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Original Research Article

Study to assess the knowledge regarding diabetes management amongst medical intern and nursing staff in tertiary care teaching hospital in Marathwada region of Maharashtra, India

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ABSTRACT

Background: Diabetes has become a major health problem in India. Inadequate knowledge and training of frontline medical care givers like nursing staff, intern doctors and resident doctors may result in increase in both acute and chronic complications amongst diabetes patients. So, it results to high economic burden on family especially in rural parts of India. So, objective of this study was to assess knowledge about diabetes and its management amongst medical interns and nursing staff in tertiary care teaching hospital in Marathwada region of Maharashtra.
Methods: This was a cross-sectional study conducted at IIMSR Medical College, Badnapur, Jalna, Maharashtra amongst 70 nursing staff and 70 medical interns by convenient sampling method during the period of June to August 2018. Knowledge on diabetes was assessed through 30 questions.
Results: Knowledge related to diabetes and its management is assessed in 70 nursing staff and 70 medical interns using 30 item questionnaires. Out of 70 nursing staff mean knowledge score was 21.41 and out of 70 medical interns mean knowledge score was 23.14. Those nursing staff that had experience more than 5 years and positive family history of DM had significant greater knowledge than counterpart. There was no significant difference in knowledge level in gender, age, degree or diploma and whether in-service education opted or not amongst nursing staff. Amongst intern knowledge was more in those who had positive family history of DM. There was no significant difference in knowledge level in male and female interns.
Conclusions: This study concluded that there was knowledge gap about diabetes and its management amongst frontline care givers like nursing staff as compared to medical interns suggesting requirement of additional training and educations amongst frontline health care providers.

Keywords: Diabetes mellitus, Knowledge, Medical Intern, Nursing staff

INTRODUCTION

Diabetes mellitus (DM) is one of the largest global health emergencies of 21st century. The burden of diabetes drains national healthcare budget, slows economic growth and causes catastrophic expenditure to vulnerable households.[1] According to the International Diabetes Federation (IDF), the number of people globally with type 2 diabetes mellitus (T2DM) will increase to 552 million by 2030, over twice the number in 2000. Nearly

21% of these new cases will be from India, which has the highest number of cases in any country. India currently has 61.3 million diabetics, a figure that is projected to increase to 103 million by 2030.[2] WHO projects that diabetes will be the 7th leading cause of death by 2030.[3] The population in India has an increased susceptibility to diabetes mellitus.[4] It has been shown that Indians have a younger age of onset of diabetes compared to other ethnic groups.[5] In the national survey 54.1% of diabetes developed it in the most productive years of their lives i.e. before the age of 50 years and they also had a higher risk of developing chronic complications of diabetes.[6] Long standing diabetes mellitus is associated with an increased prevalence of micro-vascular and macro-vascular complications specially if inadequately treated. Apart from the limited number of professional health staff in most developing countries it has been indicated that health workers are insufficiently trained in chronic disease management.[7] For a person from rural part of India, access to trained diabetes care givers is not easily available. A study from Delhi reported that the average annual direct cost of type 2 diabetes was INR 6,212.4 (USD 143.14) in 2005, of which more than half were drug costs (INR 3,324, USD 76.59). Similarly, a study from northern India on diabetes type 1 and 2 reported a total direct cost of INR 4,966 (USD 114.4) over six months in 2005, 62% of the total direct cost were drug costs (INR 3,076, USD 70.88).[7-9] Adequate knowledge is required in health care providers like nursing staff, intern doctors, resident doctors working in wards to treat properly diabetes and to prevent its complications so that it will reduce economic burden on family.[9] Hence, the present study was to assess the knowledge regarding DM management amongst intern doctors and nursing staff and to identify major areas of deficiencies requiring corrective steps by intensifying educational and training program. Hence, the objective of this study was to assess knowledge about diabetes and its management amongst medical interns and nursing staff in tertiary care teaching hospital in Marathwada region of Maharashtra.

