

Prevalence and Factors Associated with Non-Adherence to Diet Recommendations among Type 2 Diabetic Patients Presenting at Fort-Portal Regional Referral Hospital

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ABSTRACT

Diabetes Mellitus is a chronic condition that arises when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin produced. This study aimed to assess the prevalence and factors associated with non-adherence to diet recommendations among type 2 diabetic patients at Fort Portal Regional Referral Hospital. A cross-sectional study embracing both analytical and descriptive data was conducted whereby both qualitative and quantitative data were acquired using participant self-administered questionnaires and investigator-administered questionnaires using the convenience sampling technique. A total of 191 participants were studied, with a response rate of 78.0%; the results were based on the 149 respondents. Results were depicted in 95% Confidence Intervals, Odd Ratios, and P-values; all calculated using Binary Logistic Regression with Pearson's correlation in the Statistical Package for Social Sciences Version 26. Graphical representation was done by Microsoft Excel Software. Results based on the 149 respondents showed that about 76(51.1%) of the respondents were female and 73(48.9%) were male. The mean age of the study population was 38 years (with a standard deviation of 9.62 years). The prevalence of non-adherence to diet recommendations among type 2 diabetic patients at Fort-Portal Regional referral hospital was 14.8%. This prevalence was shown to be significantly associated with several factors; computed using Pearson's correlation of which the female gender being significant a value of 0.947*(P=0.021); increasing age being significant with a value of 0.286* (P=0.002); negligence being significant at P=0.027* with a 2 tailed test at 95% confidence level, P<0.05. The prevalence of non-adherence to diet recommendations among type 2 diabetic patients at Fort Portal Regional Referral Hospital was 14.8%. This infers that there was quite a high percentage of diabetic people who do not adhere to dietary recommendations and advice given to them by doctors. Socio-demographic factors such as gender, age, and relation to members of the family with diabetes type 2 are significantly associated with non-adherence to dietary recommendations.

Keywords: Diabetes Mellitus, Insulin, Pancreas, Diet, Female.

INTRODUCTION

Dietary management is considered to be one of the cornerstones of diabetes care. Improvement of dietary practice alone can reduce glycosylated hemoglobin (HbA1c) with the greatest impact at the initial stages of diabetes [1, 2]. Diabetes Mellitus (DM) is a chronic condition that arises when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin produced [3-7]. Insulin is a hormone made by the pancreas that helps "sugar" (glucose) to leave the blood and enter the cells of the body to be used as "fuel". When a person has diabetes, either their pancreas does not produce the insulin they need (Type 1 diabetes) or their body cannot make effective use of the insulin they produce (Type 2 diabetes). DM has emerged as one of the most

challenging public health problems worldwide and its prevalence is likely to double by 2030 [8-10]. The greatest burden of this condition is felt in low and middle-income countries, and these nations account for about 80% of all cases of diabetes [11-13]. Estimates indicate that Sub-Saharan Africa accounts for approximately 7 million people with diabetes [14]. Estimates for the region for 2025 are likely to double and reach 15 million [15]. In Uganda for instance the World Health Organization (WHO) estimates that the prevalence of diabetes is at 2.8% and predicts a rise to 4.5% by 2025 [15]. The Uganda diabetes association reports a higher prevalence (7.4%) in rural Eastern Uganda and partly links this to changes in lifestyle dynamics [16]. Type 2 diabetes

mellitus is a diet-dependent disease requiring multidirectional and multidisciplinary management. Global epidemiology data suggest that the incidence of diabetes is increasing, and the disease affects younger and younger individuals. Therefore, an attempt to develop efficient prevention and treatment of the disease is one of the most vital actions to be taken in this area [17, 18]. Nutritional interventions have proven effective in the treatment outcomes of diseases including improving pregnancy outcomes [19-23]. Healthy diet and physical activity improve and maintains glycemic levels of people diagnosed with type 2 diabetes mellitus [1]. This helps prevent and delay the development of complications by about 40% to 60% over 3 to 4 years [24]. However, rates of non-adherence to diet plan and exercise recommendations have been reported at 75% and 81% respectively in type 2 diabetes patients [25]. Non-adherence to lifestyle recommendations occurs when a patient deviates below the acceptable level of

