

A cross-sectional survey to assess the awareness among patients with type 2 diabetes mellitus attending tertiary care hospital in East Godavari region, India

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ABSTRACT

Background: The burden of Type 2 diabetes mellitus (T2DM) is increasing rapidly in India. Knowledge regarding this will play a crucial role in its prevention and control. **Objective:** The present survey was conducted to assess awareness on various aspects of diabetes among T2DM patients. **Materials and Methods:** This was a cross-sectional study done among Type 2 diabetes mellitus patients. Group 1 comprised 120 newly diagnosed cases while Group 2 comprised 120 old cases with <5 years duration. Demographic data and awareness of participants on T2DM were surveyed using a structured questionnaire. Score was assigned for each question and mean \pm S.D scores were calculated. *P*-value was calculated using Student's *t*-test. **Results:** Inter-group comparison showed that male and female participants of Group 2 have better awareness than male and female participants of Group 1. Intra-group comparison showed that, higher the category of each of the four socio-demographic variables, better is the awareness among the participants. Participants of both Group 1 and group 2 showed poor awareness regarding risk factors and complications of T2DM. Group 1 also showed poor awareness regarding symptoms and management when compared to Group 2. **Conclusion:** There is a need for improving overall awareness regarding T2DM particularly about the risk factors and complications, especially among the participants belonging to the lower categories of socio-demographic variables. Physicians and other healthcare workers should play a primary role in creating this awareness, hand-in-hand with public health education programs and media.


KEY WORDS: Type 2 Diabetes Mellitus; Awareness; Survey

INTRODUCTION

Type 2 diabetes mellitus (T2DM) remains as one of the most impertinent global epidemics of the 21st century^[1] and is expected to become the seventh leading cause of death by 2030.^[2] According to the Global Burden Disease Study, the prevalence of T2DM in India was 31.7 million in the year

2010, and the prevalence is expected to upsurge to 79.4 million by the year 2030.^[3] However, there are large dissimilarities in T2DM prevalence between states in India.^[4] In the state of Andhra Pradesh, where the current study was carried out, it was reported that the change in prevalence of T2DM was approximately 28.0–35.9% in 2016 when compared to 1990.^[5]

Disease of such gigantic scale requires proper management, which, in turn, is dependent on the patient's awareness regarding the nature of the disease, its risk factors, treatment, and complications. Knowledge of T2DM in the general population can lead to early diagnosis, delay in the onset of diabetes complications, and possibly reduction in diabetes-related deaths. Furthermore, knowledge about the risk factors could inspire the

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individuals to change their lifestyles, thereby reducing or delaying the chances of diabetes.^[6] However, various studies have shown poor awareness regarding T2DM among the diabetic patients. The Indian Council of Medical Research conducted a study in four regions of India and reported that only 43.2% of the overall study population had heard about a condition called diabetes.^[7] Fatema *et al.*^[8] and Mohammadi^[9] pinpointed that despite the advancement and development of the disease research, the patient's level of disease knowledge remains low affecting the glycemic control. RIDER (Rajahmundry Integrated Diabetes Evaluation and Research) group conducted similar survey in East Godavari region of Andhra Pradesh, India, but it was only regarding awareness on complications.^[10]

Against this background, the present study was conducted with an aim to assess the level of awareness regarding the risk factors, symptoms, diagnosis, management, and complications of T2DM.

MATERIALS AND METHODS

Study Design

This was a community based cross-sectional study.

Study Area

The study was conducted among the individuals presenting to the outpatient clinic of the Department of General medicine, GSL Medical College and General Hospital, Rajahmundry.

Study Period

The study was conducted for a period of 6 months from September 2019 to February 2020.

Study Population

Patients' selection was done by simple random sampling of the individuals based on following inclusion and exclusion criteria-

The subjects were selected based on following inclusion and exclusion criteria.

Inclusion Criteria

- Newly diagnosed cases and old cases of T2DM with <5 years duration who were already on treatment, in the age group of 25–60 years of both sexes were included in the study.

