Original Research Article

Assessing Knowledge, Attitude, Practice (KAP) of Diabetic Subjects Residing in Hyderabad City, India

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ABSTRACT

Aim: To assess the nutritional status and evaluate KAP among Type II diabetic person residing in Hyderabad city.

Materials and Methods: Through well-designed questionnaire demographic profile and anthropometric measurement were collected from 100 Type II diabetic subjects. To assess the knowledge, attitude and practices 30 multiple choice questions were designed and responses were evaluated.

Results: The mean age of the subjects was 52 years. Educational qualification indicated that 14% were graduate, 57% studied up to high school, and 7% were illiterate. 53% were non-working, 40% were employed and 7 % were retired. 56% of the subject's monthly income was between 20000-40000 rupees and 14% income was less than 10000 rupees. Nutritional status indicated that 20% were overweight and 44% were obese The diabetic subjects had good Knowledge score (6.8±1.88) positive attitude with moderate score (7.5±1.43) and moderate practice score (17.8±5.16). Pearson correlation showed significant strong correlation between knowledge and attitude (r = 0.5308, p = 0.00001) significant weak correlation between knowledge and practice (r = 0.2816, p = 0.00453) and significant moderate correlation between attitude and practice (r = 0.4474, p =0.00001). ANOV evaluated KAP scores and found statistically significant results at p < 0.01 (f ratio = 352.7, p < 0.00001). Chi square analysis showed statistically no significant association between educational qualification and KAP scores (chi- square value =12.079; p = 0.06023), Income and KAP scores (chi- square value = 9.892; p = 0.129) and Nutritional status and KAP scores at p < 0.05.

Interpretation and Conclusion: Knowledge regarding diabetes mellitus was good but practice was poor. The study highlights the need for conducting awareness program regarding lifestyle modification and diabetes management among diabetic subjects.

Keywords: Type II Diabetes, Nutritional Status, Knowledge, Attitude, Practice, Awareness, Program

I. INTRODUCTION

Diabetes mellitus, particularly Type-II, is a major public health concern worldwide. [1] According to World Health Organization (WHO), India today heads the world with 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030. [2] More than 382 million people (8.35%) in this world are suffering from diabetes and it is projected to rise to more than 592 million by 2035. [3] Diabetes is now affecting younger and middle aged adults who are at the peak of their economic productivity. [4-6] Diabetes leads to both premature death and complications such as blindness,

amputations, renal diseases and cardiovascular diseases. [7] It is well known that risk factor for diabetes such as physical activity and diet are modifiable and can possibly be reversed with adjustments in lifestyle; there is an opportunity to intervene, prevent or delay onset of diabetes. [8] Patient education has been termed as the corner stone for patients with Type II Diabetes Mellitus. Patients need to make informed decisions about diet, exercise, weight control, blood glucose monitoring, use of medications, foot care, eye care and control of macro vascular risk factor. [9] Studies have shown that increasing patient knowledge regarding disease and its complications has significant benefits with regard to patient compliance treatment and in decreasing complications associated with the disease. Patient with greater understanding and knowledge of their medication have been shown to have better glycemic control. [10] Efficient management of diabetes includes the patient developing an understanding of his or her disease and incorporation of such knowledge into an effective self-care program. [11] A growing body of evidence from knowledge, attitude and practice (KAP) has supported the need for greater awareness of prevention, diagnosis, and risk factors for disease management. [12, 13]

Currently, health education to prevent diabetes in rural India is non-existent. Major gaps also exist in education about health and nutrition among urban population. Aim of education for prevention of diabetes should be in achieving a healthy body weight through a combination of dietary modification and physical activity. Healthy lifestyle should be promoted at every possible opportunity but simply advising and educating people about diet and exercise is not enough. Simultaneously attention should be paid to creating condition conductive to a healthy lifestyle. Awareness and knowledge regarding diabetes is grossly inadequate in India. Hence present study was carried out with the objective to assess the nutritional status and evaluate KAP among Type II diabetic person residing in Hyderabad city.