adherence from mutually agreed collaborative approach to lifestyle changes [26]. Reasons reported for not adhering to diet and exercise range from lack of communication/information to lack of exercise partner and lack of time [27]. Persistent suboptimal glycemic control is invariably associated with onset and progression of acute and chronic diabetic complications in diabetic patients. In Uganda, studies documenting the magnitude and predictors of suboptimal glycemic control in adults underpin lifestyle modification as one of the predictors [24]. In Fort-Portal district, no study has been done on rates and factors associated with non-adherence to lifestyle modification recommendations among type 2 diabetic patients. This study investigated prevalence and factors associated with non-adherence to diet and exercise lifestyle recommendations among type 2 diabetic patients presenting at Fort-Portal Regional Referral Hospital.

METHODOLOGY

Study design

The research was a descriptive cross-sectional study design in which a questionnaire was administered to participants to determine the factors associated with non-adherence to diet and recommendations among type 2 diabetic patients at Fort Portal Regional Referral Hospital.

Area of Study

Fort-Portal district is located 80km from Kampala (capital city) in the eastern part of Uganda with an estimated population of 514,300 people.

Study population

All consented adults (30 years and above) diagnosed with type 2 diabetes mellitus attending diabetes clinic at Fort-Portal Regional Referral Hospital.

Inclusion Criteria

Type 2 diabetes mellitus patients diagnosed for at least six months and attending Fort-Portal regional referral hospital diabetes Clinic.

Exclusion Criteria

Newly diagnosed type 2 diabetes patients (less than 6 months).

Sample size determination

A sample size of 191 participants was determined using Krejcie & Morgan Sample Size Formula for Finite Population:

$$s = \frac{X^2 NP (1-P)}{d^2(N-1) + X^2 P (1-P)}$$

Where:

s = required sample size.

X = the z value on the table value of chi for 1 degree of freedom at the desired confidence level (1.96 for a 95% confidence level).

N = the population size (approx. 378 patients in a month).

P = the population proportion (assumed to be 0.5 since this would provide the maximum sample size).

d = the error margin (0.05)

Sampling techniques

The study engaged the technique of simple random sampling by convenience where the available participants at the time of study were given questionnaires to answer or interviewed by the research assistants.

Data collection methods and management

A structured, pre-tested questionnaire was used to collect data. The questionnaire comprised closed-ended and multiple-choice questions. The principal investigator and research assistant read out the questions to the participants and then documented the findings. Participants' responses were reviewed and verified on completion.

Data quality control

The inclusion of patients diagnosed at least six months before the study and on clinical care meant that recruited participants had a relative understanding of adhering to diet modification recommendations. The questionnaires to be used were pretested to remove questions with ambiguous answers. Each questionnaire was coded to avoid analyzing the questionnaire more than once.

Data Analysis Procedures

Quantitative data was coded and entered into a statistical package for social scientists (SPSS version 26.0). Exploration and analysis of data was done by SPSS; Graphical Analysis was done by MS. Excel.

Ethical consideration

The faculty of clinical medicine and dentistry approved the proposal, a letter of introduction was acquired to be presented to authorities of the proposed hospital for study. Written consent was

sought from the hospital where the study was conducted for backup. All respondents signed a consent form.

RESULTS

Social-Demographic Characteristics of the Study Population

A total of 191 participants was studied, with a response rate 78.0%. Table 1 below shows the distribution of the study population by demographic characteristics. The results based on the 149

respondents showed that about 76(51.1%) of the respondents were female and 73(48.9%) were male. The mean age of study population was 38 years (with a standard deviation of 9.62 years).

Table 1: Social-Demographic Characteristics of the Study Population

Characteristics	Frequency	Percentage (%)	95% Confidence Interval	
			Lower	Upper
Sex				
Male	73	48.9	43.8	54.4
Female	76	51.1	45.9	57.6
Age				
30-39	32	21.4	19.5	27.2
40-49	57	38.3	33.1	43.8
50>	60	40.3	35.3	45.8

Prevalence of Non-Adherence to Diet Recommendations

The results depict that non-adherence to diet is more in participants aged 50 and above 9(40.9%) of the total (22) number of participants who do not adhere to diet

recommendations. Figure 1 below shows the prevalence of non-adherence to diet recommendations as reported by the study participants.