Exclusion Criteria

The following criteria were as follows:

- Gestational/Type 1 DM patients
- Patients with complications of T2DM

- Patients suffering from any physical or mental impairment
- Patients who are not willing to give the consent.

Study Pattern

The study comprised two groups – Group 1 consisted of 120 newly diagnosed cases of T2DM and Group 2 consisted of 120 old cases of T2DM with <5 years duration who were already on treatment but without any complications.

Study Tool

The information was gathered from all the 240 subjects through a survey by asking questions from the questionnaire and their responses were noted. The questionnaire was interpreted into local language for those who could not understand English. Similarly, medical terminologies such as polyphagia and polydipsia were interpreted into common terms in local language and were asked. The questionnaire [Annexure 1] includes information about six socio-demographic variables – Age, gender, habitat, education, occupation, income and 20 questions about patient's awareness on risk factors, prevention, symptoms, diagnosis, management, and complications.

The categories in each of the education, occupation, and income were based on modified Kuppaswamy's socio-economic status scale.^[11] The categories in habitat were adapted from the study of Humphrey *et al.*^[12]

The questionnaire was validated and used in their study by Konduru *et al.*^[13] These 20 questions were grouped into four categories, each containing five questions. The awareness was assessed by giving scores based on the answers given by the subjects during the interview. Each "aware" response was assigned a score of "1" and "unaware" response a score of "0." Thus, maximum attainable score was "5" for each category and the minimum score was "0." The data obtained were analyzed using specialized software to calculate mean \pm S.D. scores. Student's *t*-test was used to calculate *P*-value, where $P < 0.05$ was considered as statistically significant.

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Statistical Analysis

The data obtained were analyzed using specialized software to calculate mean \pm S.D. scores. Student's *t*-test was used to calculate *P*-value, where $P < 0.05$ was considered as statistically significant.

Informed consent

An informed consent was taken from all the patients before survey was done.

Ethical approval

Ethical approval was sought and obtained from the institutional ethics committee before conducting the study.

RESULTS

The results of the present survey are shown in Tables 1 and 2. Table 1 demonstrates the socio-demographic

details of the study population expressed in numbers (No.) and percentage (%) along with total mean \pm SD awareness scores for each socio-economic variable among both the groups. Four socio-economic variables have been taken into account in the current study – habitat, education, occupation, and income along with age and gender.

Age

The study population consisted of 44 participants belonging to the age group of 25–44 years and 76 participants belonging to the age group of 45–65 years in Group 1. Group 2 consisted of 52 participants belonging to the age group of

Table 1: Characteristics of study participants

Variables	Group 1 (n=120)		Group 2 (n=120)		Group 1 (n=120)		Group 2 (n=120)		P-value
	No.	%	No.	%	Mean \pm SD SCORES				
Age (years)									
25–44	44	37	52	43	9.35 \pm 2.54		9.72 \pm 2.10		0.4365
45–65	76	63	68	57	8.82 \pm 3.12		9.08 \pm 3.16		0.6205
P-value					0.3403		0.2094		
Gender									
Male	74	62	66	55	8.41 \pm 5.67		10.04 \pm 3.69		0.0486*
Female	46	38	54	45	8.00 \pm 3.40		9.77 \pm 5.06		0.0466*
P-value					0.6935		0.7584		
Habitat									
Rural	34	28	45	38	6.57 \pm 4.54		8.05 \pm 3.52		0.1066
Semi-urban	41	34	38	31	8.41 \pm 4.18		8.81 \pm 3.53		0.6485
Urban	45	38	37	31	10.26 \pm 4.88		12.40 \pm 3.92		0.0341*
Education									
Illiterate	33	28	34	28	5.15 \pm 3.85		7.57 \pm 3.44		0.0085*
School	52	43	49	41	7.69 \pm 3.58		9.38 \pm 3.56		0.0194*
Graduate	35	29	37	31	12.36 \pm 2.10		12.33 \pm 3.96		0.9683
Occupation									
No/unskilled	46	38	39	33	6.35 \pm 3.85		7.85 \pm 4.65		0.1075
Semi-skilled	39	33	37	31	9.06 \pm 2.35		9.76 \pm 3.47		0.3043
Skilled	35	29	44	36	9.79 \pm 2.94		11.79 \pm 3.60		0.0096*
Income									
Low	43	36	42	35	5.49 \pm 3.60		6.56 \pm 4.05		0.2013
Medium	39	32	43	36	8.25 \pm 2.86		9.17 \pm 2.97		0.1579
High	38	32	35	29	11.61 \pm 2.69		13.07 \pm 3.85		0.0628