II. METHODOLOGY

Through purposive sampling 100 Type II diabetic subjects who were willing to be part of the study were recruited from Kompally and Upperpally area of Hyderabad city, Telangana after taking informed consent. Through a well-designed questionnaire demographic profile (educational status, employment status, monthly income) anthropometric measurement and medical history were collected from 100 Type II diabetic subjects. To assess the knowledge, attitude and practices the designed questionnaire was divided into 3 sections. Through section - A knowledge of diabetic subjects was assessed by giving scores of 1 for correct answer and 0 for incorrect answer. In section B subject's attitude was assessed by giving score of 1 to positive attitude and 0 for negative attitude. Through section C practice of subject was assessed. Subject's responses towards 10 practice based questions were scored on a scale of 30 points. The positive attitude like always was given a score of 3 while most of the time was given a score of 2, sometime was given a score of 1 and never was given a score of 0. For in-depth analysis the KAP scores were further graded and classified as 70% and above = Good score, 41% -69 % = Moderate score and less than 40% = Poor score. The percentage, mean score and standard deviation for score was calculated and analyzed. Chi square test was used to analyze the correlation between the qualification, Income, Nutritional status and KAP score. Pearson correlation analysis was done to test statistical significance of KAP level of respondents. All the statistical analysis was performed using SPSS for window version 24.0.

III. RESULTS AND DISCUSSION

The Socio economic and demographic profile revealed that majority (96%) of the subjects were in the age group

of 30-70 years. 66 percent of the subjects were diabetic since 5-10 years and only 34 percent of subjects were diabetic since more than 15 years. Shah.VN *et.al* (2010) conducted a study to assess the Knowledge, Attitude and Practice of type 2 diabetic subject in Saurashtra region, Gujarat. They

reported that the mean age of the subject's was 55.82±10.2 years (95% CI 54.5-57.1) and mean duration of diabetes was found to be 8.2±6.8 years. (95% CI 7.2-9.1). [14] The age of subjects and duration of diabetes was less when compared to the present study.
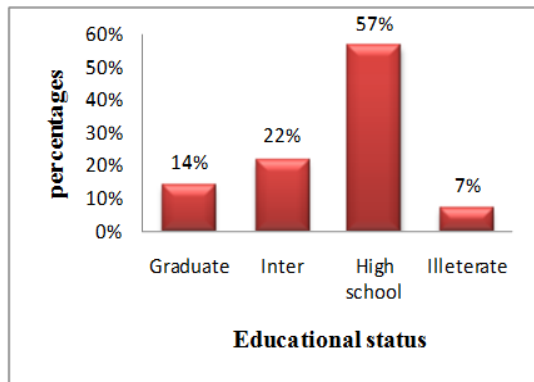

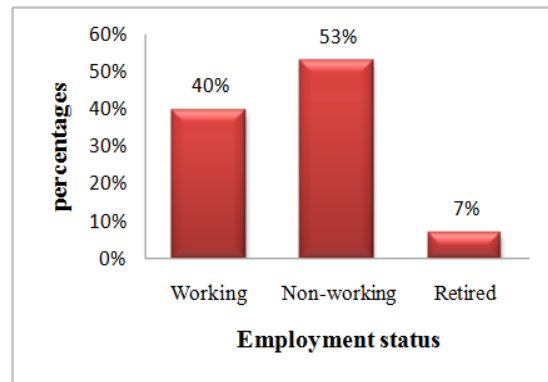Fig 1: Educational Qualification of Subjects.