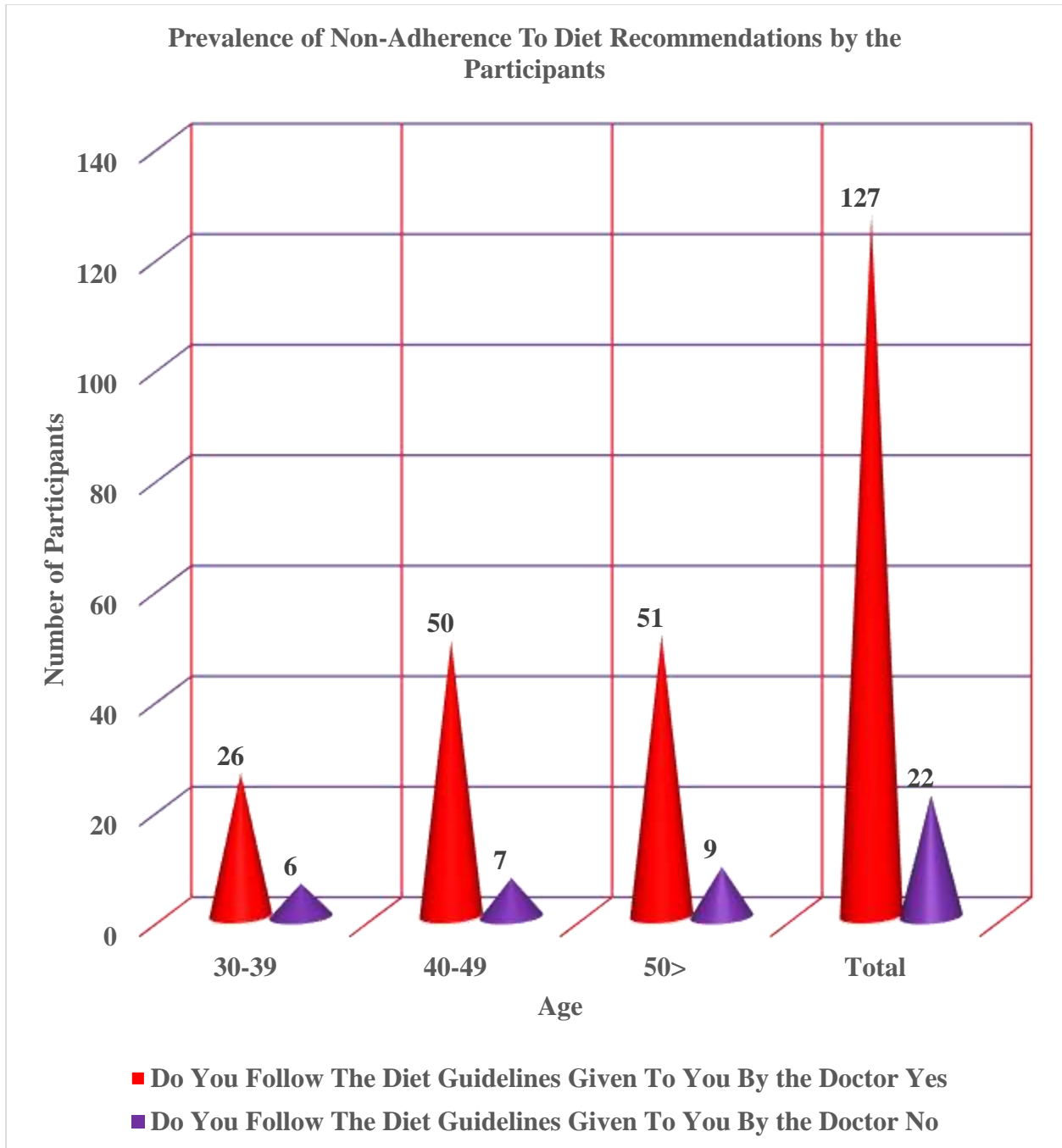


Figure 1: Prevalence of Non-Adherence to Diet Recommendations among the Participants