P<0.05 is considered as statistically significant

Table 2: Participants' response to questionnaire

Category	Questions	Mean \pm SD scores		P-value
		Group 1	Group 2	
1	Awareness regarding risk factors and prevention of T2DM	2.16 \pm 1.57	2.46 \pm 1.62	0.1851
2	Awareness regarding symptoms and diagnosis of T2DM	2.36 \pm 1.51	2.84 \pm 1.11	0.0112*
3	Awareness regarding management of T2DM	2.22 \pm 1.76	2.68 \pm 1.07	0.0066*
4	Awareness regarding complications of T2DM	2.02 \pm 1.17	2.30 \pm 1.46	0.1361
Total mean \pm SD scores		8.25 \pm 4.74	10.02 \pm 4.30	0.0062*

**P*<0.05 is considered as statistically significant. T2DM: Type 2 diabetes mellitus

25–44 years and 68 participants belonging to the age group of 45–65 years.

Gender

The study population consisted of 74 males and 46 females in Group 1 while there were 66 males and 54 females in Group 2. Intra-group comparison showed that there was no significant difference in awareness between male and female participants belonging to Group 1 ($P = 0.6935$) as well Group 2 ($P = 0.7584$). However, inter-group comparison showed significant difference in awareness among male and female participants of Group 2 than male and female participants of Group 1 ($P = 0.0486$ and 0.0466 , respectively).

Habitat, Education, Occupation, and Income

Details of the study population are shown in Table 1. Intra-group comparison showed that, higher the category of each of the four socio-demographic variables, better is the awareness (mean + SD scores) among the participants. However, inter-group comparison showed that there was no significant difference in awareness between the participants of Group 1 and Group 2, except for the categories of urban ($P = 0.0341$); illiterate, school ($P = 0.0085$ and 0.0194 , respectively), and skilled ($P = 0.0096$) among the variables.

Table 2 shows total mean \pm SD awareness scores for each category of questions in the questionnaire among both the groups. Bar diagrams 1, 2, 3, and 4 supplementary to Table 2 shows the percentage of people who are aware of each question in all the four categories.

Category-1 questions (5 in number) were about the risk factors of T2DM. The participants were least aware of smoking and alcohol but well aware of family history as risk factor. Awareness regarding other risk factors ranged between these two. The total mean \pm S.D awareness score was 2.16 ± 1.57 among Group 1, while it was 2.46 ± 1.62 among Group 2. P -value was 0.1851 which was statistically insignificant. Category-2 questions (5 in number) were about the symptoms and diagnosis of T2DM. The participants were least aware of HbA1c test and its significance but well aware of at least one symptom of T2DM. Awareness regarding other questions ranged between these two. The total mean \pm S.D awareness score was 2.36 ± 1.51 among Group 1, while it was 2.84 ± 1.11 among Group 2. P -value was 0.0112 which was statistically significant. Category-3 questions (five in number) were about the management of T2DM. The participants were least aware of the importance of regular glucose testing and physician follow-up and well aware that blood glucose levels can fall below normal when on oral hypoglycemic drugs. Awareness regarding other questions ranged between these two. The total mean \pm S.D awareness score was 2.22 ± 1.51 among Group 1, while it was 2.68 ± 1.11 among Group 2. P -value was 0.066 which was statistically significant. Category-4 questions

(five in number) were about the complications of T2DM. The participants were least aware of Alzheimer's disease risk but well aware of eye and kidney complications with uncontrolled blood glucose levels. Awareness regarding other questions ranged between these two. The total mean \pm S.D awareness score was 2.02 ± 1.17 among group 1, while it was 2.30 ± 1.46 among Group 2. P -value was 0.1851 which was statistically insignificant [Figure 1].