Fig 2: Employment status of Subjects

Educational qualification in Fig-1 indicated that 14 percent of the subjects were graduate, 22 percent studied up to inter and 57 percent studied up to high school. Only 7 percent of the subjects were found to be illiterate. Malathy R *et.al* (2011) conducted a similar study which reported that out of total 207 subjects 40 (29.2%) subjects were illiterate which was more when compared to the present study, whereas 69 (50.4%) studied up-to secondary school level. [15] Employment status in Fig-2 showed that 53 percent of the subjects were unemployed, 40 percent were working and only 7 percent were retired. Sharol Ashma Menez *et.al* (2015) conducted a study on Awareness of Diabetic Complication among 100 individuals of Type 2 Diabetic subjects and reported that 62 percent of subjects were housewives, 15 percent were service holders and 7 percent were entrepreneurs.
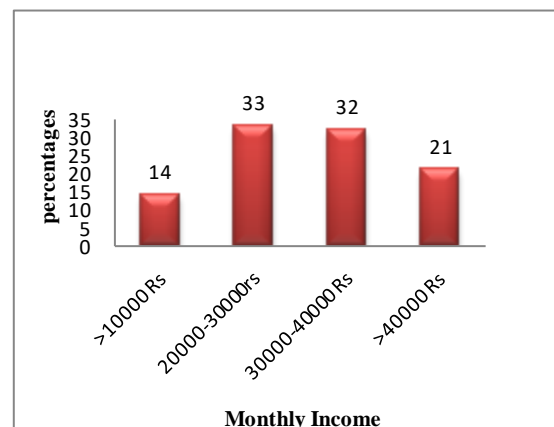

Fig -3: Monthly Income of the subjects.

Information regarding economic status in Fig-3 showed that majority (56%) of the subject's monthly income was between 20000-40000 rupees and 14 percent of subject's income was less than 10000 rupees. SwethaThungathurthi*et.al* (2012) conducted a study on 456 subjects of Warangal region on Self Care Knowledge of Diabetes among Diabetic Individuals reported that 237 subjects (51.97%) had no income, 187 (41%) belonged to low economic status and 32 (7.01%) were able to afford their needs completely which was very less when compared to present study. [16]
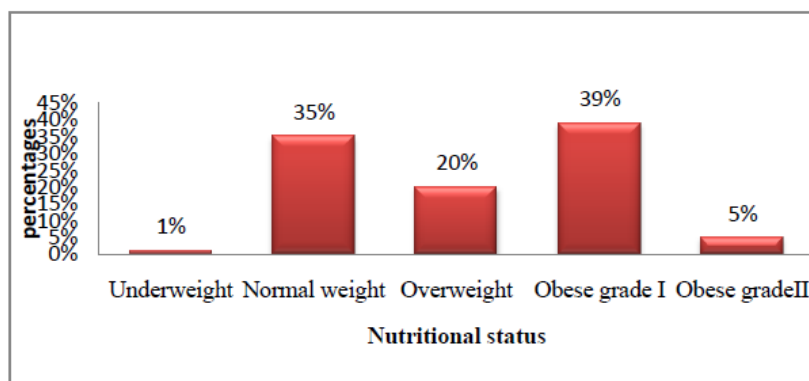
Fig 4: Nutritional Status of the Subjects (N=100)

Information regarding nutritional status in Fig-4 showed that 44 percent were found to be obese, 20 percent were overweight, 35 percent had normal body weight and only 1 percent was malnourished. Swetha Thungathurthi *et.al* (2012) conducted a similar study and reported that 61 percent of the subjects were normal weight and 28.28 percent were overweight. [16] Whereas in present study incidence of overweight was more and subjects with normal weight were only 35 percent. Chi square analysis showed that there was statistically no significant correlation at p < 0.05 between nutritional status and education level (p=0.46) and nutritional status and income levels (Chi square value = 6.98, p=0.85). The reason for overweight and obesity in present study could be attributed to high socio economic status where there is more availability of food.

III.a. RESPONSES OF DIABETIC SUBJECTS TOWARDS KNOWLEDGE BASED QUESTIONS:

Overall the knowledge of diabetic subjects on causes of diabetes and its management was good with mean score of 6.8 ± 1.88. 79 percent of the subjects were aware about the cause of diabetes while 21 percent of the subjects did not have knowledge and assumed that eating more sweets (2%), sedentary life style (14%), and obesity (4%) to be the causes of diabetes mellitus. A similar study conducted by Shooka Mohammadi *et.al* (2015) reported that 30 subjects reported that the cause of

diabetes as high sugar intake, 16 subjects (14%) stated that it is due to failure in insulin secretion and 56 percent did not know the causes of diabetes. [17] So, the knowledge regarding cause of diabetes was found to be good in the present study.