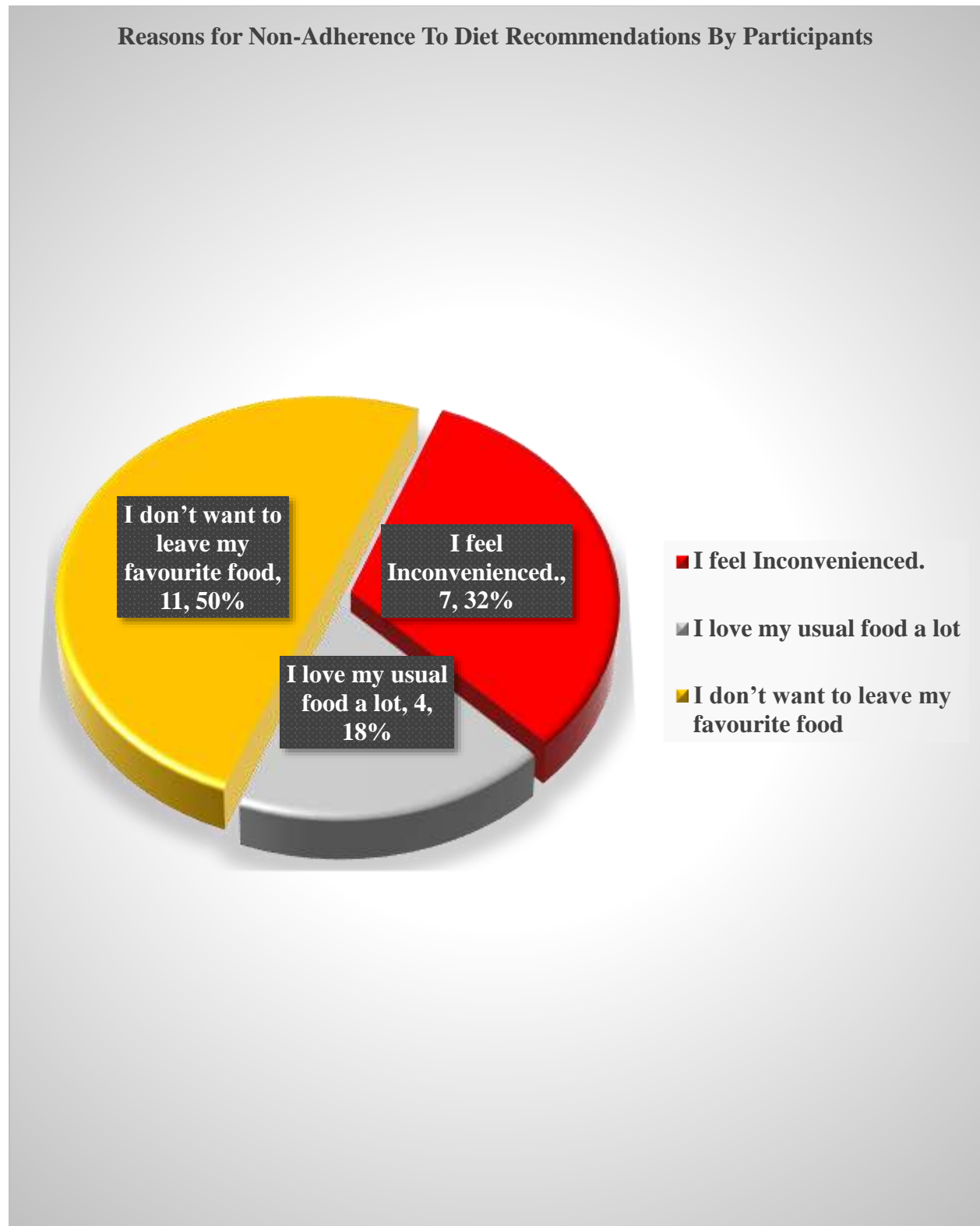


Figure 2: Reasons for Non-Adherence to Diet Recommendations among The Participants.

