



### Original Article

## Low awareness of diabetes affecting the clinical outcome of patient A cross-sectional study conducted in rural tertiary care hospital

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#### ABSTRACT

**Introduction:** Developing countries will see more than a 200% increase in the number of diabetics. Lifestyle habits from the cities had started to replicate in semi-urban and rural area. Proper management requires patients to be aware of the nature of the disease, its risk factors, its treatment and its complications. But a less attempts are done to assess the educational need of the patients and studies are mostly from urban area. **Objectives:** In present study we had assessed the existing knowledge of diabetic patient regarding disease in tertiary care rural hospital. **Methods:** A cross sectional study with self administered knowledge based questionnaire containing 33 items was filled by hundred patients and accordingly their knowledge score was graded. F test, t test and descriptive statistic were used for data analysis. **Results:** Significant difference in mean knowledge score was found among different age groups, gender, residence and educational qualification. 18 % had poor knowledge on condition called diabetes, 32%, 16%, 36%, 34% and 32% were poorly aware of etiology, signs and symptoms, medications, dietary management and complications. Mean blood glucose level of patients was  $121.12 \pm 3.63$ , BMI  $30.56 \pm 5.23$  kg/m<sup>2</sup> while BP was  $140 \pm 6.32 / 88 \pm 5.12$  mm Hg. **Conclusion:** As a consequence of low awareness about the diabetes among patients, is affecting their ability of self management and hence having a negative impact on outcome of diabetes.

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### 1. Introduction

The 1997 WHO report has shown that there is a marked increase in the number of people affected with diabetes and this trend is scheduled to grow in geometric proportions in the next couple of decades. In 1995 it was 124 million, 2000 - 153 and will further rise to 299 million in 2025. Unfortunately, the brunt of this increase will be borne by the developing countries. These countries will see more than a 200% increase in the number of diabetics, whilst the developed countries will have a relatively meager increase in numbers of around 45% [1]. India is home to around 40 million diabetics and this number is thought to give India the dubious distinction of being home to the largest number of diabetics in any one country while over 65% of which are not

aware of their condition [2] , by 2025 this is expected to nearly double to 69.9 million.

Moreover, the WHO report predicts that while the main increase in diabetes would be in the >65 years age group in developed countries, in India and other developing countries, the highest increase would occur in the age group of 45 – 64 years which includes people in the peak of their lives. This can have a huge negative impact on the economy of developing countries. Diabetes has thus become a great economic challenge as it drains between 5 – 25 % of the family income of an average Indian. [3]. This underscores the urgent need to improve the knowledge and awareness about diabetes particularly in developing countries like India.

Even though the prevalence rate in urban is more than rural area but according to Indian task force on diabetes screening has shown that the unknown to known diabetes ratio is about 1.8:1 in urban areas, whilst it is as high as 3.3:1 in rural places[1]. Lifestyle habits

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from the cities had started to replicate in semi-urban and rural area[4]. Traditional lifestyle in rural area is replaced by western lifestyle that resulted in overreliance on motorized transport and consumption unhealthy diets rich in carbohydrates, fats, sugars and salts. These lifestyles have contributed to a rise in levels of obesity and overweight in the population increasing the risk for diabetes. Hence a much larger comprehensive prevention program is needed to reach the mass population.

Improving patient knowledge on diabetes will allow them to better contribute to their care and is small investment for large benefit. Another study shows that intensive diabetes education and care management can improve patient outcome, glycaemic control and quality of life of patient [5]. Training in self-management is integral to the treatment of diabetes. Proper management requires patients to be aware of the nature of the disease, its risk factors, its treatment and its complications. Many studies had shown importance of education in management of diabetes [6, 7].

India is currently lacking structured education and information programme regarding diabetes. Obtaining information on level of awareness about diabetes is the first step in formulating a prevention programme. But a less attempts are done to assess the educational need of the patients and studies are mostly from urban area. Abysmally lower awareness must be present in rural area, very few of them are diagnosed and on regular treatment. So in present study we had assessed the existing knowledge of diabetic patient regarding disease in Acharya Vinoba Bhave rural hospital which mostly caters the rural population. Further we had explore its association with patient specific characteristics and develop educational strategies to further improve patients self management skills.