74 percent of the subjects were aware that diet + exercise + medication are important to control DM. 26 percent of the subjects had misconception that that it could be only through proper diet (7%), or exercise (2%) or medication (17%) but not all.. A study by Mafomekong Ayuk Foma *et.al* 2013 on Awareness of Diabetes Mellitus among Diabetic Patients in the Gambia: A strong case for health and promotion reported that a significant proportion (67%) of subjects said DM can be managed by dietary modification and medication while 28.5 percent felt that the condition can be managed by a combination of dietary modification, exercise and medication. Only few (0.5%) said that dietary modification or medications (2.0%) alone are the mainstream of diabetic management. [18] So, the knowledge regarding management of diabetes mellitus was good (74%) in the present study when compared to the results of above study.

Knowledge regarding monitoring of blood glucose levels indicated that 59 percent of the subjects believed that to have better control on diabetes it is important to monitor Fasting Blood Glucose Levels and Post Prandial Blood Glucose Levels every month while 41 percent thought that it was fine to monitor blood glucose levels every 3-6 months or once a year. In the present

study 45 percent of subjects had correct knowledge about HbA1c levels and knew that it had to be monitored every 3-6 months. 35 percentages of subjects did not have proper knowledge and assumed that HbA1C should be monitored every month while 19 percent of the subjects were completely not aware.

Responses of subjects towards dietary knowledge showed that 87 percent of the subjects were aware that diabetic's diet should be rich in fiber as it helps to maintain blood glucose levels. 13 percent were not aware about the benefits of fiber rich diet and assumed that protein, carbohydrate or fat were important component of the diabetic diet. The responses of subjects regarding dietary information indicated that 28 percent of the subjects agreed that honey or jaggery were better choice than artificial sweeteners as use of artificial sweeteners increase risk of cancer over the years. 59 percent of the subjects had false knowledge regarding use of artificial sweeteners. They thought that it was safe to replace sugar with artificial sweeteners in their beverages. Majority (98%) of the subjects were aware that eating custard apple increased blood glucose levels and remaining 2 percent thought that eating either apple or pineapple increased blood glucose levels.

Knowledge related to complication of diabetes indicated that 60 percent of the subjects were aware that poorly managed diabetes caused damage to eyes, kidney and heart. 40 percentages of the subjects did not have complete knowledge and believed either eyes or kidney or heart could be affected. A study conducted by Zia Ur Rahman *et.al* (2014) showed that knowledge about complication of diabetes was not satisfactory in female diabetics, only 32.4 percent female diabetics and 63 percent of male diabetics were aware of the complications. [19] Ulvi et.al (2009) conducted a study in rural Islamabad and Ali et.al (1998) in Quetta observed that

knowledge about diabetes including awareness of complication was poor. [20, 21] This indicates that majority of the diabetic subjects have not been educated about diabetes by their physicians and other health care professional, although some studies have shown that even some health care professionals don't have enough knowledge regarding diabetes. [22, 23]

Knowledge regarding symptoms of diabetes showed that 49 percent of the subjects had proper knowledge of symptoms of diabetes and answered that weight loss, increased hunger and urination, delayed wound healing were the symptoms of diabetes. The other 51 percent of the subjects failed to answer correctly. Majority (36%) characterized diabetes by increase urination. The responses of subjects regarding the importance and duration of physical activity showed that only 43 percent of the diabetic subjects were aware that exercising for 30-60 minutes daily helped to maintain blood glucose level. Majority (57%) of the subjects had poor knowledge and assumed that exercising for 10-20 minutes was enough to maintain blood glucose levels. Statistically 58 percent of the subjects had good knowledge sore (8.1 ± 1.09), 31 percent had moderate scores (5.48 ± 0.50) and only 11percent had poor scores (3.9 ± 0.30) indicating poor knowledge on diabetes and its management. The Knowledge based responses are summarized in Fig-5.

III.b. RESPONSES DIABETIC SUBJECTS TOWARDS ATTITUDE BASED QUESTIONS.

