

**AWARENESS OF DIABETICS TOWARDS DIABETES AND DIABETIC
COMPLICATIONS IN KERALA: A CROSS SECTIONAL STUDY**¹Vivek Joseph Varughese, ^{2*}Sowparnika Treasa Sabu and ³Vignesh Krishnan Nagesh¹MBBS Graduate, Government Medical College Thiruvananthapuram.²Assistant Professor, Dept. of Pharmacy Practice, Ezhuthachan College of Pharmaceutical Sciences, Trivandrum.³Clinical Observer, Dept. of Hematology and Oncology, Georgia Cancer Center- Augusta University, Georgia.***Corresponding Author: Sowparnika Treasa Sabu**

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Article Received on 16/07/2021

Article Revised on 05/08/2021

Article Accepted on 26/08/2021

ABSTRACT

Diabetes is widely recognized as an emerging epidemic that has a cumulative impact on almost every country, age group, and economy across the world. According to the International Diabetes Federation, in 2015, approximately 415 million people were suffering from diabetes worldwide, and this number is expected to exceed 640 million by the year 2040. It is estimated that half of patients with diabetes are unaware of their disease and are thus more prone to developing diabetic complications. In our study, 77% of subjects under the age of 30 scored good, the same proportion being 41% in the 30-60 age group, and 22 % in subjects above 60. Statistical significance was present for knowledge, attitude as well as practices when the subjects were assessed based on their educational level. A similar trend was observed with regards to the family income also: with a good score regarding knowledge rising from 34% among subjects from families with an income less than 10,000 to 84% in subjects from families with an income more than 40,000. Age, educational status, family history of Diabetes and information thus gathered from the relatives and income play a significant role in controlling Diabetes and its complications.

KEYWORDS:**INTRODUCTION**

Diabetes mellitus is a global epidemic with profound morbidity. Diabetes leads to a range of complications grouped into macrovascular (large blood vessel) complications, such as cardiovascular disease and stroke, and microvascular (small blood vessel) complications, such as kidney disease.^[1-10] Diabetes complications are common among patients with type 1 or type 2 diabetes but, at the same time, are responsible for significant morbidity and mortality. The chronic complications of diabetes are broadly divided into microvascular and macrovascular, with the former having much higher prevalence than the latter. Microvascular complications include neuropathy, nephropathy, and retinopathy, while macrovascular complications consist of cardiovascular disease, stroke, and peripheral artery disease (PAD). Diabetic foot syndrome has been defined as the presence of foot ulcer associated with neuropathy, PAD, and infection, and it is a major cause of lower limb amputation. Finally, there are other complications of diabetes that cannot be included in the two aforementioned categories such as dental disease, reduced resistance to infections, and birth complications among women with gestational diabetes.^[3,5,7]

Macrovascular complications of diabetes, including coronary heart disease, stroke and peripheral vascular

disease, and microvascular complications, such as end-stage renal disease (ESRD), retinopathy and neuropathy, along with lower-extremity amputations (LEA), are responsible for much of the burden associated with diabetes.^[11-15] There is also growing recognition of a diversifying set of causally-linked conditions, including cancers, ageing-related outcomes (e.g. dementia), infections and liver disease.

MATERIALS AND METHODS**STUDY DESIGN**

A cross-sectional survey-based study was conducted and consent was obtained from all the participants. Data were collected and analyzed anonymously. A convenience sample approach was adopted in this study where people from the different parts were invited to participate. Amid the global pandemic, researchers utilized social media platforms to collect data. In this study, online social media platforms (Facebook, WhatsApp) were used to recruit participants.

STUDY PERIOD: 9 months (SEP 2020- MAY 2021)

INCLUSION CRITERIA

1. > 18 yrs. of age
2. Both Male and Female.
3. Willingness to participate in the study

EXCLUSION CRITERIA

1. Psychiatric patients
2. <18 yrs. of age
3. Not willing to participate in the study
4. Very sick and bed ridden patients

INSTRUMENT DEVELOPMENT AND MEASURES

The questionnaire used in this study was developed based on literature review.^[3,4,5,6] and discussion within the research team. To reduce potential bias introduced by self-reported data, participants were ensured the confidentiality and privacy of their responses. A pilot sample (n = 10) was used to improve the wording and clarity of expression of the survey items. Data from the pilot sample was not used in any further analysis.

QUESTIONNAIRE

The demographic variables included in the study were: gender, age, marital status, educational level, and monthly income. The Knowledge, Attitude, and Practice (KAP) questionnaire was divided into: 10 questions each in each section. Participants were categorized as good when they correctly responded to 5/10 questions in each section and others were taken as poor.

