

ORIGINAL ARTICLE

Knowledge, Attitude and Practices in Type 2 Diabetes Mellitus Patients in Rural Northern IndiaRajiv Kumar Gupta¹, Tajali N Shora², Rayaz Jan³, Sunil Kumar Raina⁴, Vijay Mengi⁵, Vijay Khajuria⁶

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Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures
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Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is a leading cause of morbidity and mortality. Generating awareness on prevention of Diabetes is of key importance. For generating awareness, an idea on the level of awareness in general population has to be generated. **Aims & Objectives:** The present study was conducted with the aim to assess Knowledge, Attitude and Practices (KAP) among diabetic patients from a rural area. **Material Methods:** The study was conducted on diagnosed cases of T2 DM patients visiting Community Health Centre, Ranbir Singh Pura, Jammu, J&K for a follow-up. The study was conducted from October through December 2014 using a pre designed, pre-structured & validated questionnaire. **Results:** 230 T2 DM patients comprising 128 males and 102 females were enrolled during the study period. The knowledge score of the patients was found to be 10.13±2.09, attitude score was 3.13±1.26 and practice score was 2.86±1.39 out of maximum possible scores of 14,6 and 5 for knowledge, attitude and practices respectively. Knowledge scores had a strong association both with attitude as well as practice scores ($p < 0.05$). **Conclusions:** Knowledge of diabetic patients was good but attitude and practices needed improvement.

Key Words

KAP study; T2 DM; Rural area

Introduction

Currently 387 million people in the world are living with Diabetes Mellitus (DM) and this figure is likely to touch 592 million by 2035.(1) 80% of people with T2DM live in low and middle income Countries and almost half of them are undiagnosed. As per current estimates, prevalence of DM is 9.1% in India and according to the recent study done in current study area prevalence was found to be 8.15%.(2) In the developed world, diabetes is common among the elderly but in contrast 35-64yrs is the most

commonly affected age group in the developing world.(3) The insidious nature of the disease means that many patients remain undiagnosed till the emergence of complications. Many authors have reported that poor health literacy is one of the major social determinant in the progression of disease.(4,5,6) Knowledge, Attitude and Practice studies have generated enough evidence regarding the need to create more awareness among population in general and diabetic in particular regarding prevention, control of risk factors and disease management.(7,8,9)

In formulating a prevention program for diabetes, the obvious first step would be to obtain information about the level of awareness about diabetes. Evidence has shown that proper education and awareness program changes the attitude of the masses regarding diabetes while patient education is the cornerstone to lessen complications of diabetes and its management. Besides proper education and awareness, earlier detection and better care goes a long way in reducing many a complications and co-morbidities in the diabetic population. (10)

The recent shift in trends increased the prevalence of T2DM among rural population and hence makes such studies more pertinent. Extensive literature search on PubMed has revealed a paucity of evidence on assessing the implications of KAP regarding T2 DM amongst the rural population especially in North India.

Aims & Objectives

The present study was planned with the aim to determine the level of KAP about T2DM among diabetic patients in a rural settings of Jammu region of J&K (Jammu and Kashmir) state in North-West India.

Material and Methods

The study was conducted at Community Health Centre, Ranbir Singh Pura (CHC R S PURA), Jammu which is a field practice area of Department of Community Medicine, Government Medical College, Jammu. The study was conducted between 1st October and 31st December 2014. A KAP (Knowledge, Attitude and Practice) questionnaire was administered as described by Subish P *et al* ([Annexure I](#)) after establishing its validity to the local population as described below. (11) The Institutional Ethics Committee clearance was duly sought before the conduct of study.

Establishing validity of the questionnaire: *Initial work-up:* An expert group comprising of bilingual public health specialists from Jammu developed for the local population, a series of measures that included the same general domains, as similar as possible to English version in a language suited to the local population. *Pre-pilot and questionnaire layout:* The pre-pilot centred on information-gathering on the suitability of the questionnaire developed. For this purpose, we sat down with 25 subjects of age 20 years and above and went through the questions together to identify potential problems in the

applicability of the new. After a pre-piloting session, we amended the questionnaire before piloting with another group of 25 testers. The amended version was again based on unanimous decision by the expert group. This process was aimed at arriving at a questionnaire wherein questions were unambiguous, appropriate and acceptable to respondents. We also tested the layout at this stage to ensure that field investigator can navigate his way easily through the questionnaire. *Pilot phase:* After the appropriate modifications were made to the test items, a random sample of 50 non-diabetic subjects (as indicated clinically) was drawn from the RS Pura census database for a pilot study. The subjects were selected by simple random technique. After the utility of the questionnaire was established the study was conducted on previously diagnosed Type 2 diabetes mellitus patients visiting the OPD irrespective of age, gender, residence. Those who did not consent to participate were excluded from the study. All the patients attending were from adjoining villages thus comprising the requisite rural study population. All of the enrolled patients were evaluated for socio-demographic factors followed by administration of KAP questionnaire.