Overall the diabetic subjects had mean score of 7.5 ± 1.43 for attitude based responses. The subject's attitude towards management of diabetes mellitus showed that 78 percent of the subjects preferred to have meals every 2-3 hours. While choosing main meal majority of the subjects preferred to eat phulka + brown rice in their diet.
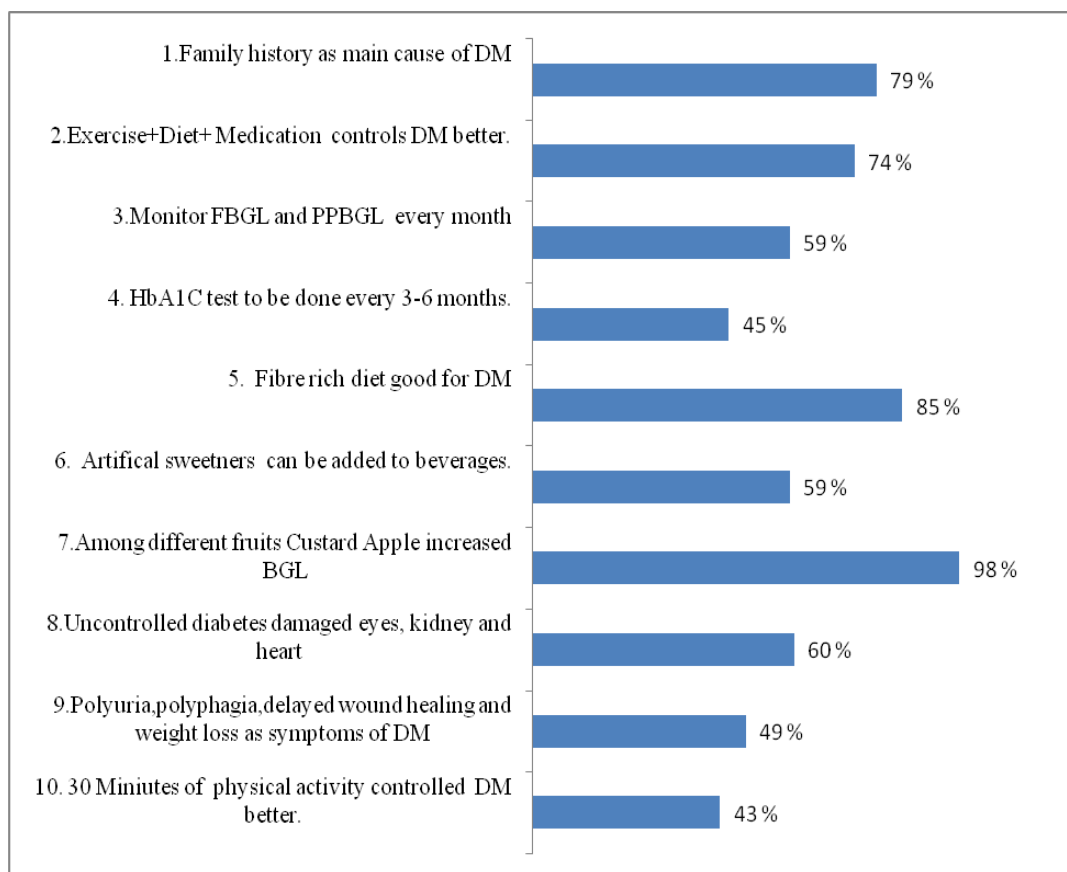
Fig-5: Responses of subjects to Knowledge Based Questions

