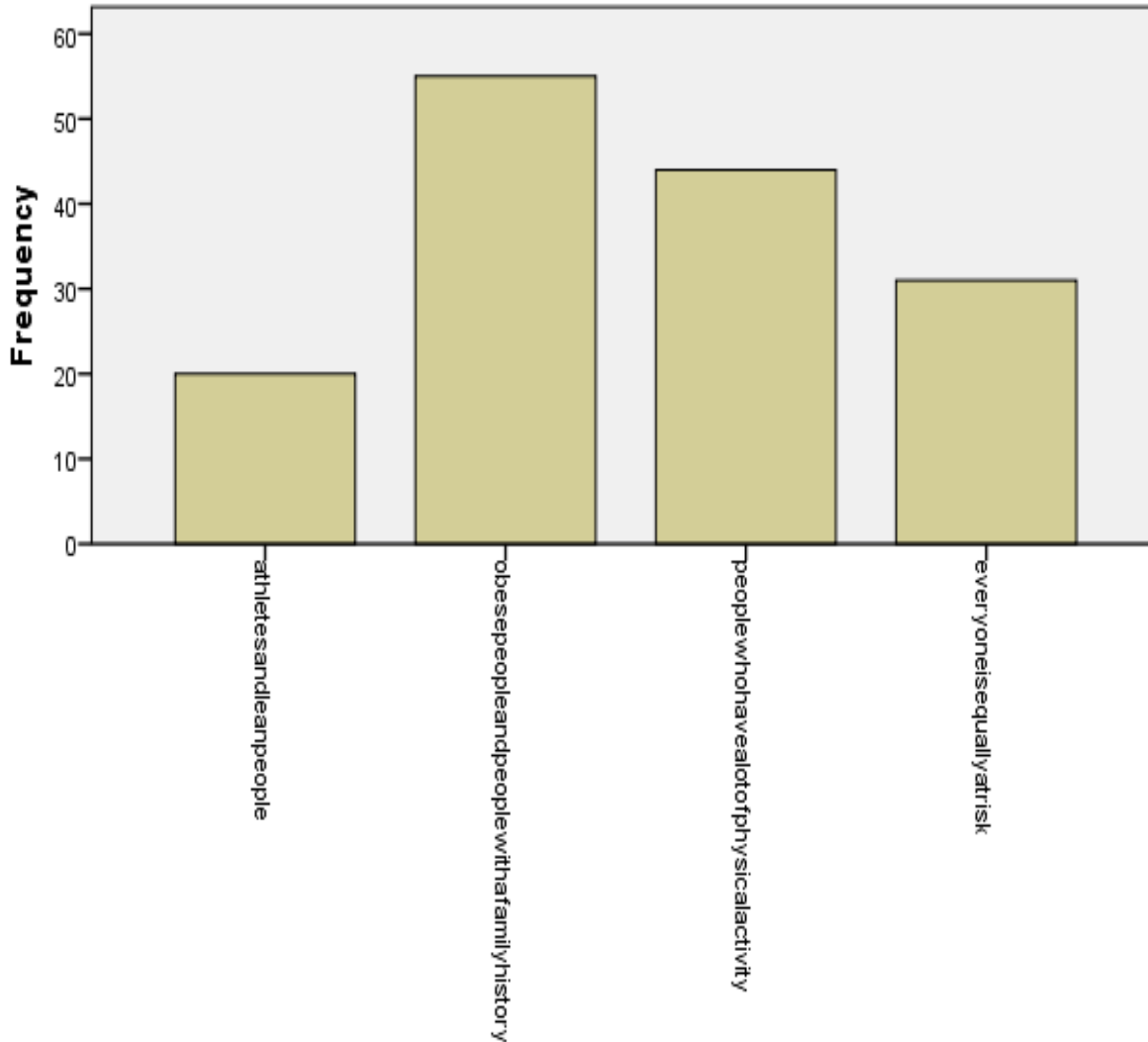
**kidneys,eyes,heartvascularandfoot,liver,gastrointestinalandnervoussystem...**

Data collected from the participants found that 50(33.3%) patients had kidneys, eyes, heart vascular and foot, 39(26%) had liver, gastrointestinal and nervous system, 26(17.3%) had musculoskeletal system, 35(23.3%) had gastrointestinal and immune system.

**Q6: Which of the following person is most susceptible to diabetes?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Athletes and lean people	20	13.3	13.3	13.3
Obese people and people with a family history	55	36.7	36.7	50.0
People who have a lot of physical activity	44	29.3	29.3	79.3
Everyone is equally at risk	31	20.7	20.7	100.0
Total	150	100.0	100.0	