The KAP questionnaire consisted of 25 questions (Knowledge-14, Attitude-5 and Practice-6). Each correct answer was given score of one while the wrong answer was given zero score. The data thus obtained was tabulated and categorized into proportions and percentages. Statistical analysis of the data was done using Open-Epi version 2.3, and chi-square test was used to establish relationship between KAP scores with $p < 0.05$ taken as statistically significant.

Results

A total of 230 patients were enrolled during the study period comprising of 128 males and 102 females. Age wise distribution of the patients shows that 78.25% of them were ≥ 46 years of age. Mean age of subjects was 54.7 years. Majority of these diabetic patients belonged to Hindu religion and 52.16% of them were either illiterate or educated up to primary level, [Table 1](#). Other characteristics like duration of disease, family history of disease and source of information is depicted in [Table 2](#).

The proportion of subject who answered correctly to knowledge, attitude and practice questions is depicted in [Figure 1](#).

Regarding knowledge of disease, three-fourth of diabetic patients knew about causes and symptoms. 90% had knowledge about accurate method to monitor DM, well-balanced diet and treatment which was a very positive sign especially in rural patients. The study subjects knew less (38.26%) about regular urine glucose testing and consequences of this disease if not treated (48.69%). Only 33.91% of the diabetic patients undertook physical exercise regularly while 53.91 were following diet control plan. A cause of major concern was that 88.69% of the patients reported missing of diabetic medication. When asked if they should keep in touch with their physician, 80% of them replied in positive.

Only 47.82% study subjects were getting blood pressure checked regularly and similar proportion had gone for eye checkup in the previous year. Last urine examination a month ago, last visit to physician in the preceding month and blood-sugar examination in the preceding month was 39.13%, 45.21% and 57% respectively.

The mean scores of knowledge, attitude and practices were 10.13 ± 2.09 , 3.13 ± 1.26 and 2.86 ± 1.39 respectively. The overall mean KAP score was 16.13 ± 3.53 , [Table 3](#). When knowledge and attitude scores were compared the results revealed a statistical significant association ($p < 0.01$). A highly statistical significant association ($p < 0.001$) was also found between knowledge and practice scores, [Table 4](#) & [Table 5](#).

Discussion

The outcome of the study shows that the level of knowledge regarding DM in diabetic patients was fairly good in this rural area of India with 86.95% of correct responses. The results concur with those reported by Saleh F *et al*,⁽¹²⁾ Ng SH *et al*,⁽¹³⁾ and Saadia Z *et al*,⁽¹⁴⁾. Saleh F *et al*,⁽¹²⁾ found that 82% of diabetic patients had basic knowledge of diabetes albeit in an urban area.

In contrast a few previous studies have reported poor knowledge.^(8,15,16) Low levels of knowledge were reported in a Western Nepal study⁽¹⁷⁾ with only 6.59% of respondents being aware of the importance of regular checking of blood sugar and its consequences on blood pressure. Similarly a Bangladesh study⁽¹⁸⁾ reported very limited knowledge of DM in rural areas even in patients suffering from type 2 DM. Low levels of knowledge of diabetes management, its risk factors and

complications were also reported by Islam FMA *et al*⁽¹⁸⁾ and Thabit MF.⁽¹⁹⁾

In a UAE study,⁽⁷⁾ 60% of respondents believed that lifestyle modification needed controlling sugar and sweets and these findings concur with our results where 66.95 replied similarly.

In response to the attitude about the disease, authors found that about 65.21% of patients had a positive attitude towards the disease. Shrestha L⁽²⁰⁾ reported very healthy in all diabetic patients who were under regular contact with physician in comparison to 80% patients in the present study. The socio-economic status of the individual is of utmost importance regarding the outcome of any disease. In the current study, 53.47% patients had an annual income less than 20,000 which according to authors is a major constraint in attitude in seeking treatment of diabetes mellitus. Practices among patients were not up to the desired level as only 47.82% of them were getting blood pressure and blood sugar checked on monthly basis. Since majority of the patients in the present study were either illiterate or educated up to primary level, authors speculate that it could have some bearing on the attitude and practices of these patients. Shrestha L in a Nepal study⁽²⁰⁾ reported similar results in the study population. Rani PK *et al*⁽⁵⁾ reported that only 36.5% of individuals had knowledge about diabetic retinopathy and believed that if they controlled their blood-sugar, they could avoid a visit to ophthalmologist. Ng SH *et al*⁽¹³⁾ reported good attitude and practices among respondents while Saadia Z *et al*⁽¹⁴⁾ reported lower than desirable levels of attitude and practice.