METHODS

This was a cross-sectional study conducted at IIMSR Medical College, Badnapur, Dist. Jalna, Maharashtra, India amongst 70 nursing staff and 70 medical interns by convenient sampling method during the period of June 2018 to August 2018. After taking necessary permission, institutional ethical committee approval was obtained for the study. Pre-designed, pre-tested, self-administered questionnaire in English was devised to collect data. Knowledge on diabetes was assessed through 30 questions which are based on knowledge about definition, pathophysiology, clinical features, investigations, prevention and treatment of diabetes mellitus. Questions were with 'Yes' and 'No' options. Each correct answer was given one score and the range of the score varied between 0 (with no correct answer) to 30 (for all correct answers). A scoring mechanism was used to understand overall knowledge level, a score of one has given for each correct response and zero for wrong response. Respondents with all correct response get a maximum of 30 points, higher points indicate good knowledge. Based on total score, knowledge level on diabetes and its management was categorized into poor (≤10 points), average (11-20 points) and good (≥21-30 points). The participation to study was on voluntary basis. Those nursing staff and medical interns was absent during study period and those not willing to give consent were excluded from study. All participants were given a briefing about objective of the study and were assured confidentiality in collection of personal data. Universal sampling method is used to enroll study participants. After data collections, data was entered in MS Excel and results were analysed statistically using percentage, proportions and t-test. If p-value was equal or less than 0.05 and observed difference was considered to be statistically significant. Quantitative data such as age, duration of service etc., was presented with the help of mean, standard deviation, median and inter-quarantine range. Qualitative data such as gender, various knowledge related to question etc., was be presented with the help of frequency, percentile table.

RESULTS

For this study, diabetes related knowledge was assessed among 70 nursing staff working in different departments.

Table 1: Socio-demographic characteristics of the nursing staff.

Variable		Frequency	%
Age (in yrs)	21 to 25 yrs	19	27.14
	26 to 30 yrs	27	38.57
	31 to 35 yrs	11	15.71
	Above 35 yrs	13	18.57
	Total	70	100.00
	Mean age (Mean±SD)	29.26±5.72	
	Range	21-42	
Gender	Male	17	24.29
	Female	53	75.71
	Total	70	100.00
Qualification	Graduate and above	06	8.57
	RANM	14	20.00
	RGNM	50	71.43
	Total	70	100.00
Experience (length of service)	Upto 5 yrs	53	75.71
	Above 5 yrs	17	24.29
	Total	70	100.00
Family history of DM	Yes	07	10.00
	No	63	90.00
	Total	70	100.00
Inservice education	Yes	40	57.14
	No	30	42.86
	Total	70	100.00

The demographic characteristic of the study is shown in Table 1. Mean age of participants was 29.26+/-5.72 with range of 21 to 42 years, out of that 53 (75.71%) were females and 17 (24.29%) were males.

In total, 64 (91.43%) had diploma in nursing, 5 were graduates and 1 were post-graduate in nursing. In total, 53 (75.71%) had less than 5 years of experience and rest 17 (24.29%) had above 5 years of experience. 7 (10%) reported positive family history of DM in first degree relatives. Out of 70 nurses, 40 (57.14%) completed in-service education.

Table 2: Knowledge regarding diabetes management among nursing staff.

Category	Knowledge score	Frequency	%
Poor	1-10	00	00
Average	11-20	23	32.86
Good	21-30	47	67.14

It was seen from Table 2 that out of total, 47 (67.14%) had score between 21 to 30 and 23 (32.86%) had score 11 to 20 and no one had score between 1 to 10 marks.

Table 3: Association between socio-demographic variables and knowledge score on diabetes management among nursing staff.

Variable	Knowledge score			
	Average No. (%)	Good No. (%)	χ^2 -value	P-value
Age group				
21 to 25 yrs	03 (4.29%)	16 (22.86%)		
26 to 30 yrs	09 (12.86%)	18 (25.71%)		
31 to 35 yrs	04 (5.71%)	07 (10%)	5.169	0.160 NS
Above 35 yrs	07 (10%)	06 (8.57%)		
Total	23 (32.86%)	47 (67.14%)		
Gender				
Male	06 (8.57%)	11 (15.71%)		
Female	17 (24.29%)	36 (51.43%)	0.060	0.806NS
Total	23 (32.86%)	47 (67.14%)		
Qualification				
Graduate and above	00 (0%)	06 (8.57%)		
RANM	03 (4.29%)	11 (15.71%)	4.550	0.108 NS
RGNM	20 (28.57%)	30 (42.86%)		
Total	23 (32.86%)	47 (67.14%)		
Experience (length of service)				
Upto 5 yrs	21 (30%)	32 (45.71%)		
Above 5 yrs	02 (2.86%)	15 (21.43%)	4.528	0.033 S
Total	23 (32.86%)	47 (67.14%)		
Family history of DM				
Yes	00 (0%)	08 (11.43%)		
No	23 (32.86%)	39 (55.71%)	4.420	0.036 S
Total	23 (32.86%)	47 (67.14%)		
Inservice education				
Yes	11 (15.71%)	29 (41.43%)		
No	12 (17.15%)	18 (25.71%)	1.214	0.271 NS
Total	23 (32.86%)	47 (67.14%)		

It was observed from Table 3, that mean knowledge score of participants was 21.41 with range of 11 to 30 marks. No statistically significant difference in knowledge score was found in different age group (P=0.160) and gender of study participants (P=0.806). There was no statically significant difference in knowledge score in relation to qualification. There was statistically significant difference in level knowledge amongst less than 5 years or more than 5 year's experience (p=0.033).