**athletesandleanpeople,obesepeopleandpeoplewithafamilyhistory, everyoneisequallyatrisk**



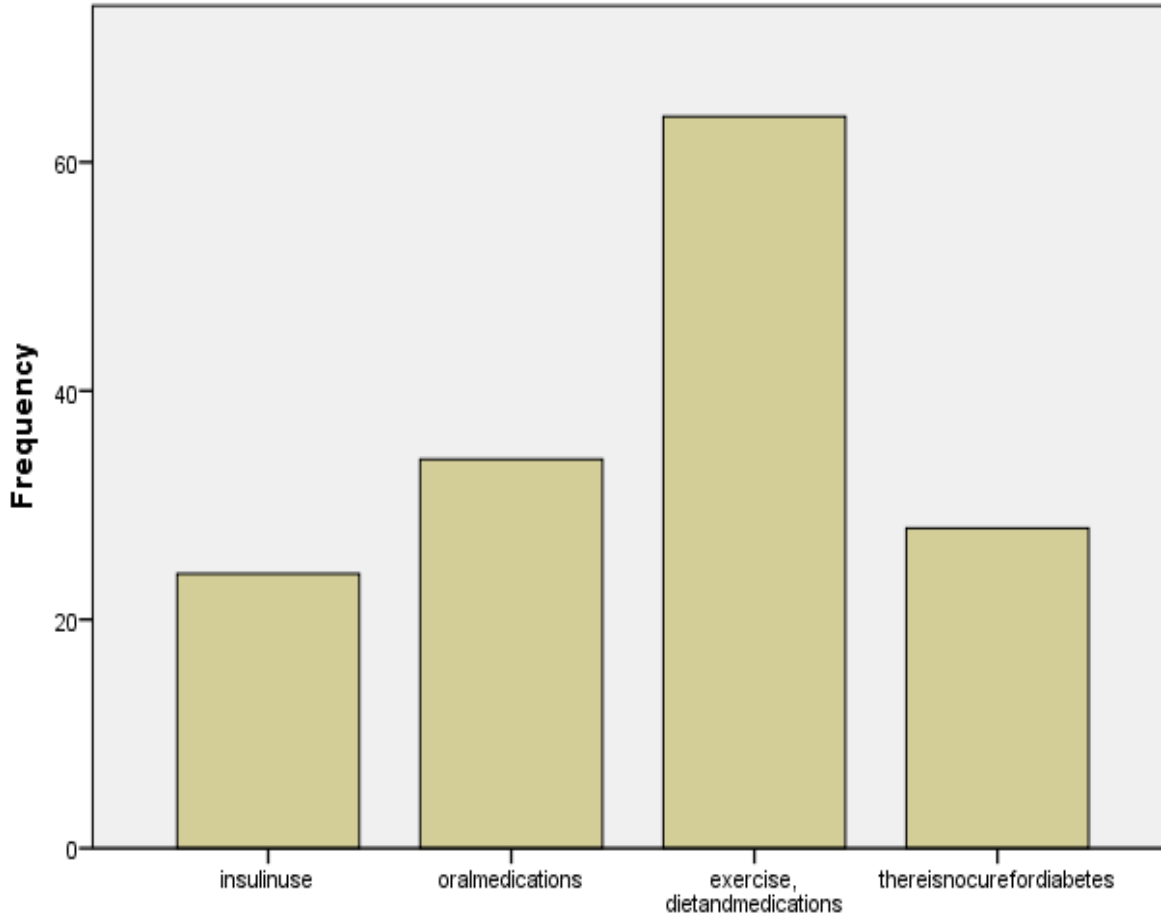
**athletesandleanpeople,obesepeopleandpeoplewithafamilyhistory.**

Data collected from the participants found that 20(13.3%) patients had athletes and lean people, 55(36.7%) had obese people and people with a family history, 44(29.3%) had people who have a lot of physical activity and 31(20.7%) had everyone is equally at risk.

**Q7: What are the principles of diabetes treatment?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Insulin use	24	16.0	16.0	16.0
Oral medications	34	22.7	22.7	38.7
exercise, diet and medications	64	42.7	42.7	81.3
There is no cure for diabetes	28	18.7	18.7	100.0
Total	150	100.0	100.0	

insulinuse,oralmedication,exercise,dietandmedications,thereisnocurefordiabetes



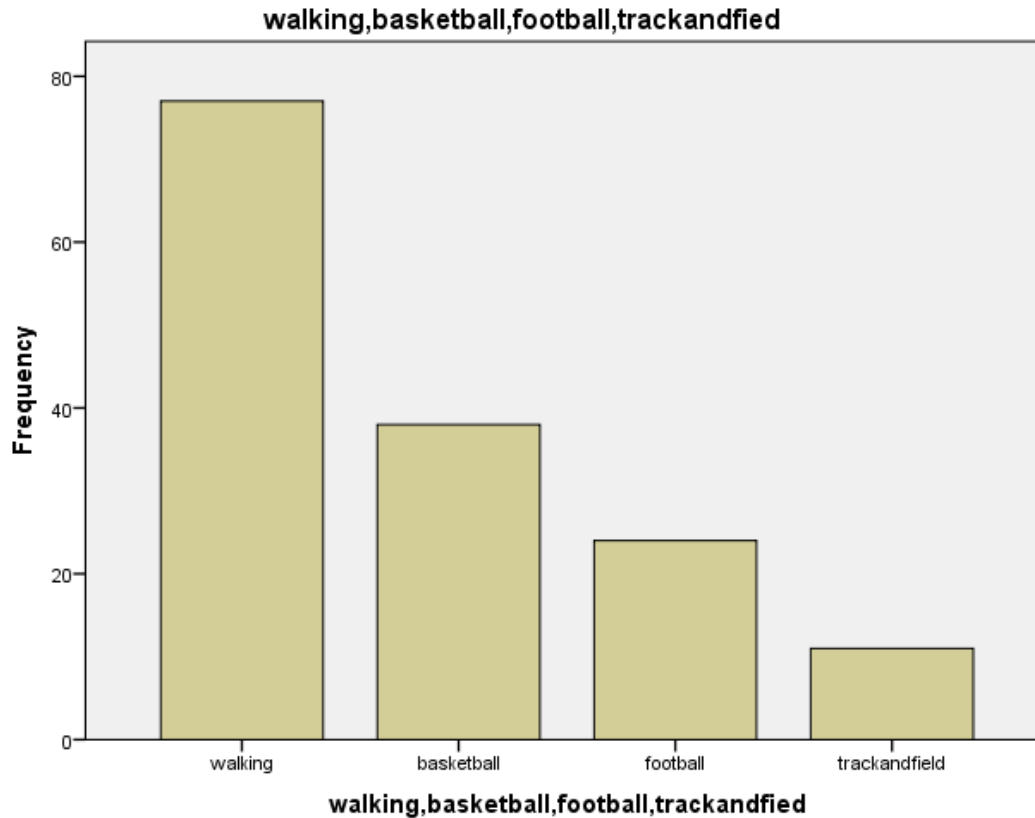
insulinuse,oralmedication,exercise,dietandmedications, thereisnocurefordiabetes

Data collected from the participants found that 24(16%) patients had insulin use, 34(22.7%) oral medications, 64(42.7%) exercise, diet and medications, 28(18.7%) there is no cure for diabetes.