The knowledge and attitude scores in the current study were in agreement in those reported by Ng SH *et al*⁽¹³⁾ while practice scores were considerably lower. Saadia Z *et al*⁽¹⁴⁾ also reported higher knowledge scores while attitude and practice scores were lower. Overall KAP score of the present study were found to be higher than those reported by Upadhyay DK.⁽¹⁷⁾

The results of the current study showed a significant statistical association between knowledge and practices and between knowledge and attitude. Our results are in agreement with Ng SH *et al*⁽¹³⁾ who reported a strong association between knowledge and attitude as well as knowledge and practices ($p < 0.05$).

One interesting feature in the present study was usage of internet as the source of information among

the patients. Although a miniscule 5.65% were using it to get information about the disease yet it reflects a healthy trend of internet penetration in rural areas of India.

Conclusion

Knowledge of diabetic patients was fairly good but attitude and practices were not up to the mark. Public health Programs involving educational interventions and behavioral change is the need of the hour for better control and management of the disease both in urban and rural areas.

Recommendation

Educational programs and health interventions need to be planned and implemented to manage risk factors along with dietary modification. Governmental and NGOs should help in removing the prevalent misbeliefs and myths about DM. Efforts are needed to improve the understanding of health professionals and community about symptoms, prevention and progression of disease. Improving the literacy rate among the population would go a long way to control this disease.

Limitation of the study

One potential drawback in the current study is a single location data collection and authors recommend more studies in different rural locations to make results truly representative at the national level. Further the results of the study may not be extrapolated to the entire diabetic population. Also that the authors could not retrieve HbA1C levels from study subjects due to non-availability of reliable lab reports which would have otherwise given a more clear picture of past glycaemic control.

Authors Contribution

All authors have contributed equally.

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Tables

TABLE 1 SOCIO-DEMOGRAPHIC CHARACTERS OF THE STUDY POPULATION (N=230)

Gender	No.	% age
Male	128	55.65
Female	102	44.35
Age		
>35yrs.	08	03.47
36-45yrs.	42	18.26
46-55yrs.	68	29.56
56-65yrs.	66	28.69
>65yrs.	46	20.00
Religion		
Hindu	176	76.52
Muslim	32	13.91
Sikh	22	09.56
Literacy		
Illiterate	68	29.56
Upto Primary	52	22.60
Upto Matric	76	33.04
> Matric	34	14.78
Annual Income		
< 20,000	123	53.47
20,000-50,000	68	29.56
>50,000	39	16.95

TABLE 2 CHARACTERISTICS OF PATIENTS WITH TYPE2 DM (N=230)

Duration of Disease		
Years	No.	%
Upto 5yrs.	96	41.73
6-10yrs.	84	36.52
11-15yrs	36	15.65
>15yrs.	14	06.08
Family History of Disease		
Yes	96	41.73
No	134	58.27
Source Of Information		

Doctor	167	72.60
Media	15	06.52
Relatives/Friends	49	21.30
Internet	13	05.65

TABLE 3 MEAN KNOWLEDGE, ATTITUDE AND PRACTICE SCORE OF THE T2DM PATIENTS

Parameter	Mean ± SD
Knowledge	10.13 ± 2.09
Attitude	3.13 ± 1.26
Practice	2.86 ± 1.39
Total	16.13 ± 3.53

