

# Populations knowledge of diabetes and the role of nutritional therapy in controlling the disease in Basrah city: A cross-sectional study of assessment

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## Abstract

**Introduction:** Diabetes mellitus is a clinical syndrome of disturbed metabolism of carbohydrates, protein, and fat that are associated with hyperglycemia due to absolute or relative insulin deficiency. Worldwide, the incidence of diabetes has been increased. By the year 2030, over 347 million persons have diabetes. Nutrition therapy is an essential intervention of diabetes management. The prior concepts of diabetes management are to decrease microvascular and macrovascular disease risks complications, thereby decreasing mortality, and to improve quality of life. These goals can achieve by giving each patient knowledge and support, which consider the principal role of the health-care team. Our study was achieved to study the demographic aspects of diabetic patient's attitude and their knowledge of the role of nutritional therapy as new era in the management of diabetes. **Materials and Methods:** All the screened populations were included in the study after getting their verbal consent. The questionnaire had 12 questions. Personal parameters of participants such as age, gender and family History of diabetes, response to knowledge and questionnaire attitudes. The questionnaires were distributed by the researchers to the participants and collected after completion. Uneducated participants were assisted by verbal interviews based on the questions in the questionnaire and the appropriate responses were recorded. **Results:** We studied 89 patients, of which 42.7% were male and 57.3% were female with a mean age of 45 years. About 25% of patients has positive family history; majority of participants (63%) does not know what diabetes is? About 63% of people believed that nowadays is more and more people are affected by diabetes. About 24% of patients knew that diabetes could be prevented by both diet and exercise. About 67% of patients believed that medication is more important than diet. **Conclusions:** The study reveals very less number of patients received patient education and counseling regarding disease, medication, and lifestyle modification for diabetic patients can greatly affect patient's outcomes. The study shows the need for educational and counseling programs aimed to improve the knowledge of diabetes.

**Key words:** Diabetes, patient counseling, quality of life, questionnaire

## INTRODUCTION

Diabetes mellitus is a clinical syndrome of disturbed metabolism of carbohydrates, protein, and fat that are associated with hyperglycemia due to absolute or relative insulin deficiency.<sup>[1]</sup> Deficiency of insulin secretions results in a significant disturbance of water and electrolyte homeostasis caused by improper metabolism of carbohydrate, protein, and fat,<sup>[1]</sup> Worldwide, the incidence of diabetes has been increased. By the year 2030, over 347 million persons have diabetes.<sup>[2]</sup> In 2009, 2.4 million people had diabetes and the number is

expected to increase by the year 2019 to reach 3.7 million in Canada.<sup>[3]</sup> This may reflect the economic burden of diabetes in Canada, which expected to increase from \$6.3 billion in 2000 to reach \$16.9 billion by the year 2020.<sup>[4]</sup> Nutrition therapy is an essential intervention of diabetes management.

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It is so obviously in the recent studies that improving dietary intake can reduce glycated hemoglobin ( $Hb_{A1C}$ ),<sup>[5,6]</sup> mediate weight loss, and finally improve clinical outcomes.<sup>[6,7]</sup>

Diabetes has considerable impact on each individual patient life because it is a chronic incurable syndrome. For the successful care of diabetic patients, patient should consider a crucial part of management process and its involvement is a paramount for that purpose.<sup>[8,9]</sup> The prior concepts of diabetes management are to decrease microvascular and macrovascular disease risk complications, thereby reducing mortality and improving quality of life. These goals can achieve by giving each patient knowledge and support, which consider the principal role of the health-care team.<sup>[10,11]</sup> Lack of patients understanding characteristics such as attitude and personality of the patient cause unreliable guidance about the disease.<sup>[12]</sup> For example, in Nepal, the public knowledge and awareness process about DM is improper due to poor medical services.<sup>[13]</sup> The level of diabetic patient knowledge has been improved by achieving several interventions.<sup>[14]</sup>

The first step in establishing a program for prevention of diabetes is obtaining information about diabetic patient level of awareness in a population.<sup>[15,16]</sup> Different studies showed that the diabetic patient outcomes and quality of life management could be improved by intensive diabetes education.<sup>[17]</sup> Our study was achieved to study the demographic aspects of diabetic patient's attitude and their knowledge of the role of nutritional therapy as new era in the management of diabetes. Many studies have showed that proper glycemic control can reduce the complications of diabetes.<sup>[18]</sup> The good control is achieved by increasing the patient's adherence to medications, frequent monitoring of blood glucose, lifestyle modifications, etc. This can be proceeding by enhancing patient education and counseling.<sup>[18]</sup>