DISCUSSION

In the present study, there was no significant difference in awareness when male and female participants within Group 1 as well as within Group 2 (intra-group) are compared. This finding is in-contrast with the study of Noura *et al.*^[2] where males were found to have better awareness than females but supports the study of Herath *et al.*^[14] where gender had no significant association with knowledge of diabetes. Awareness of the participants belonging to higher categories of socio-demographic variables was found to be better than the participants belonging to the lower categories of socio-demographic variables, within Group 1 as well as within Group 2 (intra-group). This difference in awareness can be due to the fact that participants belonging to urban areas and high-income group have better access to sources such as books and internet, thus more chances of gaining knowledge about T2DM. Besides, educated people can communicate with health-care providers better without any language barriers and can acquire the necessary information. Our study has been consistent with the study of Parakh *et al.*^[15] which reported that higher levels of education followed by the job status of the participants were strong factors for better level knowledge. Another study by Bukhsh *et al.*^[16] also reported a similar finding in which the patient's educational level was a substantial predictor toward their self-care practices.

In the present study, participants of both groups showed poor awareness regarding category 1 questions. These results suggest that proper awareness should be created among the public regarding the risk factors through public health awareness programs, so as to delay the onset of diabetes mellitus. Our study has been consistent with the study of Gillani *et al.*,^[17] which reported low knowledge of diabetes risk factors, in Pakistani general population and has recommended for public education in diabetes prevention. Another study by Desai *et al.*^[18] reported that the participants had poor knowledge on etiology of diabetes, in which, a portion of patients believed diabetes to be a communicable disease. Study of Clark *et al.*^[19] also reported poor awareness among the participants and the cause is attributed to be more focus on individual's nutritional status/physical activity rather than increasing awareness about T2DM risk factors.

In the present study, participants of Group 2 showed overall better awareness than Group 1 regarding category 2 questions. However, it was thought to be due to better awareness regarding