**AWARENESS ABOUT EXERCISE AND PHYSICAL ACTIVITY**

**Q1: What is the best type of physical activity for you?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Walking	77	51.3	51.3	51.3
Basketball	38	25.3	25.3	76.7
Football	24	16.0	16.0	92.7
Track and field	11	7.3	7.3	100.0
Total	150	100.0	100.0	

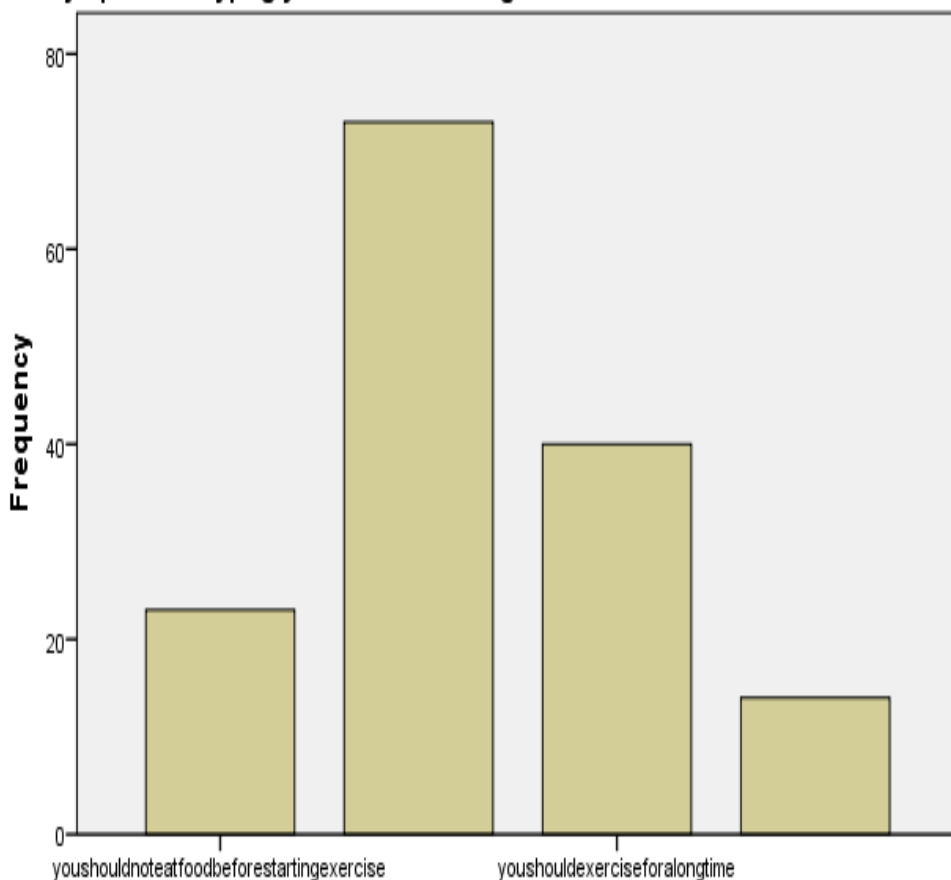


Data collected from the participants found that 77(51.3%) patients had walking, 38(25.3%) basketball, 24(16%) football, 11(7.3%) track and field.

**Q2: What should be observed before starting the exercise?**

	Frequency	Percent	Valid Percent	Cumulative Percent
You should not eat food before starting exercise	23	15.3	15.3	15.3
Eat foods or sugars before exercise	73	48.7	48.7	64.0
You should exercise for a long time	40	26.7	26.7	90.7
If symptoms of hypoglycemia occur during exercise it should not be considered	14	9.3	9.3	100.0
Total	150	100.0	100.0	

you should not eat food before starting exercise, eat foods or sugars before exercise, you should exercise for a long time, if symptoms of hypoglycemia occur during exercise it should not be considered



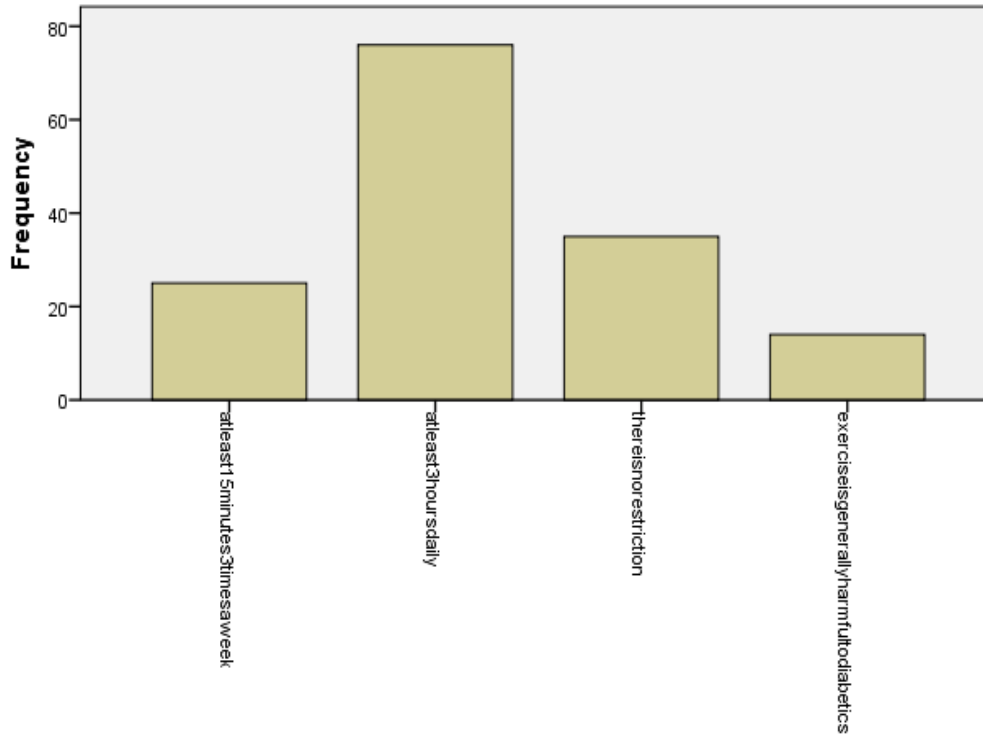
you should not eat food before starting exercise, eat foods or sugars before exercise, you should exercise for a long time, if symptoms of hypoglycemia occur during exercise it should not be considered

Data collected from the participants found that 23(15.3%) patients should not eat food before starting exercise, 73(48.7%) eat foods or sugars before exercise, 40(26.7%) you should exercise for a long time and 14(9.3%) if symptoms of hypoglycemia occur during exercise, it should not be considered.