## 2. Materials and Method

A descriptive cross – sectional clinic based study was carried out at tertiary care teaching institute. Structured questionnaire was self administered containing demographic data and knowledge based questions on diabetes regarding definition, causes, signs and symptoms, medications, dietary management and complication. Total 33 items were present each containing one point. All the items were compulsory carrying one point for correct answer, zero for incorrect and don't know remark. Questionnaire took thirty minutes to complete. As per pilot study done with same questionnaire the mean score was  $13.4 \pm 4.89$  with acceptable difference of  $\pm 1$ , confidence level 95%, minimum sample size is 91 patients. We had to contact 123 patients to get one hundred fully filled questionnaires.

Based on scores, level of knowledge was graded as  $\leq 20\%$  - very poor, 21- 40% poor, 41-60% average, 61-80% good and above 80% excellent. Appropriate statistics was used to analyze the collected data.

## 3. Results

Table I: 36 % were in age group of 41-50 yrs followed by early incidence in less than 40 yrs. 61 % diabetics were from rural area, 28% farmer by occupation and all the patients were qualified atleast upto SSC. Significant difference in mean knowledge score was found among different age groups, gender, residence and educational qualification.

**Table 1. Demographic characteristics of diabetics and its relation with knowledge score**

	No. of diabetics	Mean knowledge	F-value	p-value
<b>Age(yrs)</b>				
31-40	32	13.43 $\pm$ 2.93	2.868	0.0405
41-50	36	12.74 $\pm$ 3.03		
51-60	24	12.03 $\pm$ 2.9		
61-70	8	110.3 $\pm$ 2.10		
<b>Sex</b>				
Male	58	13.41 $\pm$ 3.62	1.983	0.051
Female	42	12.1 $\pm$ 2.68		
<b>Residence</b>				
Rural	61	11.93 $\pm$ 3.53	2.018	0.046
Urban	39	13.2 $\pm$ 2.65		
<b>Educational Qualification</b>				
SSC	38	11.03 $\pm$ 3.83	4.626	0.004
HSC	36	11.68 $\pm$ 4.22		
Graduate	20	13.90 $\pm$ 2.07		
Post Graduate	6	15.66 $\pm$ 3.78		
<b>Occupation</b>				
Professionals	20	14.00 $\pm$ 5.20	1.928	0.1303
Clerk	22	12.81 $\pm$ 3.42		
Farmer	28	11.42 $\pm$ 2.70		
Business/ shop owner	30	12.53 $\pm$ 3.52		

Table II: 18 % had poor knowledge on condition called diabetes, 32%, 16%, 36%, 34% and 32% were poorly aware of etiology, signs and symptoms, medications, dietary management and complications. Overall only 2% had excellent knowledge on diabetes.

**Table 2: Distribution of diabetes patients with regardsto level of knowledge of aspects of diabetes.**

Level of Knowelge Score	Poor	Average	Good	Excellent
What is diabetes	18(18%)	54(54%)	20(20%)	8(8%)
Etiology	32(32%)	36(36%)	14(14%)	18(18%)
Sign and Symptoms	16(16%)	34(34%)	20(20%)	30(30%)
Medications	36(36%)	36(36%)	20(20%)	8(8%)
Dietary Management	34(34%)	52(52%)	14(14%)	0(0%)
Complications	32(32%)	46(46%)	12(12%)	10(10%)
Overall	10(10%)	78(78%)	10(10%)	2(2%)

Table III. Mean percentage score for definition, etiology, signs and symptoms, medication, dietary management, complications was 39%, 43%, 53%, 33%, 32.7%, and 33% respectively. Overall mean score was  $12.58 \pm 3.69$ .

**Table 3: Mean scores of diabetes patients**

Area	Maximum score	Mean	Standard deviation	Mean percentage
Definition	3	1.18	0.82	39.33
Etiology	5	2.16	1.18	43.20
Sign and Symptoms	5	2.66	1.11	53.20
Medications	3	1.00	0.94	33.33
Dietary Management	14	4.58	2.16	32.71
Complications	3	1.00	0.92	33.33
Overall	33	12.58	3.69	38.12

Table IV: Mean blood glucose level of patients was  $121.12 \pm 3.63$ , BMI  $30.56 \pm 5.23 \text{ kg/m}^2$  while BP was  $140 \pm 6.32/88 \pm 5.12 \text{ mm Hg}$ .