One of the most essential parts of the treatment and self-management of diabetic patients is nutrition therapy and counseling. As we said earlier, the nutrition therapy goals are to improve quality of life and nutritional and physiological health; and to treat and prevent acute- and long-term complications of diabetes.<sup>[19]</sup> It is well documented that nutrition therapy can enhance glycemic control by reducing  $Hb_{A1C}$  by 1.0%–2.0%<sup>[6,20]</sup> and it can further improve clinical and metabolic outcomes when used with other components of diabetes care<sup>[5,7,21,22]</sup> resulting in decreased rates of hospitalization.<sup>[23]</sup>

Nutrition therapy and self-management education should incorporate.<sup>[24]</sup> Counseling delivered in either a small group and/or an individual setting.<sup>[25,26]</sup> This step has provided benefits for those with, or at risk for, diabetes.<sup>[22]</sup> Individual education and counseling will be preferred for people with low socioeconomic status.<sup>[23]</sup> For establishing good adherence to any dietary approach, nutrition therapy and meal planning should be individualized to meet the individual's values and preferences, which take in consideration age, culture, duration and type of diabetes, nutritional requirements, lifestyle, concurrent medical therapies, economic status,<sup>[27]</sup> activity level, and food

intolerances.<sup>[28]</sup> This individualized approach accommodates with that of other clinical practices.<sup>[29,30]</sup> Many studies have designed a questionnaire to figure out the adherence to disease-relevant guidelines<sup>[31,32]</sup> or specific diets.<sup>[33,34]</sup>

The present study aimed to investigate the effect of increasing individual's knowledge and counseling on the diabetic patient's outcomes and their adherence to lifestyle modification such as diet restriction using questionnaire.

## MATERIALS AND METHODS

This study was carried out from March 20 to July 3, 2018, in Basra city. All the screened populations were included in the study after getting their verbal consent. The questionnaire had 12 questions. Participant profile parameters such as age and gender, family history of diabetes, response to knowledge and attitude questionnaire. The data were analyzed using Microsoft Excel spreadsheet.

### Statistical Analysis

The questionnaires were distributed by the researchers to the participants and collected after completion. Uneducated participants were assisted by verbal interviews based on the questions in the questionnaire and the appropriate responses