RESULTS AND DISCUSSION

A total of 100 participants were enrolled in the study. Majority of the sample belong to the age group 30-60 years (57%), were males (54%) and married (43%). 65% were graduates and the majority have a monthly income of Rs. 10-20000 (52%). 93% had a family member with Diabetes and the majority have a disease duration of less than 5 years.

Table 1: Demographics (N=100).

Variables		Frequency (%)
Age	<30	9%
	30-60	57%
	>60	34%
Gender	Male	54%
	Female	46%
Marital status	Single	21%
	Married	43%
	Widow	12%
	Separated	24%
Educational level	Illiterate	0%
	Primary	2%
	Secondary	9%
	High school	12%
	Degree	65%
	Post graduation	12%
Family monthly income	<10000	22%
	10-20000	52%
	20-30000	10%
	30-40000	9%
	>40000	7%
Family member has DM	93	93%
Duration of DM	<5 Years	42%
	5-10 years	34%
	10-20 years	12%
	>20 years	12%

Table 2: KAP Regarding Diabetes.

		Knowledge		P- value	Attitude		P-value	Practice		P-value
		good	poor		good	poor		good	poor	
Age	<30	77%	33%	<0.0001	75%	35%	0.06	71%	29%	0.07
	30-60	41%	59%		43%	57%		41%	59%	
	>60	22%	78%		23%	77%		22%	78%	
Gender	Male	34%	66%	0.34	34%	66%	0.34	30%	70%	0.44
	Female	41%	59%		42%	58%		42%	58%	
Marital status	Single	70%	30%	0.56	71%	29%	0.44	50%	50%	0.65
	Married	65%	35%		66%	34%		22%	78%	
	Widow	43%	57%		40%	60%		40%	60%	
	Separated	55%	45%		50%	50%		11%	89%	
Educational level	Illiterate	0%	0%	<0.0001	0%	0%	0.02	0%	0%	0.045
	Primary	11%	89%		20%	80%		20%	80%	
	Secondary	23%	77%		20%	80%		11%	89%	
	High school	43%	57%		43%	57%		40%	60%	
	Degree	55%	45%		50%	50%		43%	57%	
	Post graduation	87%	13%		80%	20%		43%	57%	
Family monthly income	<10000	34%	66%	<0.0001	34%	66%	0.03	24%	76%	0.04
	10-20000	56%	44%		43%	57%		43%	57%	
	20-30000	67%	33%		80%	20%		71%	29%	
	30-40000	71%	29%		50%	50%		71%	29%	
	>40000	84%	16%		82%	18%		82%	18%	
Family member has DM	93	77%	33%	0.04	70%	30%	0.002	60%	40%	0.03
Duration of DM	<5 Years	65%	35%	0.34	60%	40%	0.34	56%	44%	0.67
	5-10 years	54%	46%		51%	49%		51%	49%	
	10-20 years	33%	77%		30%	70%		23%	77%	
	>20 years	41%	59%		40%	60%		11%	89%	

Table 3 KAP Regarding Diabetic Complications.

		Knowledge		P- value	Attitude		P-value	Practice		P-value
		good	poor		good	poor		good	poor	
Age	<30	77%	33%	<0.01	71%	29%	0.46	72%	28%	0.004
	30-60	41%	59%		41%	59%		43%	57%	
	>60	22%	78%		22%	78%		23%	77%	
Gender	Male	34%	66%	0.34	30%	70%	0.34	34%	66%	0.44
	Female	41%	59%		42%	58%		43%	57%	
Marital status	Single	70%	30%	0.56	50%	50%	0.44	71%	29%	0.65
	Married	65%	35%		22%	78%		66%	34%	
	Widow	43%	57%		40%	60%		43%	57%	
	Separated	55%	45%		11%	89%		50%	50%	
Educational level	Illiterate	0%	0%	<0.001	0%	0%	0.047	0%	0%	0.0025
	Primary	11%	89%		20%	80%		20%	80%	
	Secondary	23%	77%		11%	89%		22%	78%	
	High school	43%	57%		40%	60%		43%	57%	
	Degree	55%	45%		43%	57%		50%	50%	
	Post graduation	87%	13%		43%	57%		80%	20%	
Family monthly income	<10000	34%	66%	<0.001	24%	76%	0.01	34%	66%	0.056
	10-20000	56%	44%		43%	57%		43%	57%	
	20-30000	67%	33%		71%	29%		67%	33%	
	30-40000	71%	29%		71%	29%		50%	50%	
	>40000	84%	16%		82%	18%		80%	20%	
Family member has DM	93	77%	33%	0.04	60%	40%	0.007	70%	30%	0.03
Duration of DM	<5 Years	65%	35%	0.34	56%	44%	0.34	60%	40%	0.57
	5-10 years	54%	46%		51%	49%		51%	49%	