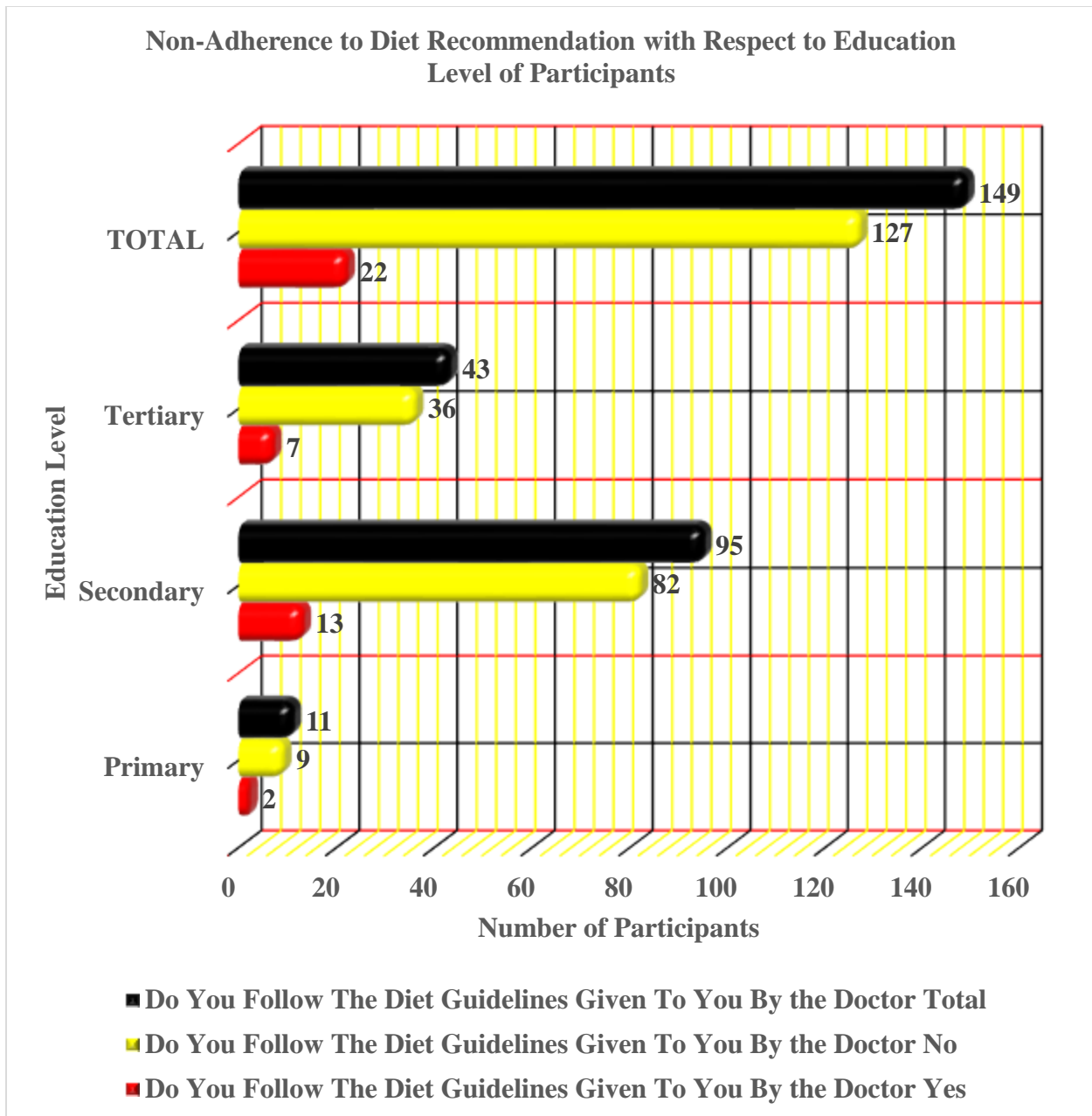


Figure 3: Prevalence of Non-Adherence to Diet Recommendations among the Participants concerning Education Level.

Figure 3 above shows the prevalence of non-adherence to diet recommendations among the participants concerning education level depicting further that the most prevalence is in participants of secondary school level accounting for 13(59.1%) of

the total 22 participants who do not adhere to dietary recommendations. Relation should be drawn to Figure 4 which shows the relationship between dietary recommendation non-adherence and occupation.