**Q3: What is the recommended time for exercise in people with diabetes?**

	Frequency	Percent	Valid Percent	Cumulative Percent
At least 15 minutes 3 times a week	25	16.7	16.7	16.7
At least 3 hours daily	76	50.7	50.7	67.3
There is no restriction	35	23.3	23.3	90.7
Exercise is generally harmful to diabetics	14	9.3	9.3	100.0
Total	150	100.0	100.0	

atleast15minutes3timesaweek,atleast3hoursdaily,thereisnorestriction, exerciseisgenerallyharmfultodiabetics



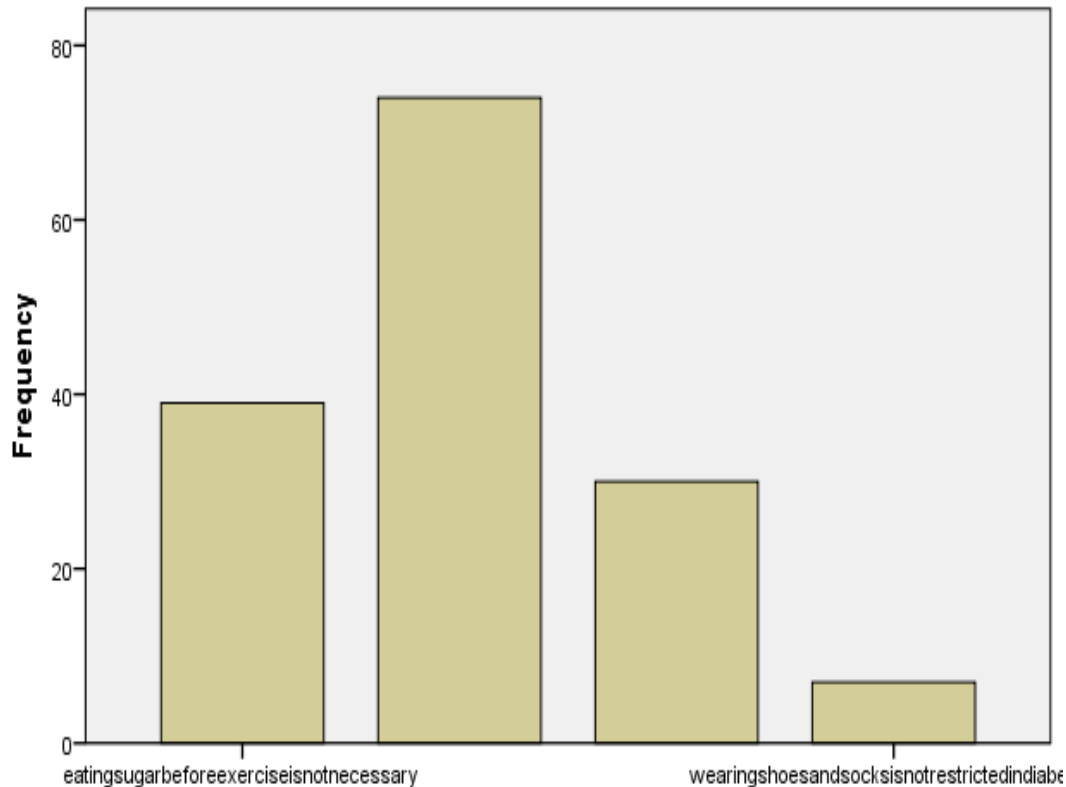
atleast15minutes3timesaweek,atleast3hoursdaily,thereisnorestriction,...

Data collected from the participants found that 25(16.7%) patients at least 15 minutes 3 times a week, 76(50.7%) at least 3 hours - daily, 35(23.3%) there is no restriction and 14(9.3%) exercise is generally harmful to diabetics.

**Q4: Which one of the following is correct?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Eating sugar before exercise is not necessary	39	26.0	26.0	26.0
There is no problem if you exercise the site of insulin injection	74	49.3	49.3	75.3
A complete cardiac evaluation should be performed in people with diabetes who have a history of cardiovascular disease	30	20.0	20.0	95.3
Wearing shoes and socks is not restricted in diabetics	7	4.7	4.7	100.0
Total	150	100.0	100.0	

**eatingsugarbeforeexerciseisnotnecessary,thereisnoprobblemifyouexercisethesiteofinsulininjection,  
acompletecardiacevaluationshouldbepformedinpeoplewithdiabeteswhohaveahistoryofcardiovasculardiseas  
e,wearingshoesandsocksisnotrestrictedindiabetic**