Snacks preferences indicated that 65 percent of the subjects preferred to eat whole fruit while 35 percent of the subjects preferred either bakery products or fruit juices during snack time. Majority (40%) of the subjects preferred not to add sugar to their beverages, 33 percent preferred to add sugar and 27 percent of the subjects prefer to use artificial sweetener. 99 percent of the subjects prefer to exercise every day. 97 percent of subjects preferred to take their medication regularly while 3 percent preferred to use medication only when sugar levels were high or prior to blood test for monitoring glucose levels. 86 percent of the subjects preferred to wear shoes which covered feet completely and prevented foot injuries. All this shows that majority of the subjects knew the importance of small and frequent meals, benefits of high fiber diet and importance of foot care. Hence subject's attitude towards meal timings, diet preferences, use of sweeteners, physical activity and use of medication was found to be positive. While attitude towards monitoring of blood glucose levels was poor. It was observed that majority of the subjects (63%) answered correctly that BGL levels should be monitored once in a month and only 48 percent agreed that HbA1c levels should be tested once in 3 months for better control of diabetes. 37 percent of the subjects did not belive in regular monitoring of blood glucose and 51 percent of the subjects were not aware about of HbA1c test or its duration. Statistically 77 percent of the subjects had good attitude score (8.09 ± 0.98), 21 percent had moderate scores (5.71 ± 0.46) and only 2 percent had poor scores (3.5 ± 0.70).This shows that majority of the subjects had positive attitude towards diabetes and its management. The Attitude based responses are summarized in Fig-6.
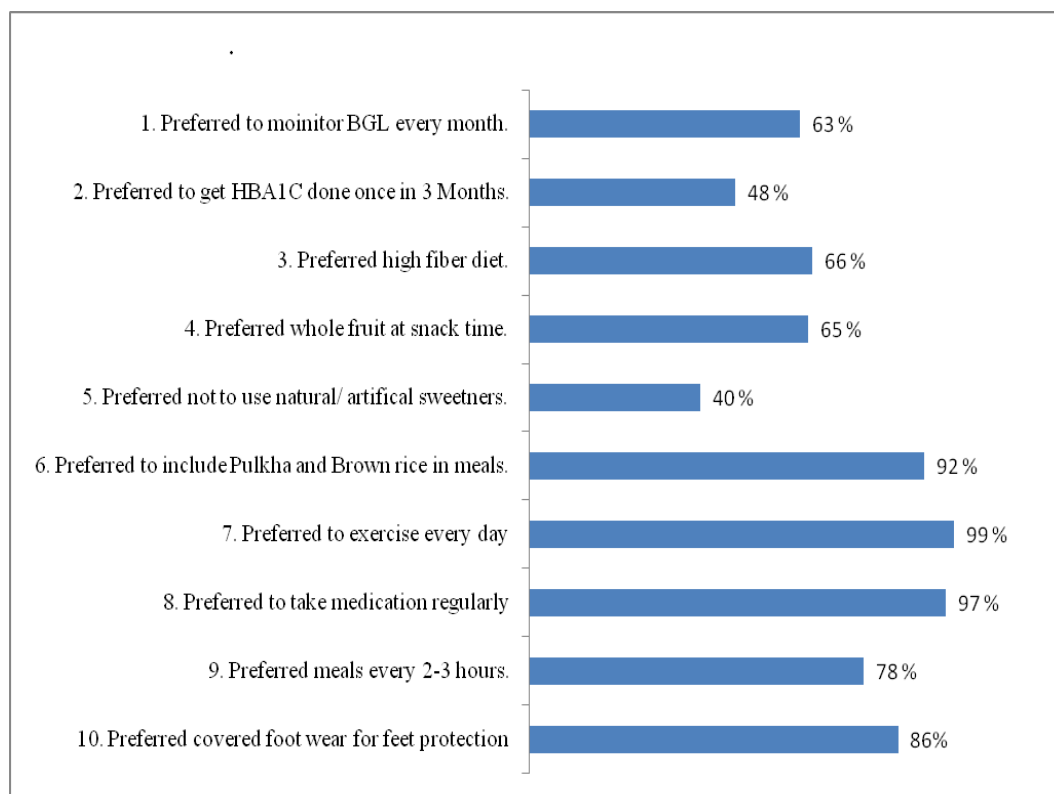
Fig-6: Responses of subjects towards Attitude Based Questions

III.C.RESPONSES OF DIABETIC SUBJECTS TOWARDS PRACTICE BASED QUESTIONS:

Overall the diabetic subjects had moderate mean score of 17.8±5.16 for practice based responses. Responses in Fig - 7 regarding practices of diabetic subjects indicated that 54 percent monitored their BGL every month and 9 percent monitored HbA1c levels every 3 months. Gupta .R (2015) too reported from a KAP study that only 47.82 percent of the subjects monitored blood pressure and blood sugar levels on monthly basis. [24,25] Only 27 percent of the subjects included fruits and vegetables in their diet to control DM while 73 percent made no effort to modify dietary habits. The use of sugar and artificial sweeteners showed that 49 percent of the subjects avoided sugar and 54 percent avoided artificial sweeteners in their beverages. The frequency of consumption of meal indicated that 44 percent of subjects consumed small and frequent meals and 12 percent excluded rice completely from diet to maintain BGL. A study conducted by Odenigbo Marian A *et.al* (2012) showed that approximately 52.5