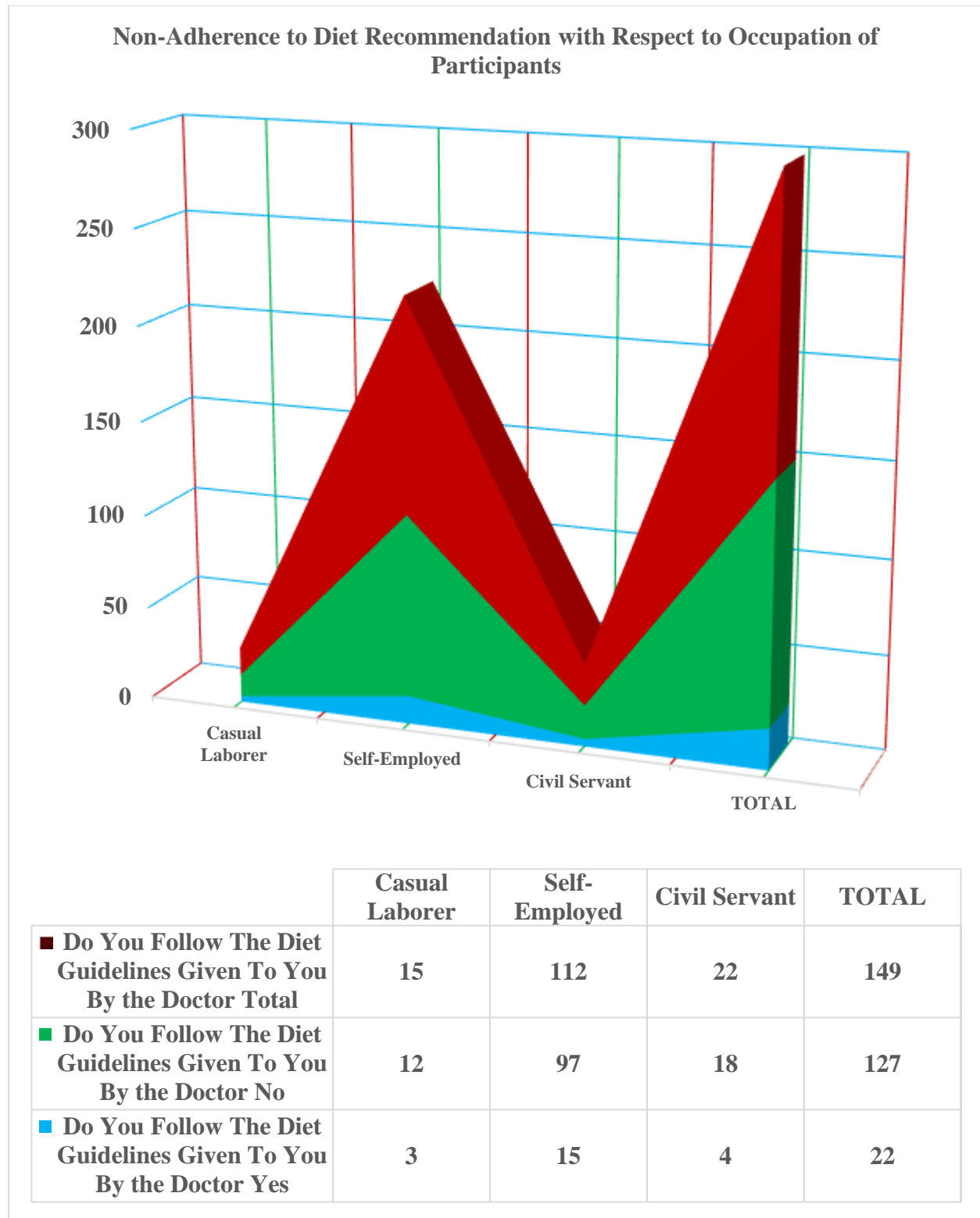


Figure 4: Prevalence of Non-Adherence to Diet Recommendations Among The Participants concerning Occupation.