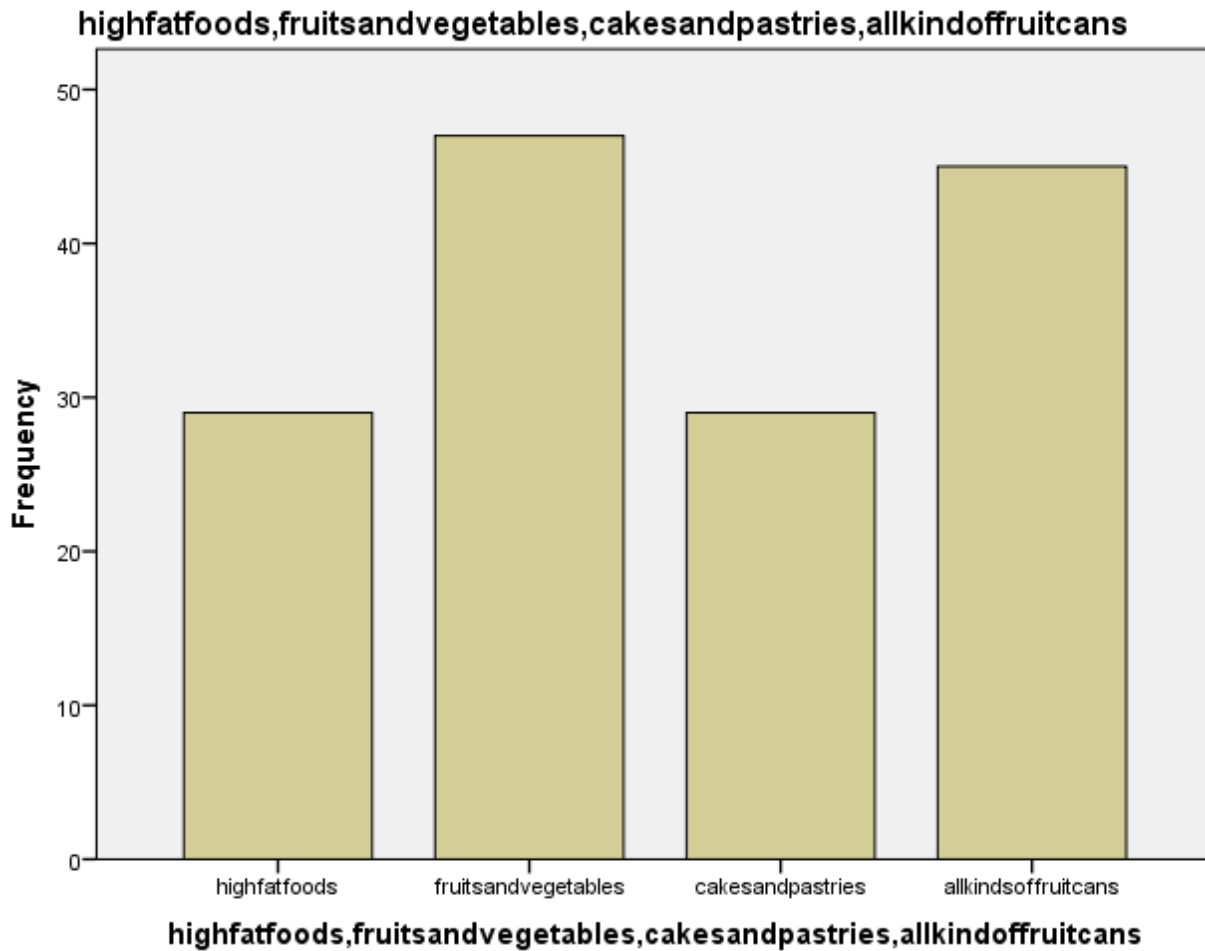
**eatingsugarbeforeexerciseisnotnecessary,  
thereisnoprobblemifyouexercisethesiteofinsulininjection,  
acompletecardiacevaluationshouldbepformedinpeoplewithdiabeteswhohav  
eahistoryofcardiovasculardisease,  
wearingshoesandsocksisnotrestrictedindiabetic**

Data collected from the participants found that 39(26%) patients had eating sugar before exercise is not necessary, 74(49.3%) there is no problem if you exercise the site of insulin injection, 30(20%) had a complete cardiac evaluation should be performed in people with diabetes who have a history of cardiovascular disease and 7(4.7%) wearing shoes and socks is not restricted in diabetics.

## AWARENESS ABOUT DIET

**Q1: Which one of the following foods are helpful to you?**

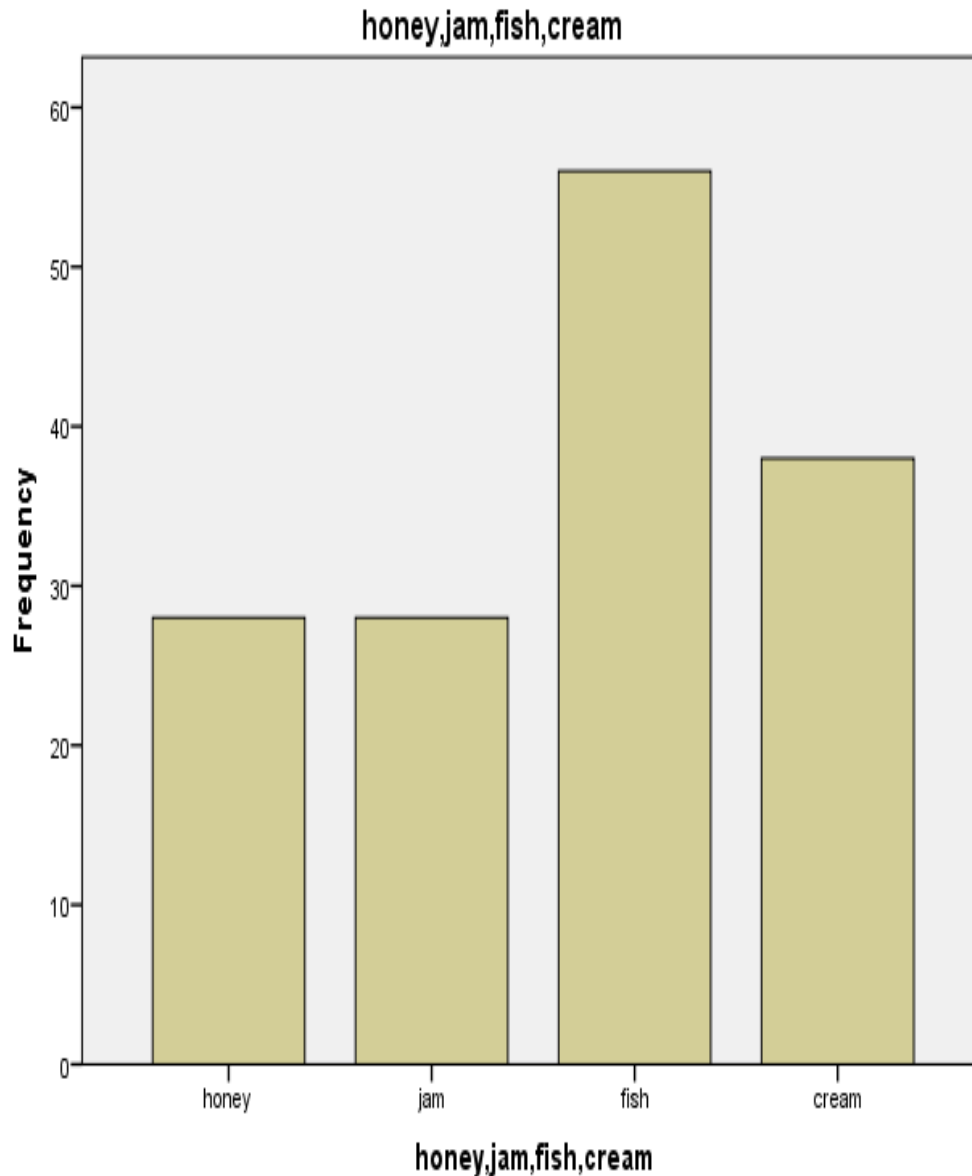
	Frequency	Percent	Valid Percent	Cumulative Percent
High fat foods	29	19.3	19.3	19.3
Fruits and vegetables	47	31.3	31.3	50.7
Cakes and pastries	29	19.3	19.3	70.0
All kinds of fruit cans	45	30.0	30.0	100.0
Total	150	100.0	100.0	



Data collected from the participants found that 29(19.3%) patients had high-fat foods, 47(31.3%) had fruits and vegetables, 29(19.3%) had cakes and pastries and 45(30%) all kinds of fruit cans.