TABLE 4 RELATIONSHIP BETWEEN KNOWLEDGE AND ATTITUDE SCORES

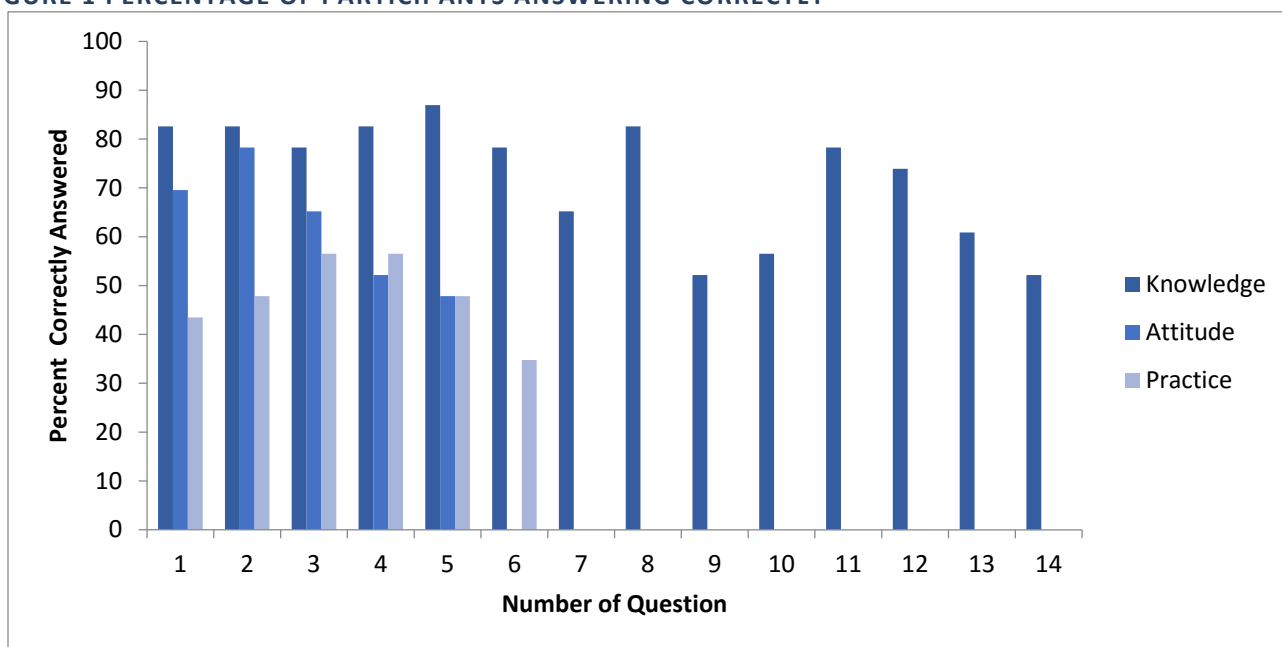
Knowledge range scores	Attitude range scores		Total N (%)
	0-7 N (%)	8-14 N (%)	
0-7 N (%)	05 (02.17)	25 (10.92)	30 (13.09)
8-14 N (%)	75(32.62)	125 (54.29)	200 (86.91)
Total N (%)	80 (34.79)	150 (65.21)	230 (100)
P	0.01		
Chi	4.99		

TABLE 5 RELATIONSHIP BETWEEN KNOWLEDGE AND PRACTICE SCORES.

Knowledge range scores	Practice range scores		Total N (%)
	0-3 N (%)	4-6 N (%)	
0-7 N (%)	09 (03.91)	21 (09.13)	30 (13.09)
8-14 N (%)	161 (70.01)	39(16.95)	200 (86.91)
Total N (%)	170 (73.92)	60 (26.08)	230 (100)
P	<0.0001		
Chi	34.5		

Figures

FIGURE 1 PERCENTAGE OF PARTICIPANTS ANSWERING CORRECTLY



Annexure I**25 ITEM KAP QUESTIONNAIRE**

Knowledge questions	
1	Diabetes is a condition in which the body contains
2	The major causes of diabetes are hereditary and obesity
3	The symptoms of diabetes are frequent urination, increased thirst and hunger
4	Diabetes, if not treated, will cause heart disease
5	The most accurate method of monitoring diabetes is
6	In a diabetic patient, high blood pressure can worsen the disease.
7	A diabetic patient should measure his or her blood pressure.....
8	The lifestyle modification required for diabetic patients is
9	A diabetic patient should have his or her eyes checked every year.
10	Regular urine tests will help in knowing the amount of proteins in your urine.
11	The important factor that helps in controlling blood sugar is
12	A regular exercise regimen will help in glucose control
13	A well-balanced diet include
14	Treatment of diabetes comprises of
Attitude questions	
1	Do you exercise regularly?
2	Are you following a controlled and planned diet?
3	Do you think missing doses of your diabetic medication will have a negative effect on your disease control?
4	Are you aware of your blood sugar levels fall below normal when you are taking drugs?
5	Do you think you should keep in touch with your physician?
Practice Questions	
1	When your blood pressure was last checked?
2	When was your last eye examination?
3	When was your last urine examination?
4	When was your last visit to your physician?
5	When was your blood sugars last checked?
6	When was your lipids last checked?