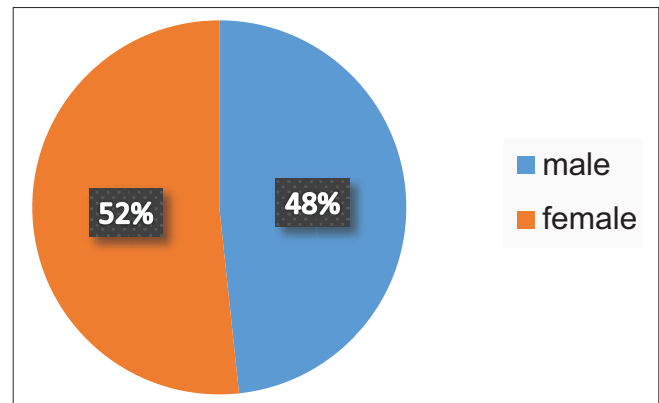


Figure 1: Gender distribution of population studied

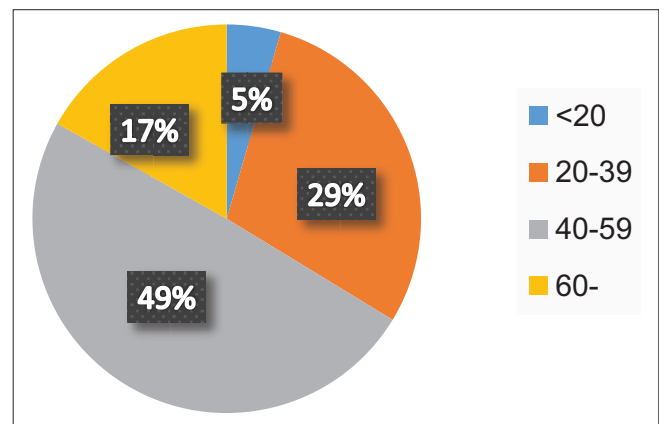


Figure 2: Age distribution of population studied

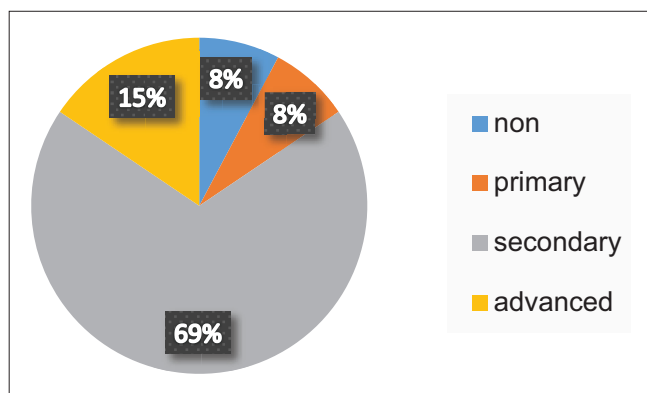
were recorded. The information was recorded and analyzed using the Microsoft Excel worksheet (Microsoft Office 2010).

## RESULTS

The total number of participant was 89 individuals, 48% were male and 52% of females [Figure 1]. The demographic data such as gender, age, and education were recorded. The mean age of the study population was 45. Among 89 patients, 25% were diabetic patients and 75% were non-diabetic patients.

**Table 1:** Retrieve questions about patient responses to knowledge

Questions	Responses	
	Yes	No
1 Do you know about diabetes?	37	37
2 Do you know diabetes is affecting more and more people now day?	96	96
3 Do you think some factors can contribute diabetes such as family history?	89	89
4 Can diabetes be transmitted among population?	4	4
5 Do you know diabetes can cause complications?	57	57
6 Do you think that diabetes can be prevented by diet restriction and exercise only?	24	24
7 Do you think that diet and exercise equally important in controlling diabetes as medication such as insulin?	33	33
8 Do you know the value of normal blood glucose level?	27	27
9 Do you exercise?	44	44
10 Do you consider yourself on healthy diet?	48	48
11 Do you know what kind of diet should a diabetic eat?	42	42
12 Do you think that if you avoid taking only sugar and sweets, your blood glucose levels will be under control?	52	52



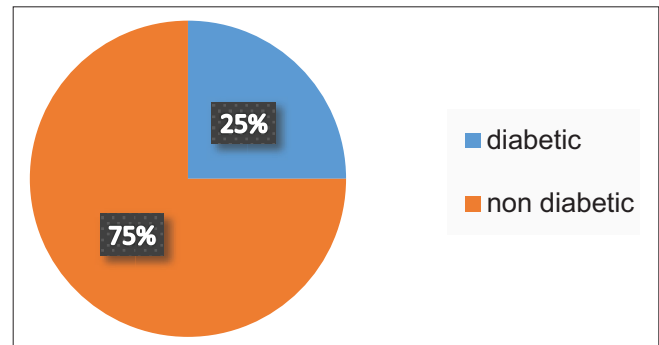
**Figure 3:** Education distribution of population studied

The response of the patients regarding the knowledge-related questions is listed in Table 1.

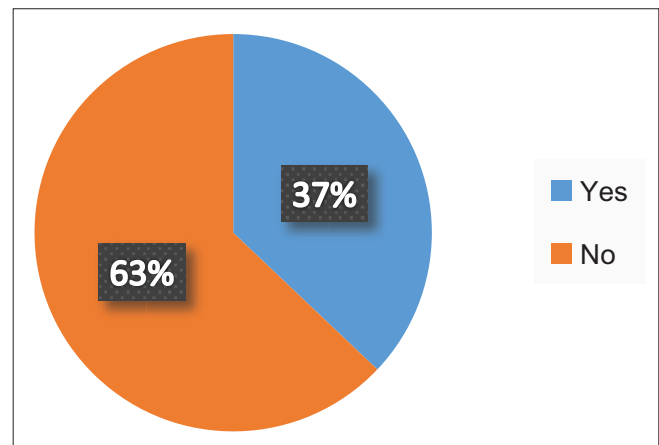
### Diabetes and Nutritional Therapy Questionnaire

Assessment questions regarding population knowledge of diabetes.