	10-20 years	33%	77%		23%	77%		34%	66%	
	>20 years	41%	59%		11%	89%		40%	60%	

DISCUSSION

When it came to Diabetes, the knowledge about the condition showed statistical significance when being assessed with respect to the age group of the subjects. 77% of subjects under the age of 30 scored good, the same proportion being 41% in the 30-60 age group, and 22 % in subjects above 60. Statistical significance was present for knowledge, attitude as well as practices when the subjects were assessed based on their educational level: with the percentage of people scoring good going up from 11% among the illiterate to 87% among the post graduates with respect to knowledge, nil among illiterate to 80% among postgraduates with respect to attitude, and nil among illiterate to 43% among postgraduates with respect to practices. A similar trend was observed with regards to the family income also: with a good score regarding knowledge rising from 34% among subjects from families with an income less than 10,000 to 84% in subjects from families with an income more than 40,000. A good score in attitude exhibited a rise from 34% to 82%, and practices from 24% to 82%, when going from less than 10,000 earning to more than 40,000 earning subjects. A good score of 77% with regards to knowledge, 70% with regards to attitude and 60% with regards to practices were seen in subjects with a family member with diabetes, the data being statistically significant. Subjects being assessed based on gender, marital status and duration of the disease did not provide statistically significant information.

When it came to the complications of Diabetes, statistically significant data was obtained only with respect to knowledge regarding the same, when the subjects were being assessed based on their age: with 77% of subjects under the age of 30 getting a good score, the same percentage came down to 41% in the 30-60 age group, and 22% in the more than 60 age group. Statistically significant information was obtained with respect to knowledge, attitudes as well as practices regarding diabetic complications when the subjects were being assessed based on their educational level: the percentage of subjects scoring positive going up from nil among illiterates to 87% among postgraduates with regards to knowledge about complications of Diabetes. Meanwhile the same trend for attitude went up from nil to 43%, and practices from nil to 80%. 34% of the subjects from families with incomes less than 10,000 scored positive for knowledge regarding the complications, while it rose to 84% for subjects from families with an income more than 40,000. Attitude regarding the complications was associated with a positive score of 24% for subjects with a family income of less than 10,000, the value being 84% for subjects with family income more than 40,000. There was a positive score of 77% with regards to knowledge and 60% with regards to attitude for subjects with a family member with diabetes. Assessment based on gender,

marital status and duration of the disease failed to show up with a statistically meaningful information with respect to awareness about complications of diabetes

CONCLUSION

The level of education of the study subjects exhibited statistically significant interpretations when being assessed for knowledge, attitudes as well as practices with respect to diabetes and its complications. A meaningful interpretation which could be made out of this being, as the level of education of the subject improved, there was an improved understanding about diabetes as well as its complications, with respect to knowledge, attitude as well as practices.

The family income is another factor that exhibited a positive correlation with regards to knowledge, attitude and practices about diabetes among the study population. As the monthly income of subjects moved up from the less than 10,000 to the above 40,000, there was a better understanding with respect to knowledge and attitude towards the complications of diabetes also.

The presence of a family member with diabetes is another factor that was seen to hold a positive correlation with improved understanding regarding knowledge, attitude as well as practices associated with diabetes as well as its complications, with subjects having a family member having diabetes showing around a 90% improved knowledge about diabetes and its complications. There was also a 60-70% better attitude as well as practices with respect to the disease and its complications for subjects with a family member with diabetes.

Age was another factor that showed an association with respect to knowledge about diabetes and its complications. The knowledge regarding diabetes and its complications being more positive in the less than 30 age group, with it going down in the 30-60, and further down in the more than 60 age group.

In total, a higher level of education, a higher family income and presence of a family member with Diabetes is associated with a better understanding about knowledge, attitude and practices regarding Diabetes and its complications. The awareness regarding the same being more in the less than 30 age group, and less in the elderly. Gender, marital status and the duration of having the disease did not seem to be statistically associated with the knowledge, attitudes or practices about the disease, nor its complications.

AUTHOR CONTRIBUTIONS

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and

interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; have agreed on the journal to which the article will be submitted; reviewed and agreed on all versions of the article before submission, during revision, the final version accepted for publication, and any significant changes introduced at the proofing stage; and agree to take responsibility and be accountable for the contents of the article.

DISCLOSURE

The authors report no conflicts of interest for this work.

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