Multi-Variate Analysis

Table 2: Factors associated with non-adherence to diet recommendations among the study participants

Predictors	Do You Follow the Diet Guidelines Given to You By the Doctor?		AOR	95% Confidence Interval		P-Value
	Yes	No		Lower	Upper	
Education Level						
Primary	2	9	1.000			0.257
Secondary	13	82	1.333	0.532	3.342	0.539
Tertiary	7	36	0.511	0.226	1.157	0.107
Occupation						
Casual Laborer	3	12	1.000			0.830
Self-Employed	15	97	0.929	0.500	1.729	0.817
Civil Servant	4	18	0.772	0.331	1.799	0.549
Age						
30-39	26	6	1.000			0.545
40-49	50	7	0.627	0.256	2.624	0.737
50>	51	9	0.286	0.210	1.866	0.002
Sex						
Male	8	65	1.000			
Female	14	62	0.947	0.566	1.586	0.021
If No, Why?						
I feel Inconvenienced.		7	1.000			0.796
I love my usual food a lot		4	3.250	1.141	9.262	0.027
I don't want to leave my favorite food		11				

DISCUSSION

Prevalence of Non-Adherence to Diet Recommendations

This study was a cross-sectional study which focused on the determination of the prevalence and factors associated with non-adherence to diet recommendations among type 2 diabetic patients at Fort Portal Regional Referral Hospital. The study showed that the overall prevalence of non-adherence to diet recommendations among type 2 diabetic patients at Fort-Portal Regional referral hospital was 14.8% at the instant of data collection based on the responses given by participants. This prevalence was shown to be significantly associated with several factors including the female gender, increasing age, limited knowledge about diabetes mellitus and negligence. The significance of these variables was computed using Pearson's correlation which the female gender being significant a value of 0.947*(P=0.021); increasing age being significant with a value of 0.286* (P=0.002); negligence being significant at P=0.027* with a 2 tailed test at 95% confidence level, P<0.05. The prevalence of non-adherence to dietary recommendations is high since management of the disorder of diabetes mellitus creates a great physical, psychological and

socioeconomic burden on the individual, family and the society, priority should be given on the preventive aspects of disorders with diet and lifestyle modifications. However, results for dietary advice and physical activity compliance assessment have been found by different researchers in different countries. Non-adherence to dietary advice was higher in the current study than those in Mexican Americans (25.2%), Ohio (33.4%), Iran (37%), Oregon (50%), Calgary (55%), Kuwait (63.5%), Saudi Arabia (67.9%), Texas (67.9%), Alexandria (68%) and Hungary (78.3%) and lower than study done in Egypt which was found to be 94.3%. Comparing the current finding with the South East Asian data, non-adherence to dietary advice was seen on 45.7% [28]. Regarding gender, non-adherence to dietary advice of females is higher than males respectively which is statistically significant (p = 0.001). In contradiction to the present study, a study done in Nigeria showed male diabetic patients seemed to have greater tendencies to forget dietary regimens than their female counterparts. However, the result is different from the study done in Egypt, which showed that there was minimal gender difference with no statistical differences in adherence to different aspects of the diabetic regimen

[28]. The present study shows significant age differences in the adherence to dietary advice. With increasing age, the degree of compliance decreases for several reasons, most of the elderly have memory

problems and decreased cognitive function. Similar result was reported by another study where adherence level decreases with increasing age.

CONCLUSION

The study aimed at assessing the prevalence and factors associated with non-adherence to diet recommendations among type 2 diabetic patients at Fort-Portal regional referral hospital. The prevalence of non-adherence to diet recommendations among type 2 diabetic patients at Fort-Portal regional referral hospital was 14.8%. This infers that there is quite a high percentage of diabetic people who do not adhere to dietary recommendations and advice given to them by doctors. Socio-demographic factors such gender, age, relation to member of family with diabetes type 2, and occupation were significantly associated with non-adherence to dietary recommendations.

Recommendations

Ministry of health in Uganda in conjunction with other stakeholders, should increase awareness by

creating awareness campaigns about the dangers of non-adherence to dietary recommendations. Intensive health education and awareness campaigns on the importance of diabetic diet and diabetes prevention diet to patients should be done to equip them with tactical knowledge thus this will reduce the burden of diabetes and non-adherence to diet recommendations by the diabetic patients. More effort must be applied on spreading awareness about proper health service seeking by the diabetic patients to seek specialized healthcare from properly equipped health facilities with trained health workers on diabetes management. All people should be educated about the dangers of diabetes and its prevention.

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