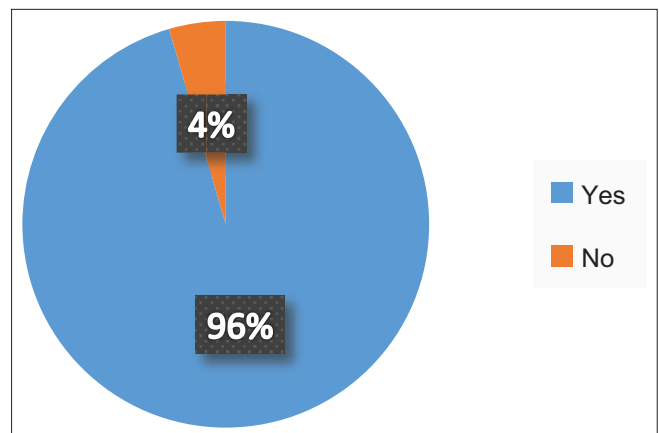
1. Do you know about diabetes?
2. Do you know diabetes is affecting more and more people nowadays?
3. Do you think some factors can contribute diabetes such as family history?



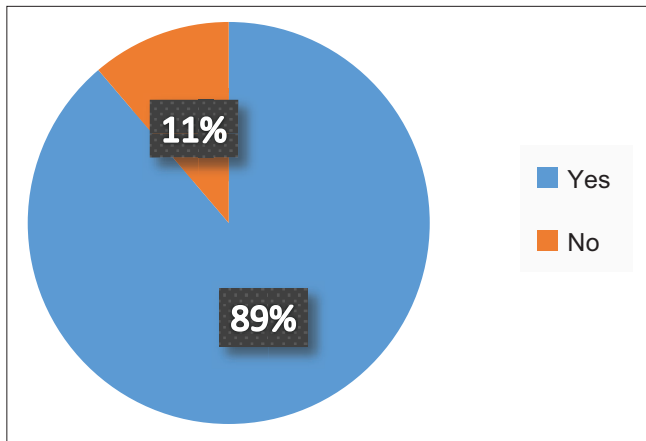
**Figure 4:** Diabetic patient distribution of population studied



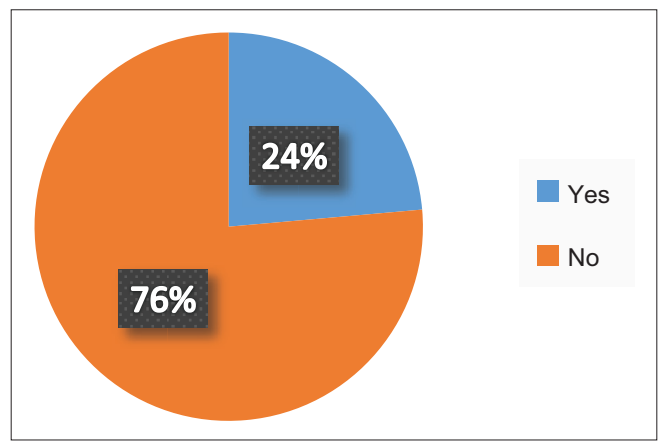
**Figure 5:** Knowledge of diabetes in studied population



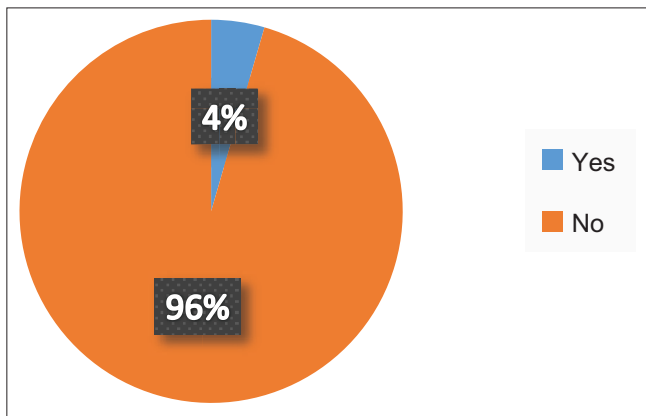
**Figure 6:** Knowledge of how diabetes is affecting more people