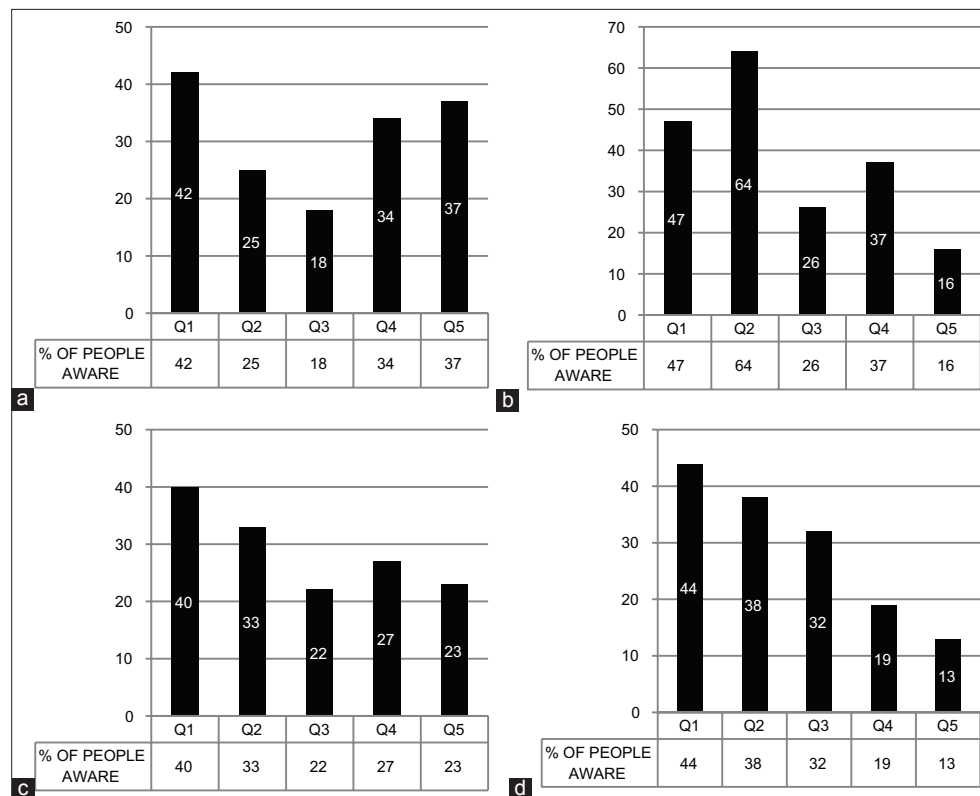


Figure 1: Responses of participants to questions of different categories. (a) Responses to questions of category 1. (b) Responses to questions of category 2. (c) Responses to questions of category 3. (d) Responses to questions of category 4

the symptoms but not the diagnosis of diabetes mellitus (as evidenced from bar diagram 2). Hence, proper awareness should be created regarding the target values of blood glucose levels and HbA1c test. Our study has been consistent with the study of Al-Aboudi *et al.*^[20] which reported that most of the participants had poor knowledge on HbA1c. However, the study is in-contrast with the study of Agu *et al.*^[21] which had reported poor knowledge regarding the symptoms of diabetes among Nigerian civil servants and study of Kishore *et al.*^[22] which reported poor knowledge regarding the symptoms of diabetes.

In the present study, participants of Group 2 showed better awareness than Group 1 regarding category 3 questions. However, this better awareness was thought to be due to the fact that the patients were already on treatment. Our study has been consistent with the study of Alanazi *et al.*,^[23] which had reported poor knowledge regarding the management of diabetes among Saudi nationals and made recommendations for increasing the awareness. Study of Kiren *et al.*^[24] reported that 62.7% of the participants in Tamil Nadu were not aware of balanced diet to be taken daily in diabetes. In another study of Konduru *et al.*,^[13] only about a third of the study participants knew that dietary plan is an essential component of diabetes management.

In the present study, participants of both groups showed poor awareness regarding the complications of diabetes mellitus. These results suggest that it is more important to educate the public about complications of diabetes mellitus. Our study has been consistent with the study of Deepa *et al.*,^[17]

which reported poor knowledge regarding complications and majority (49%) were unaware that uncontrolled diabetes can lead to loss of foot. Study of Qurieshi *et al.*^[25] had also reported poor knowledge regarding the complications of diabetes mellitus where 34.1% of the respondents were unaware of any of the complications. Another study of Venugopal *et al.*^[13] had reported poor awareness and knowledge regarding diabetic retinopathy among the participants in Goa.

Strengths and Limitations

This study has few strengths and limitations. The study included socio-demographic variables and the awareness was assessed category wise among each variable. The questionnaire also covered almost all the major aspects related to T2DM. Furthermore, very few studies are available in the literature, which compared awareness between two groups of the participants. However, limitations of the study include small sample size, thus limiting the generalizability of the results in this region, where the study was conducted. Furthermore, the method of data collection used in this study depends on ability of the participants to recall the information, hence, could be influenced by their cognitive levels.

CONCLUSION

The present study showed that there is a need for improving overall awareness regarding T2DM particularly about the risk

factors and complications, especially among the participants belonging to the lower categories of socio-demographic variables. A possible reason for this could be lack of exposure to diabetes health education among the population since there was no national wide implemented public health programs. The National Diabetes Control Programme which was implemented in selective states could not meet its objectives mainly due to paucity of funds. Hence, healthcare professionals and other healthcare workers themselves should take responsibility in creating awareness both among T2DM patients as well as general public. It is also recommended that the awareness of T2DM can be improved through mass media and social media campaigns, with a special focus on lifestyle modifications and complications.