percent of subjects do not consume vegetables on daily bases (less than 2 times a week). [26] Another study demonstrated poor food intake pattern with poor score in KAP test. Nevertheless, 46 percent reported they consumed vegetables in their meals between 2-3 times per week while 44.5 percent consumed vegetables more than 3 times per week. However, these were below the recommended five or more daily servings for fruits and vegetables. [27] Only 13 percent of the subjects regularly performed physical activity to maintain BGL and avoid complications while 27 percent were not physically active. This could be one of the reasons for higher incidences of complications in diabetic subjects. Henry I. Okonta *et.al* (2014) reported from their study that only 8.3 percent of subjects exercised regularly while 91.7 percent of subjects did not exercise indicating poor lifestyle practices. [28] The responses of subjects towards use of medication showed that majority (88%) of the subjects took their medication regularly indicating that they relied more on medication than dietary modification to

maintain BGL. Responses of subjects towards foot care showed that only 30 percent of subjects practiced foot care by washing, drying feet and wearing comfortable foot wear that covered the feet in order to protect them from injury. Practice regarding medication and monitoring BGL was good but regarding HbA1c, dietary modification, physical activity and foot care protection were very poor. Statistically only 27 percent of the subjects had good scores for practice (24.22 ± 2.13), 58 percent had moderate practice scores (16.77 ± 2.32) and14 percent had poor practice scores (3.9 ± 0.30). This shows that majority did not put the knowledge to practice. Thus it can be concluded from present study that diabetic subjects had good knowledge and attitude but failed to practice or implement the same. . The practice based responses are summarized in Fig-7.
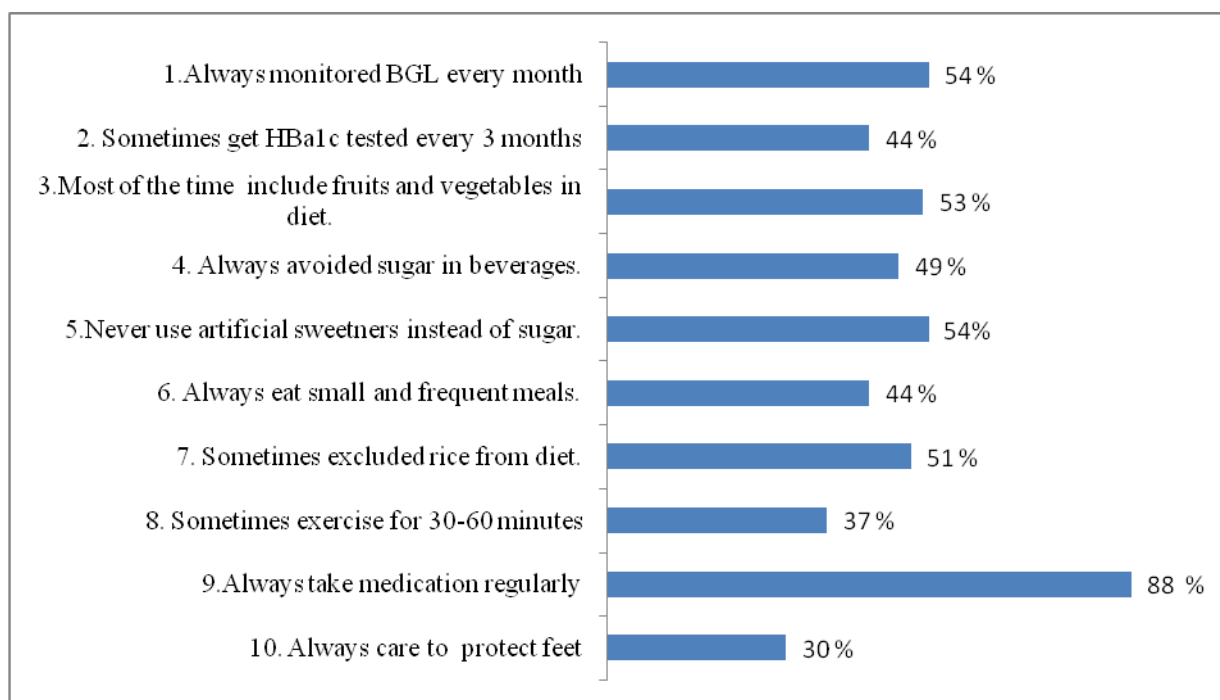

Fig-7: Responses of subjects towards Practice Based Questions.