**Q2: Which of the following foods has no restrictions for you and is safe to eat?**

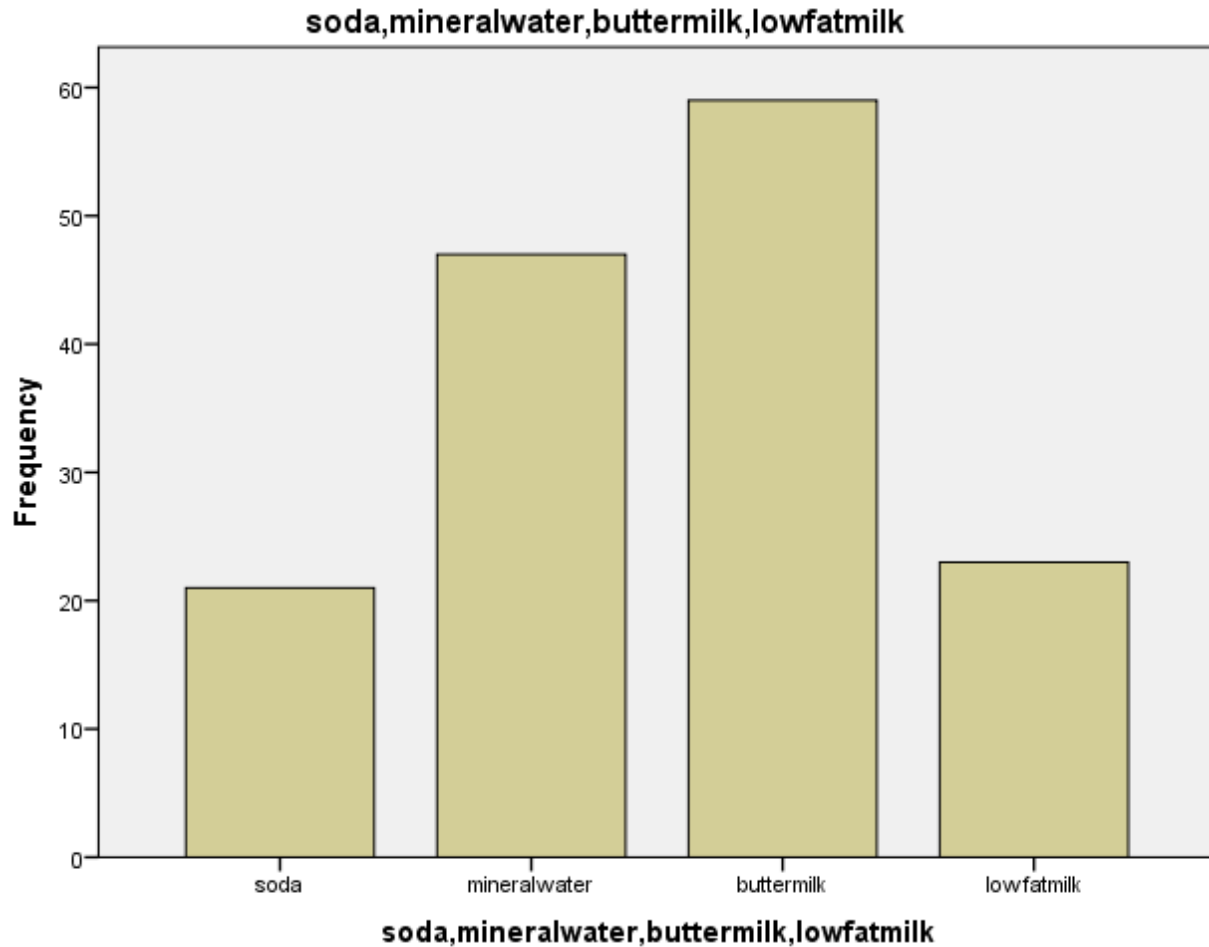
	Frequency	Percent	Valid Percent	Cumulative Percent
Honey	28	18.7	18.7	18.7
Jam	28	18.7	18.7	37.3
Fish	56	37.3	37.3	74.7
Cream	38	25.3	25.3	100.0
Total	150	100.0	100.0	



Data collected from the participants found that 28(18.7%) patients had honey, 28(18.7%) had jam, 56(37.3%) had fish and 38(25.3%) had cream.

**Q3: Which of the following drinks is forbidden to you?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Soda	21	14.0	14.0	14.0
Mineral water	47	31.3	31.3	45.3
Buttermilk	59	39.3	39.3	84.7
Low fat milk	23	15.3	15.3	100.0
Total	150	100.0	100.0	