REFERENCES

- Sethuram K, Uma MA, Rao S. A study of prevalence of diabetes mellitus, prediabetes and cardio metabolic profile among rural population in South India. *Int J Contemp Med Res* 2019;6:C4-9.
- Abouammoh NA, Alshamrani MA. Knowledge about diabetes and glycemic control among diabetic patients in Saudi Arabia. *J Diabetes Res* 2020;2020:1239735.
- Venugopal D, Lal B, Fernandes S, Gavde D. Awareness and knowledge of diabetic retinopathy and associated factors in Goa: A hospital-based cross-sectional study. *Indian J Ophthalmol* 2020;68:383-90.
- Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, *et al.* Prevalence of diabetes and prediabetes in 15 states of India: Results from the ICMR-INDIAB population-based cross-sectional study. *Lancet Diabetes Endocrinol* 2017;5:585-96.
- Tandon N, Anjana RM, Mohan V, Kaur V, Afshin A, Ong A, *et al.* The increasing burden of diabetes and variations among the states of India: The global burden of disease study 1990-2016. *Lancet Glob Health* 2018;6:1352-62.
- Amankwah-Poku M. A cross-sectional study of knowledge and awareness of Type 2 diabetes mellitus in a student population in Ghana: Do demographics and lifestyle make a difference. *Health Psychol Behav Med* 2019;7:234-52.
- Deepa M, Bhansali A, Anjana RM, *et al.* Knowledge and awareness of diabetes in urban and rural India: The Indian council of medical research India diabetes study (Phase I): Indian council of medical research India diabetes 4. *Indian J Endocrinol Metab* 2014;18:379-85.
- Fatema K, Hossain S, Natasha K, Chowdhury HA, Akter J, Khan T, *et al.* Knowledge attitude and practice regarding diabetes mellitus among nondiabetic and diabetic study participants in Bangladesh. *BMC Public Health* 2017;17:364-9.
- Mohammadi S. Knowledge, attitude and practices on diabetes among Type 2 diabetic patients in Iran: A cross-sectional study. *Sci J Public Health* 2015;3:520-6.
- Kumar NL, Rao KV, Kishore K, Priyadarsini L, Kiran DM, Laxman RN, *et al.* Awareness of diabetes and its relation to prevalence of microalbuminuria in known cases of Type 2 Diabetes. *Indian J Public Health Res Dev* 2015;6:167-71.
- Wani RT, Socioeconomic status scales-modified Kuppaswamy and Udai Pareekh's scale updated for 2019. *J Family Med Prim Care* 2019;8:1846-9.
- Okeke HC, Osonwa KO, Awhen PA. Patients' sociodemographic variables and adherence to antihypertensive therapy in southern senatorial district of cross river state, Nigeria. *J Med Allied Sci* 2019;9:83-9.
- Konduru SS, Amit R, Karthik, Sravanthi M, Shabnam S, Lakshmi SV. Diabetes related KAP study. *Ind J Pharm Pract* 2017;10:32-8.
- Herath HM, Weerasinghe NP, Dias H, Weerarathna TP. Knowledge, attitude and practice related to diabetes mellitus among the general public in Galle district in Southern Srilanka: A pilot study. *BMC Public Health* 2017;17:535-41.
- Parakh MK, Kasi A, Ayyappan V, Prabhu S. Knowledge and awareness of oral manifestations of diabetes mellitus and oral health assessment among diabetes mellitus patients a cross sectional study. *Curr Diabetes Rev* 2019;169:156-64.
- Bukhsh A, Khan TM, Nawaz MS, Ahmed HS, Chan KG, Lee LH, *et al.* Association of diabetes related self-care activities with glycemic control of patients with Type 2 diabetes in Pakistan. *Patient Prefer Adherence* 2018;12:2377-85.
- Gillani AH, Islam FM, Hayat K, Atif N, Yang C, Chang J, *et al.* Knowledge, attitudes and practices regarding diabetes in the general population: A cross-sectional study from Pakistan. *Int J Environ Res Public Health* 2018;15:1-13.
- Desai R, Vadgama P, Parth D. Effect of awareness of diabetes on clinical outcomes of diabetes: An observational study at a private hospital in Gujarat. *Natl J Med Res* 2012;2:493-6.
- Clark B, Boghani S, Grullon C, Batista M. The impact of a worksite-based diabetes prevention intervention: A pilot study. *Popul Health Manag* 2017;20:233-8.
- Al-Aboudi IS, Hassali MA, Shafi AA. Knowledge, attitudes and quality of life of Type 2 diabetes patients in Riyadh Saudi Arabia. *J Pharm Bioallied Si* 2016;8:195-202.
- Agu U, Agu MC, Nnaji GA, Ugochukwu DO. Socio-demographic determinants of the knowledge of diabetes mellitus in Onitsha-North Local Government Area, Anambra State, Nigeria. *Orient J Med* 2014;26:40-7.
- Kishore J, Kohli C, Gupta N, Kumar N, Sharma P. Awareness, practices and treatment seeking behaviour of Type 2 diabetes mellitus patients in Delhi. *Ann Med Health Sci Res* 2015;5:266-73.
- Alanazi AM, Abo El-Fetoh NM, Alotaibi HK, Alanazi KA, Alotaibi BK, Alshammari Q. Survey of awareness of diabetes mellitus among the Arar population, Northern Border Region of Saudi Arabia. *Electron Phys* 2017;9:5369-74.
- Kiren J, Priya VV, Gayathri R. Awareness on balanced diet among diabetic patients. *J Pharm Sci Res* 2017;9:245-7.
- Qurieshi MA, Ganesh R, Leelamoni K, Kurian B. A community-based study on knowledge of diabetes mellitus among adults in a rural population of Kerala. *Int J Med Sci Public Health* 2016;5:2075-81.