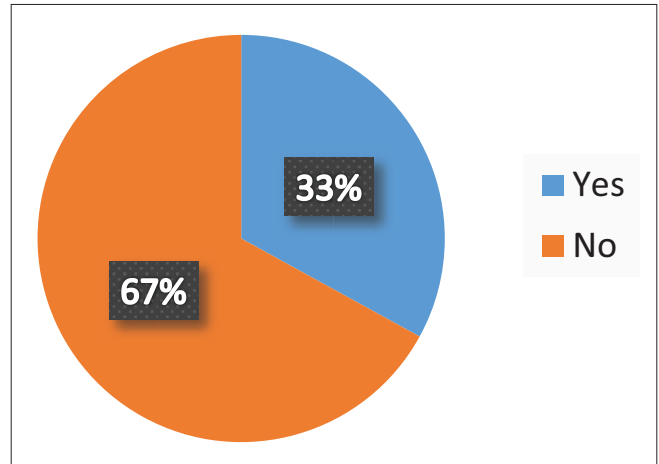
**Figure 7:** Knowledge of population studied regarding contributing factors in diabetes such as family history



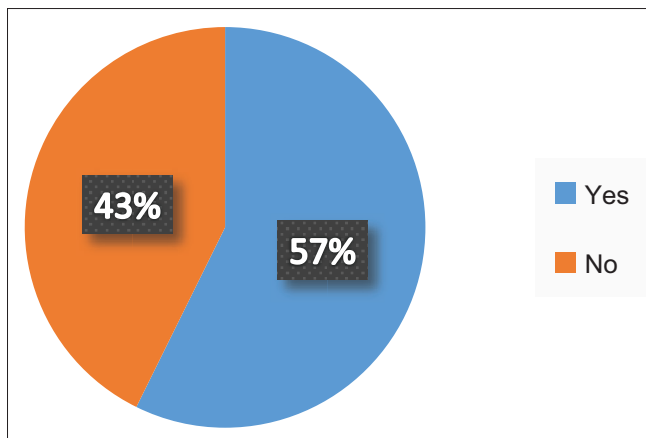
**Figure 10:** Knowledge of participants about the effect of diet and exercise in prevention of diabetes



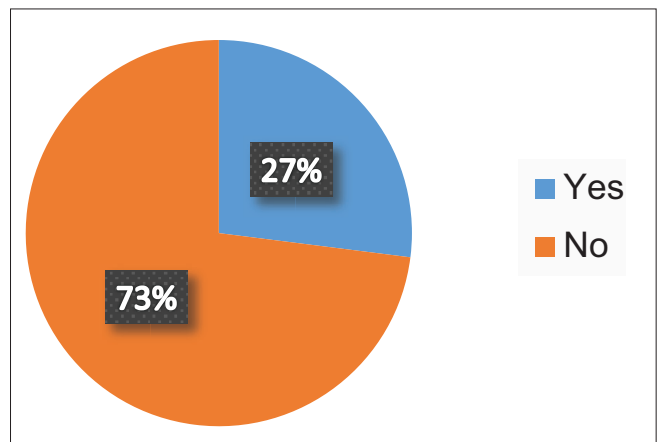
**Figure 8:** Knowledge of participants about transmission of diabetes among population



**Figure 11:** Knowledge of participants about the effect of diet and exercise in controlling diabetes with equal importance as medications like insulin



**Figure 9:** Knowledge of participants about diabetes complications



**Figure 12:** Knowledge of participants about the normal values of blood glucose

4. Can diabetes be transmitted among population?
5. Do you know diabetes can cause complications?
6. Do you think that diabetes can be prevented by diet restriction and exercise only?
7. Do you think that diet and exercise equally important in controlling diabetes as medication such as insulin?
8. Do you know the value of normal blood glucose level?

9. Do you exercise?
10. Do you consider yourself on healthy diet?
11. Do you know what kind of diet should a diabetic eat?
12. Do you think that if you avoid taking only sugar and sweets, your blood glucose levels will be under control?

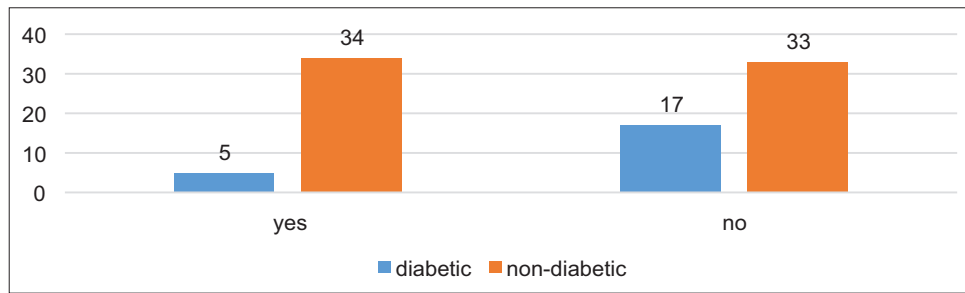


Figure 13: Knowledge of participants about if they doing exercise

## DISCUSSION

Eighty-nine participants were included in this study. Females were more in number than males. Among the 89 participants, 52% of subjects were female and 48% were male [Figure 1]. The demographic data of participants were recorded such as age, gender, and education status [Figure 1-3]. The mean age of the population studied was 45 and the percentage of diabetic patients among participants was (25%) [Figure 4].