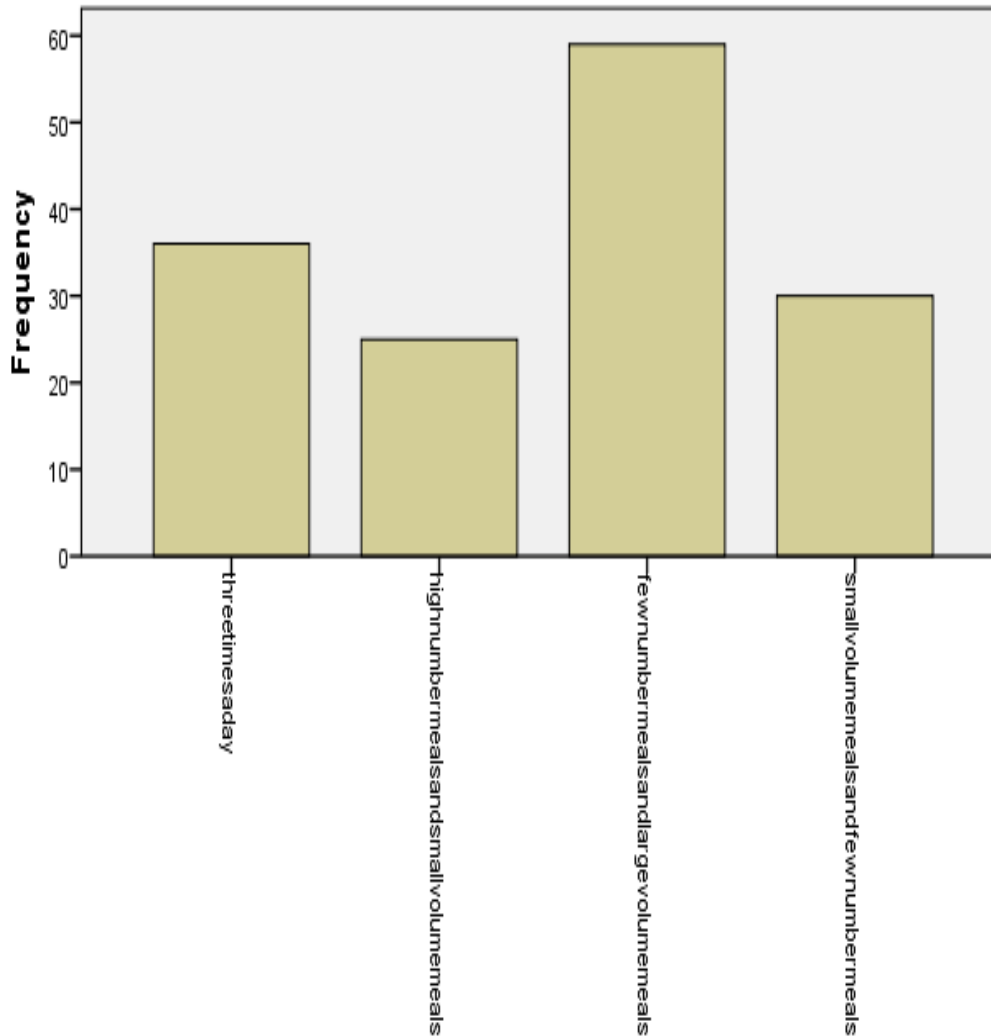


Data collected from the participants found that 21(14%) patients had soda, 47(31.3%) had mineral water, 59(39.3%) had buttermilk and 23(15.3%) had low-fat milk.

**Q4: What should your diet be like?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Three times a day	36	24.0	24.0	24.0
High number meals and small volume meals	25	16.7	16.7	40.7
Few number meals and large volume meals	59	39.3	39.3	80.0
Small volume meals and few number meals	30	20.0	20.0	100.0
Total	150	100.0	100.0	

threetimesaday,highnumbermealsandsmallvolumemeals,  
fewnumbermealsandlargevolumemeals,smallvolumemealsandfewnumbermeals

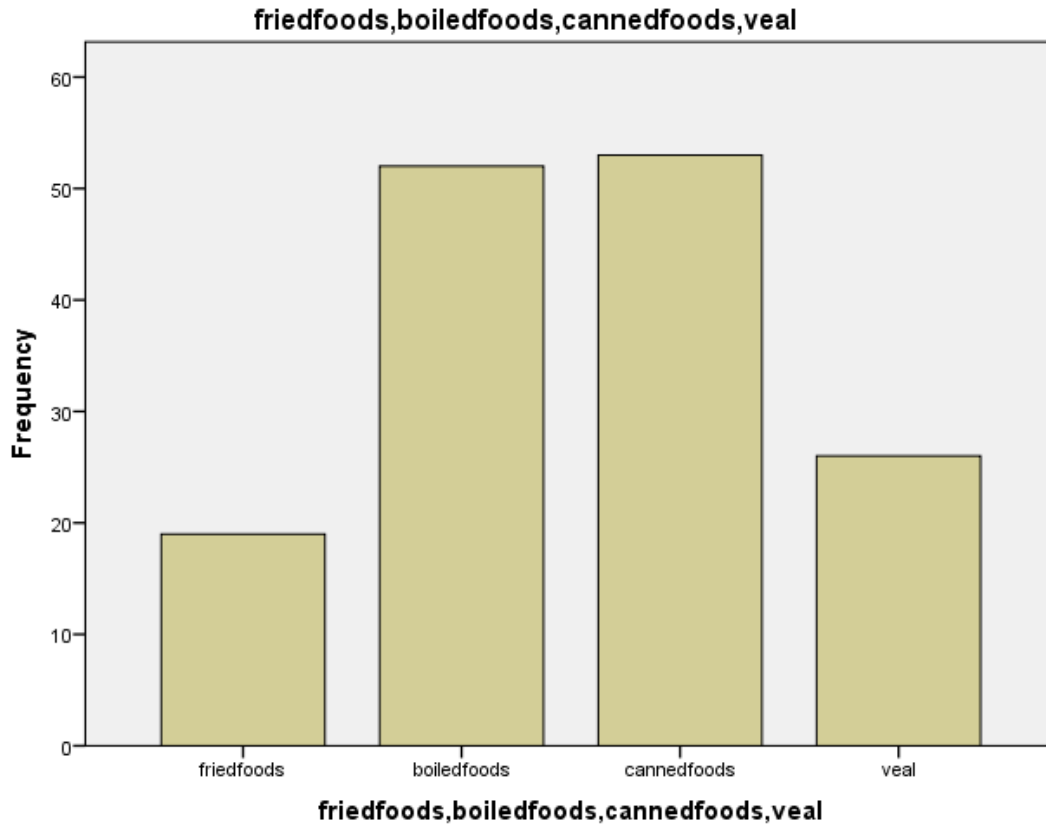


threetimesaday,highnumbermealsandsmallvolumemeals,...

Data collected from the participants found that 36(24%) patients had three times a day, 25(16.7%) had high number meals and small volume meals, 59(39.3%) had few number meals and large volume meals, 30(29%) had small volume meals and few number meals.