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ANNEXURE

Annexure 1: Diabetes awareness survey

Age - Sex - New/old case

Habitat	Education	Occupation	Income
Rural	Uneducated	Unskilled	Low
Semi-urban	School	Semi-Skilled	Medium
Urban	Graduate	Skilled	High

Awareness regarding risk factors and prevention of diabetes mellitus

No.	Question	A	UA
1	Family H/O diabetes is a risk factor for diabetes mellitus		
2	Obesity and hyperlipidemia are risk factors for diabetes mellitus		
3	Excess alcohol and smoking are risk factors for diabetes mellitus		
4	Unhealthy and untimely diet is a risk factor for diabetes mellitus		
5	Healthy diet, regular physical activity prevent/delay diabetes		

Awareness regarding symptoms and diagnosis of diabetes mellitus

No.	Question	A	UA
1	Diabetes is a lifelong chronic disorder due to insulin deficiency		
2	Polyuria, polyphagia, polydipsia, and sudden weight fluctuations are symptoms		
3	Hypoglycemia symptoms such as shaking, sweating, and anxiety		
4	Target fasting, post-prandial, and random blood sugar levels		
5	HbA1c test meaning and its significance		

Awareness regarding management of diabetes mellitus

No.	Question	A	UA
1	Blood sugar levels can fall below normal when on OHD		
2	Upon diabetes control, medicines should not be stopped immediately		
3	Follows self-help practices like self-glucose monitoring		
4	Diabetic diet plan – fiber – fruits to be consumed/avoided, etc.		
5	Regular glucose testing and physician follow-up is important		

Awareness regarding complications of diabetes mellitus

No.	Question	A	UA
1	Diet and exercise are as equally as important medications to prevent complications		
2	Uncontrolled diabetes will affect eyes, heart, kidneys		
3	Delayed wound healing – diabetic foot, diabetic ulcer		
4	More prone to infections like urinary tract infections		
5	There will be increased risk of Alzheimer's disease		