Knowledge was more in experience more than 5 years. Also, there was significant difference in knowledge score

in participants who had first degree relatives with DM and those who don't have (p=0.036).

Knowledge was more on those participants who had positive history first degree relative DM. No statically significant difference in knowledge score amongst participants who had in service education and who do not have in service education.

For this study, diabetes related knowledge was assessed among 70 interns working in different departments. It was seen from Table 4 that out of total, 38 (54.29%) were females and 32 (45.71%) were males. 28 (40.00%) reported positive family history of DM in first degree relatives.

Table 4: Socio-demographic characteristics of the interns.

Variable	Frequency	Percentage
Gender		
Male	32	45.71
Female	38	54.29
Total	70	100
Family history of DM		
Yes	28	40
No	42	60
Total	70	100

Table 5: Knowledge regarding diabetes management among medical interns.

Knowledge score	Frequency	Percentage
Poor (≤10)	00	00
Average (11-20)	13	18.57
Good (21-30)	57	81.43

Table 6: Association between socio-demographic variables and knowledge score on diabetes management among interns.

Variable	Knowledge score			
	Average no. (%)	Good no. (%)	χ^2 value	P-value
Gender				
Male	06 (8.57%)	26 (37.14%)	0.001	0.972 NS
Female	07 (10.00%)	31 (44.29%)		
Total	13 (18.57%)	57 (81.43%)		
Family history of DM				
Yes	02 (2.86%)	26 (37.14%)	4.031	0.045 S
No	11 (15.71%)	31 (44.29%)		
Total	13 (18.57%)	57 (81.43%)		

It was observed from Table 5 that the 57 (81.43%) had knowledge score between 36 to 50 and 13 (18.57.26%) had score between 21 to 35 marks. It was seen from Table 6 that no statistically significant difference in knowledge score was found in gender of study participants. In participants who had first degree relatives with DM there is significant difference in knowledge score and those who don't have. Participants with positive DM history had more knowledge score.

It was seen from Table 7 that mean knowledge score in intern was 23.14 with range of 11 to 30 marks and nursing staff was 21.41, suggest statistically significant good knowledge in intern than the nursing staff.

Table 7: Comparison of knowledge score on diabetes management between interns and nursing staff.

Group	Frequency	Mean	SD	t-test	P-value
Interns	70	23.14	3.88	-2.38	0.018
Nursing staff	70	21.41	4.69		

DISCUSSION

Knowledge about diabetes and its management amongst frontline professionals like nurses and medical interns was very important and crucial as they paly important role in diabetic care to preventing macro and micro vascular complications and to reduce economic burden in diabetic patient. Poor knowledge in health care providers has been found to be major obstacles in management of diabetes.[10-12] Hospital nurses have been reported to be inadequately trained in diabetes management.[13]

According to this study, 47 (67.14%) nursing participant's knowledge score were between 21 to 30 marks, only 23 (32.86%) nursing participant's score were between 11 to 20 marks. Mean knowledge score of nursing participant were 21.41. So, 67.14% nursing participants had good score and 32.86% had average knowledge score. This finding was similar to the study by Ahmad A et al.[10]

In present study, knowledge score was more in nursing staff that had experience more than 5 years and there no significant knowledge level difference in gender and age of nursing participants. This finding was in contrary to the study by Abduelkarem AR et al.[14]

In current study, both nursing and intern with first degree relative with DM had statistically significant knowledge than counterpart. Interestingly there is no difference in level of knowledge amongst nurses with degree and diploma in nursing, this finding was in contrary to the study by Abduelkarem AR et al.[14]

According to this study, 57 (81.43%) intern participant score was between 21 to 30 marks, 13 (18.57%) intern participants score was between 11 to 20 marks. Mean knowledge score of intern participant were 23.14, had good score. This finding was similar to the study by Ahmad A et al.[10] In this study, there is no significant difference in level of knowledge in gender.

This finding was in contrary to the study by Abduelkarem AR et al.[14] In current study, mean knowledge score in intern was 23.14 and nursing staff was 21.41, suggest statistically significant good knowledge in intern than the nursing staff.

CONCLUSION

This study concluded that medical interns participated in study have certain level of knowledge about diabetes and its management but this study also indicates that there was knowledge gap about diabetes management in nursing staff especially nursing staff with less experience. This study also showed that the knowledge about DM management is good in interns and nursing staff, who had first degree relative with DM, suggest requirement of practical approach to teach about DM management. It's needed to improve knowledge amongst frontline heath care providers like nursing staff and medical interns to provide quality care to diabetic patients, so that complications due to DM will be reduced and will lessen the economic burden. To improve the knowledge, they require additional training programs, lectures and seminars etc., about diabetes management.

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