In the present study, the most of participants showed an improper level of knowledge of diabetes; this obviously appears in Figure 5. This is expected since 69% of participants were having a secondary education level while 8% of them were illiterate [Figure 3]. The knowledge of the subjects pertaining to the prevalence of diabetes revealed that a significant number of individuals (63% of participants) thought that more and more people were affected by diabetes nowadays [Figure 5]. The results showed that a significant number of participants (89%) thought that the disease caused by factors other than lack of insulin such as positive family history (inherited disorder) [Figure 6]. About 67% of the participants thought that diabetes is an infectious disease, i.e. it spreads from one person to other person [Figure 7], this might reflect the poor knowledge level of the respondents. Lack of knowledge of this magnitude will likely place diabetics at risk of doing things, which might predispose them to complications although it is well known that patients passively learn to recognize the symptoms once they suffer from it, 43% of participants have poor responses about complication [Figure 8].

Regarding the knowledge of the complications, 57% of participants answered that diabetes could cause complications. About 24% of the respondents only believed that diabetes is preventable by diet control and exercise [Figure 9]. This indicates a significant lack of knowledge of primary prevention of diabetes in population. The fact that 67% of respondents believed that medication is more important in controlling diabetes than diet and exercise, reflects great extent of medication adherence [Figure 10].

Although 33% agree with that opinion, which show greater extent of medication adherence and the medication is very important in controlling the disease. It was surprising to know that only 27% of the subjects were aware of the target values of

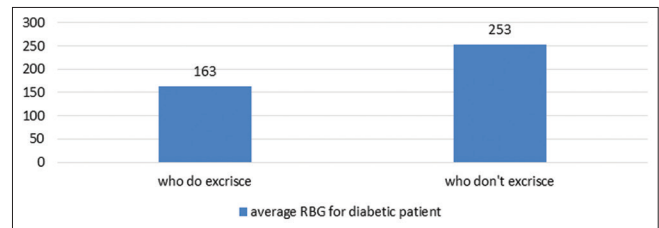


Figure 14: Effect of exercise on the average level of RBG of the studied population

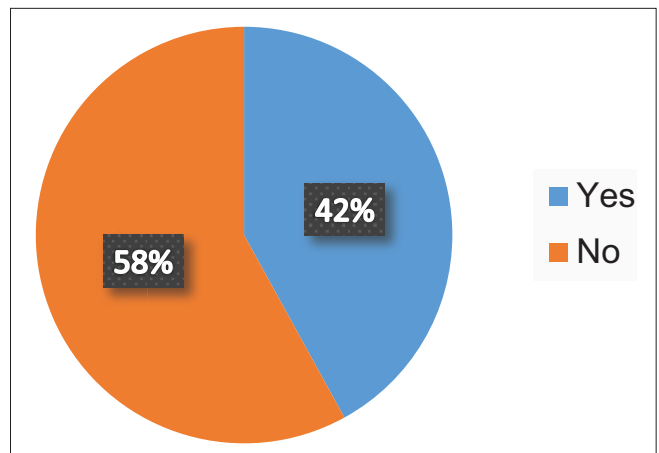
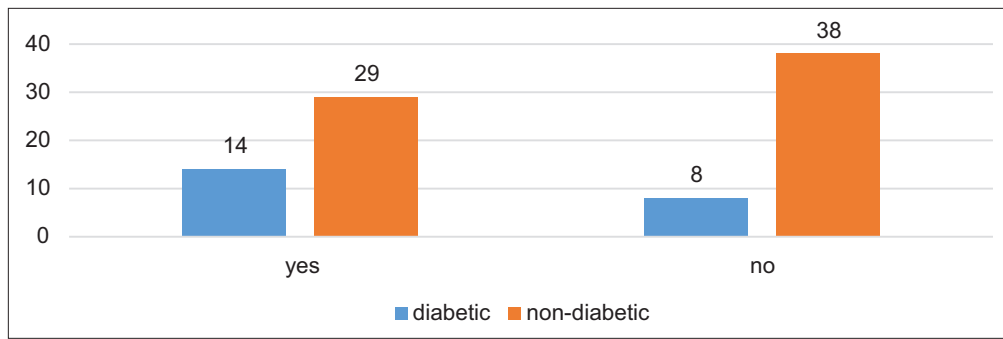