**Q5: Which one of the following foods is best for you?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Fried foods	19	12.7	12.7	12.7
Boiled foods	52	34.7	34.7	47.3
Canned foods	53	35.3	35.3	82.7
Veal	26	17.3	17.3	100.0
Total	150	100.0	100.0	



Data collected from the participants found that 19(12.7%) patients had fried foods, 52(34.7%) had boiled foods, 53(35.3%) had canned foods and 26(17.3%) had veal.

**Table 2: Self Care Functions**

Self-Care Functions	Yes%	No%
<b>Self-care function in diet</b>		
1. Do you use white meat (fish and chicken) in cooking?	148 (98.7%)	2 (1.3%)
2. Do You Eat Fruits and Vegetables in Your Diet?	120 (80%)	30 (20%)
3. Do you eat boiled foods in your diet?	76 (50.7%)	74 (49.3%)
4. Do you eat snack between the main meals?	65 (43.3%)	85 (56.7%)
5. Do you use pastries in your diet?	86 (57.3%)	64 (42.7%)
6. Do you use solid oil in cooking?	111 (74%)	39 (26%)
7. Do you season your food at the table with salt?	99 (66%)	51(34%)
<b>Self-care function in exercise and physical activity</b>		
8. Do you have any activity in your schedule?	94 (62.7%)	56 (37.3%)
9. Do you follow the doctors recommendations for activity and rest period?	93 (62%)	57 (38%)
10. Do you eat a little sugary food before exercise?	80 (53.3%)	70 (46.7%)
11. Do you have some candy chocolate or candy while exercising?	82 (54.7%)	68 (45.3%)
12. Do you continue to exercise if you feel weak and restless during exercise?	64 (42.7%)	86 (57.3%)

13. Do you exercise for a long time?	119 (79.3%)	31 (20.7%)
<b>Self-care function in control of early complications</b>		
14. Have you ever had hypoglycemic symptoms before such as headaches, chills, sweating, paleness, etc.?	96 (64%)	54 (36%)
15. Have you experienced symptoms of hypoglycemia during exercise?	102 (68)	48 (32)
16. Do you eat your meals regularly?	92 (61.3%)	58 (38.7%)
17. Do you eat a glass of sweetened beverage or a few cups of sugar when you have symptoms of low blood sugar	113 (75.3%)	37 (24.7%)
18. Have you experienced symptoms of high blood sugar (increased thirst, increased urine, increased hunger, etc.)?	101 (67.3%)	49 (32.7%)
<b>Self-care function in control of early complications</b>		
19. Do you take your medications on time?	98 (65.3%)	52 (34.7%)
20. Do you follow a diet?	80 (53.3%)	70 (46.7%)
21. How many exercises do you have during the week?	84 (56%)	66 (44%)
22. Do you control your blood pressure?	98 (65.3)	52 (34.7)
23. When do you check your skin and legs?	80 (53.3)	70 (46.7)
<b>Self-care function in foot care</b>		
24. Do you wash your feet with soapy warm water?	60 (40%)	90 (60%)
25. After working out, do you look for blisters or redness on your legs?	64 (42.7%)	86 (57.3%)
26. Do you control the temperature of the water by hand or thermometer before washing?	54 (36%)	96 (64%)
27. Do you dry between your fingers with a clean and soft towel?	53 (35.3%)	97 (64.7%)
28. Do you apply greasy creams to your feet after drying them completely?	51 (34%)	99 (66%)

### (Ghobadi et al., 2020c)

The data collected from the 150 participants found that patients had Diet: 98.7% consume white meat, 80% fruits and vegetables, 50.7% boiled foods, 43.3% snack between meals, and 57.3% eat pastries. - Exercise: 62.7% engage in physical activity, 53.3% consume sugary foods prior to exercise, and 42.7% continue to exercise despite feeling weak. - Early complication control: 64% reported hypoglycemia symptoms, 67.3% reported high blood sugar symptoms, and 75.3% drank sweetened beverages to treat low blood sugar. - Medication and treatment: 65.3% take their pills on time, 53.3% eat properly, and 65.3% keep their blood pressure under control. - Foot care: 40% wash their feet with warm water, 42.7% check for blisters after working out, and 36% adjust the water temperature before washing (table 2).

### DISCUSSION

This study was conducted at Arif Memorial Teaching Hospital, where the age of patients ranged from 18 to 68+. The ratio of diabetic foot ulcers was higher in females. We examined the differences between married, unmarried, and divorced individuals in this study. It revealed that people have awareness about diabetes but lack knowledge on how to prevent and manage foot ulcers. The female ratio was higher in this study. From

previous research, we can infer that very little research has been done on this topic. According to our study results, there is a lack of education among people. As shown in this study, there is a lack of awareness among people regarding prevention and management. In 2020, a study was conducted at the University of Medical Sciences in Kermanshah, Iran, with 109 participants, of which 57.4% were female. The average score of awareness in this study was 6.99 and the functional score was 62.22. According to these findings, due to lack of knowledge, people were unaware of how to prevent or manage diabetic foot ulcers, resulting in a higher ratio. (Ghobadi et al., 2020c)

A study was conducted in Guilan Province in Northern Iran, involving 375 participants. It was a cross-sectional study where researchers collected demographic data through face-to-face interviews. The majority of participants demonstrated low understanding, as indicated by the mean score of 8.3 out of 15. This suggests that due to lack of knowledge, they were unaware of how to prevent foot ulcers (Pourkazemi et al., 2020b).

## **STRENGTHS OF THE STUDY**

A few of the study's merits include that it included participants from both urban and rural areas, which improved the study's generalizability, and it had a pretty big sample size (150 patients). Furthermore, the 100% consent rate from participants shows a high level of participation and engagement with the research process.

## **LIMITATIONS OF THE STUDY**

Data collected from a specific population choose a simple study design and there are several restrictions on this study. The current study's sample size is tiny. Descriptive cross-sectional studies are great for capturing a snapshot of a population at a specific point in time. They're efficient when time is limited.

## **RECOMMENDATIONS**

In the future study, we should expand the sample size because it is now too small. Since we only gathered information from hospitals the next time. This research indicates that there is a lack of awareness about diabetic foot ulcers among patients. Awareness can be increased through seminars, public counseling, or teaching. We conducted this study at a Tertiary Care Hospital, and it suggests that if similar setups are implemented, about prevention and management of diabetic foot ulcers can be improved.

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