**Table4: Clinical aspects of type II diabetic patients**

Clinical Aspects	Mean $\pm$ SD
Random Blood glucose level	$123.12 \pm 3.63$
Height	$5.5 \pm 1.02$ inches
Weight	$80.21 \pm 4.53$ kg
BMI	$30.56 \pm 5.23 \text{ kg/m}^2$
Systolic Blood Pressure	$140 \pm 6.32 \text{ mm Hg}$
Diastolic Blood Pressure	$88 \pm 5.12 \text{ mm Hg}$

#### 4. Discussion

Participants in this included 58% males and 42% females. The mean age was  $47 \pm 3.4$  yrs. Most people with diabetes in low income and middle income countries are middle aged (45-64yrs) not elderly which is contrary to popular belief that diabetes is disease of elderly[8]. So physician not only faces dual challenge with more patients but these patients will require life long treatment and ruin the national economy. There is significantly decrease in knowledge score of elderly which is in line with others[9,10]. Aged has decreased cognitive functions, less education and more barriers in practicing self care their middle aged counterparts.

Significant difference of knowledge score was found according to gender and urban-rural population that correlates with the other studies. Males and urban population are more exposed to diabetes education from various sources. Higher education and professionals are related to each other but significant difference was only seen with education though professional had comparatively more knowledge score. Finding a relationship between literacy and health outcome implies an inability to

acquire and understand health related information which is important mediating factor for determining good outcome [11]. 18% had poor knowledge about the condition called diabetes and more than half believe it to be a communicable disease. 32% had poor knowledge on etiology of diabetes as half of them were aware of hereditary nature of disease while other risk factor was known to only 30- 40% of patients. 30 % had excellent knowledge on signs and symptom of diabetes. This was the only area where patients mean percentage score crosses 50%. Only 48% thinks diabetes to be manageable and just one fifth of them were aware of life-long treatment and regular revision of drugs. The questions related to dietary management reveals that many misconceptions were present regarding fasting and frequency of meal while only 38% and 34% opined for dietary modification and physical exercise as a part of management regime. Mean score of knowledge regarding complications of diabetes was just  $1 \pm 0.92$  out of maximum 3. Less than one fourth know the importance of foot care and follow up investigations to be done for early diagnosis.

General awareness of diabetes mellitus in present study was very poor when compared with other studies [12,13,14]. The difference in finding among different studies may be due to difference in literacy status, gross income of country and patients exposure to diabetic education. The present study states very low awareness among patients than the other carried in this part of world as all were done in urban set up [12, 13, 15, 16].

Random blood glucose level of patients were ( $123.12 \pm 3.63$  mg/dl) higher than normal. Blood pressure was also found to be at cut off value, though all these patients were under treatment since at least last one year. BMI too was alarmingly high ( $30.56 \pm 5.23 \text{ kg/m}^2$ ). Another study had shown the direct influence of knowledge on attitude and practice of patients [17]. The management of diabetes is dependent to a great extent on affected person's own ability to carry out the self care in their daily lives and patient's education is essential component of achieving this objective.

#### 5. Conclusion

As a consequence of low awareness about the diabetes among patients, is affecting their ability of self management and hence having a negative impact on outcome of diabetes.

#### Limitations

As knowledge of patients with self administered questionnaire was to be tested, we only included those who were able to read and write fluently. So the study participants may not be the representative of diabetic population in India. Study was clinic based so referral bias may be present. We had not taken into account those who were exposed or not exposed to diabetic education.

#### Recommendation

Education should be delivered by health professionals, with some degree of reinforcement of that education made at additional points of contacts, may provide the best opportunity for improvements in patient outcomes. The health education module on diabetes can be prepared for general community. The health

education intervention activity can be coupled with clinical investigations as it is much accepted method. Health education is by far the best vaccine to prevent and it needs to be strengthened at peripheral level by continue medical education for medical officers. Audiovisual techniques can be used for rural public to create wider awareness about the importance of Diabetes.

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