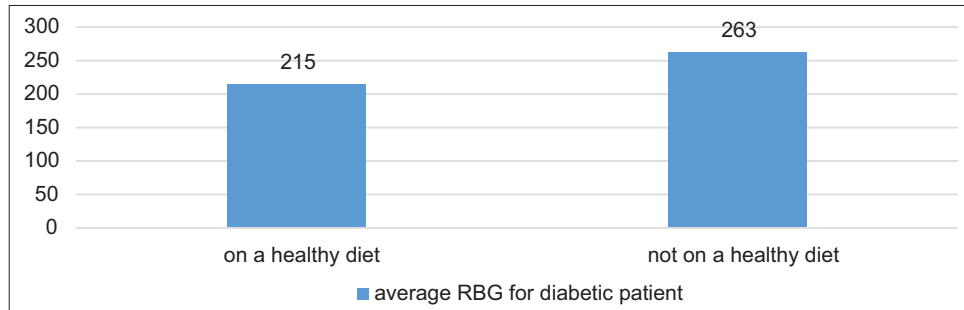
Figure 15: Participants should know what kind of healthy diet to follow

blood glucose [Figure 11]. Seventeen of the diabetic respondents said that they do not exercise in comparison with those exercised and this might attribute to the lower education level that affects the participant's knowledge of this concept [Figure 12]. The results show that exercise has proper effect on lowering blood glucose level of the diabetic participants [Figure 13]. Fourteen of diabetic participants were on healthy diet. While the non-diabetic persons this percentage is lower since most of the non-diabetic, patient's thoughts that they do not need to have diet restriction since they do not have diabetes yet [Figure 14].

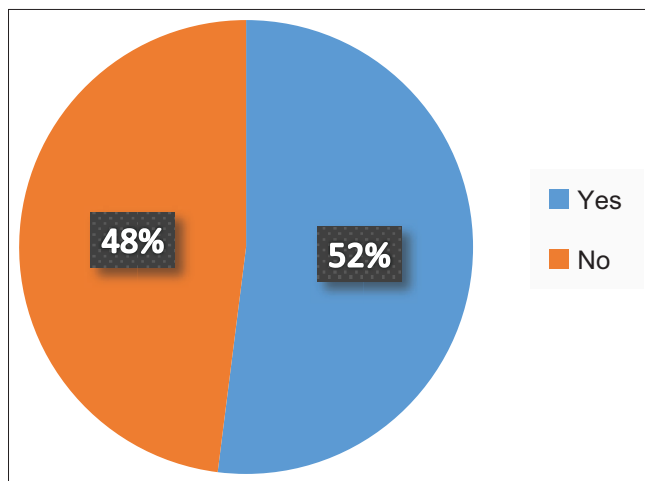
About 42% of patients knew what kind of diet they must take [Figure 15]. This proportion was slightly lower than the patients who did not know about the diabetic diet. This greatly appears in Figure 16 that shows the effect of healthy diet on blood glucose [Figure 17]. About 52% answered that diabetic patients must avoid sweets to control blood glucose



**Figure 15:** Knowledge of participants about if they having a healthy diet



**Figure 16:** Effect of healthy diet on the average level of RBG of the studied population



**Figure 17:** Knowledge of participants about avoiding sugar and sweets as the only measure to control diabetes

level; this might reveal the need for great efforts to enhance the patient counseling.

## CONCLUSIONS

This study concludes that the diabetic patients showed a poor knowledge concerning the causes, prevention, and medications used in the management of diabetes. In addition, the study reveals very less number of patients received patient education. Patient education and counseling regarding disease, medication, and lifestyle modification for diabetic patients can greatly affect patient’s outcomes. These results indicate

the need for educational and counseling programs aimed to improve the knowledge of diabetes and role of nutritional therapy as one of the new approaches in controlling diabetes.

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