IV. Statistical Analysis of KAP of Diabetic subjects:

Table1: Correlation (Pearson) among KAP levels of Diabetic subjects

Levels	r value	p value
Knowledge and Attitude	0.5308	0.00001**
Knowledge and Practice	0.2816	0.00453**
Attitude and Practice	0.4474	0.00001**

Statistically significant at ** p < 0.01

The correlation coefficient between KAP domain are presented in Table 1. Cohen (2013) stated that the strength of correlation between variables can be divided into three categories which are weak (r =0.10-0.29) moderate (r = 0.30 -0.49)and strong (r =0.50-1.00)with regards to KAP. In present study with regards to KAP it was found that there was significant strong correlation between knowledge and attitude (r = 0.5308, p = 0.00001) and significant weak correlation between knowledge and practice (r = 0.2816, p = 0.00453). Nutritional knowledge potentially enables a person to practice healthy eating habits and ensure good health of body. However in the present study though the subjects had good knowledge they did not implement the same. Banwat et al (2012) reported that nutrition knowledge alone could not ensure a good practice of healthy eating. [29] Zhang et al (2013) reported that attitude towards healthy eating ultimately influences on diet practice of individuals. [30] In the present study significant moderate correlation was found between attitude and practice (r = 0.4474, p =0.00001). Shaziman et al (2017) also reported that positive attitude

significantly (p=0.006) influences the dietary practices of individuals. [31] Analysis of variation (ANOVA) was used to evaluate KAP scores between diabetic subjects. Statistically a significant results were obtained at p < 0.01 (f ratio = 352.7, p < 0.00001). Chi square analysis showed statistically no significant association between educational qualification and KAP scores (chi- square value =12.079; p = 0.06023), Income and KAP scores (chi-square value = 9.892; p = 0.129) and Nutritional status and KAP scores at p < 0.05.

V. CONCLUSION

The total burden of disease is constantly increasing as a result of economic development, urbanization, physical inactivity and obesity. [32] Diabetes management depends not only on drug therapy but also on physical exercise, diet and other lifestyle changes.

Present study revealed a good level of knowledge regarding causes of diabetes (79%), management (74%), monitoring BGL (59%) and complication (60%) while knowledge regarding use of artificial/natural sweeteners (11%) was poor. Attitude of subjects towards meal timings (78%), medication (97%), physical activity (99%) and diet preferences (92%) was positive while attitude towards addition of sugar (40%) and monitoring HbA1c (48%) was poor. Practice regarding medication (88%) and monitoring BGL (54%) was good but regarding HbA1c (9%), dietary modification (12%), physical activity (13%) and foot care protection (30%) was very poor. Food consumption pattern was irregular with inadequate intake of fiber rich fruits and vegetables. Majority of them were well educated and belonged to high socio economic group hence consumed food high in calories and poor in nutrients like fiber and were physically inactive. As subjects portrayed poor practices toward dietary management and physical activity. Majorities were either overweight or obese that implies nutritional status deterioration

in future if food intake practices are not improved.

Hence there is a definite need to empower patients with right information at every available opportunity and create awareness on self-care management with the emphasis on lifestyle modification and behavioral changes. Education plays an important role not only in the prevention of diabetes itself but also in preventing its complication. The quality of life of patients with diabetes can be improved if complications of the disease are detected early. Thus every step in educating and creating awareness will improve overall wellbeing and prolong life span of people suffering from DM.

Contribution of Authors:
Humera Banu: Designed the work, analyzed, interpreted the data and drafted the final article.
Noorani Shireen: Designed the work, collected data, drafted initial manuscript, revised and approved the final draft of the published version.

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