Section: Community Medicine

Original Research Article

STUDY ON ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC FACTORS AND SELF- CARE PRACTICES AMONG DIABETIC PATIENTS IN A TERITARY CARE INSTITUTE: A CROSS- SECTIONAL STUDY

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ABSTRACT

Background: Diabetes mellitus is a major global health problem associated with significant morbidity and mortality due to its acute and chronic complications. Effective self-care practices, particularly regular physical activity and blood glucose monitoring, play a crucial role in preventing complications and improving quality of life among diabetic patients. This study assessed these self-care practices and their association with socio-demographic factors among diabetic individuals. **Aim:** To study physical activity and blood glucose monitoring practices among diabetic patients and determine their association with socio-demographic characteristics.

Materials and Methods: A community-based cross-sectional study was conducted among 462 diabetic patients selected through convenience sampling. Data were collected using a structured, pre-tested, self-administered questionnaire after obtaining informed consent. Data were analyzed using IBM SPSS version 25, and results were expressed as frequencies, percentages, and statistical associations.

Results: The mean age of participants was 57.5 ± 10.64 years, with the majority (33.1%) aged 60- 69 years. Most participants were illiterate (47.8%) and belonged to the lower-middle socioeconomic class (45.9%). Walking for less than 30 minutes daily was reported by 88.1% of participants, while only 6.5% walked for 30 minutes or more. Regular blood glucose monitoring within three months was reported by 86.4% of participants, and most monitoring was conducted at rural health centers (87.2%). A significant association was observed between sex and duration of physical activity ($p<0.001$), while socioeconomic status was significantly associated with the frequency of blood glucose monitoring ($p=0.015$).

Conclusion: Although regular blood glucose monitoring was widely practiced, adequate physical activity remained low among diabetic patients. Strengthening diabetes self-care education and promoting lifestyle modifications are essential to improve disease management and prevent complications.

Keywords: Blood Glucose Monitoring, Diabetes Mellitus, Physical Activity.

INTRODUCTION

According to the 11th edition of the international diabetes federation (IDF) Diabetes Atlas 2024, it is estimated that 589 million adults aged 20-79 were living with diabetes. Over 9.5 million people had type 1 diabetes in 2024, of whom 1.9 million children and adolescents under the age of 20. The total number of people living with diabetes is projected to reach 853 million by 2050.[2] Diabetes has acute as well as chronic complications, which are responsible for the

majority of morbidity and mortality associated with the disease, therefore requires continuing medical care and ongoing patient self-management education and support to prevent acute complications and to reduce the risk of long-term complications.[8,9]

Diabetes self-care practices are undertaken by people with or at risk of developing diabetes in order to successfully delay the onset and manage the disease by their own, it includes healthy eating habits, being physically active, regular monitoring of blood glucose and blood pressure level, taking medication properly and reducing other potential risks which leads to the development of diabetes complications.[10] Generally, it accounts for about 95% of all diabetes management since most people with diabetes may only have contact with a healthcare professional for a total of a few hours per year, the rest of the time they care and manage their diabetes by themselves.[11]

The cost of treatment and death of diabetes arise mainly from its complications, such as heart diseases, stroke, amputations and kidney failure and serious infections. These can be prevented or long-delayed by inexpensive, patent self-care practice by monitoring their blood sugar, blood pressure level, quit smoking and alcohol and practice that reduces bad cholesterol and by adopting a healthy diet and exercise.[12,13] Although there are studies on self-care management of diabetes mellitus in India and globally looking at the magnitude of the problem and serious implications at individual and community level there is strong need to further study these practices and associated factors in different parts of India and across the world.

Aims and objectives

Aim

To study the Physical activity and Blood Glucose Monitoring practices among diabetic patients.

Objectives

1. To study and assess the self-care practices which include physical activity and glucose monitoring among diabetic patients.
2. To study the association between socio-demographic factors and self-care practices.

MATERIALS AND METHODS

It is a community based cross sectional study was conducted among 462 subjects who were present during the study period and provided informed consent were included, while those unwilling to participate or with incomplete responses were excluded. A convenience sampling method was adopted, wherein all subjects available during the data collection period was approached until the required sample size was achieved. The sample size was calculated using the formula 4pq/L2 of 400 was calculated considering a prevalence of 50% and a relative precision of 10% considering a non-response rate of 10%, the total sample size came out to be 440 study subjects which will be rounded up to 450. the final sample size was increased to 462 participants. Data was collected using a structured, pre-tested, self-administered questionnaire. Prior to data collection, institutional ethical clearance was obtained, and informed consent was taken from all participants. Confidentiality and anonymity were ensured throughout the study. Data were entered into Microsoft Excel and analysed using IBM SPSS software version 25. Descriptive statistics were expressed as frequencies and percentages with 95% confidence intervals.

RESULTS

Table 1 shows a total of 462 Subjects participated in the study were majority of the participants (33.1%) were in the age group of 60-69 years. Maximum participants among males (32.1%) and females (34.6%) were also from the same age group. The mean age of the study population was 57.5± 10.64 years. Among the total study subjects, majority (95.2%) were Hindus, followed by Muslims (3.7%) and Christians (1.1%). The proportion of study who never attended school (illiterate) were highest (47.8) followed by educational status of Primary school (28.8%). It was observed that only 9.3% and 5.8% had completed their education till high school and Graduation respectively.

The study it was observed that 47% of the study populations were self-employed followed by homemakers (22.7%) and retired (19.0%). It was observed that only 2.4% and 4.5% of the study group were government and non- government employee respectively. Socio economic status calculated using Udai Pareek classification socio economic status scale. Majority of the study subjects belonged to lower middle socio- economic class (45.9%) followed by middle class (31.8%). Only 16.7 and 0.2% belong to upper middle and upper class respectively as shown in table 3.

Table 4 shows Physical activity (walking) was present in <30 minutes 407 (88.1%) to be the highest subjects involved in physical activity followed by ≥30 minutes 30 (6.5%) subjects and the least subjects are seen in the no physical activity 25 (5.4%) due to health problems, paralyzed (bed ridden) and due to traditional taboos. The subjects are presented for the physical activity (cycling) is high 408(88.3%) with no physical activity due to health problems, paralyzed or traditional taboos followed by 47(10.2%) who is performing the physical activity for <30 minutes whereas least subjects are seen in the ≥30minutes 7(1.5%).

The association between socio demographic factors and duration of physical activity in a week was examined in table 5. There was a strong and significant association between sex and duration of physical activity ($p<0.001$). However, the association between marital status, SES, age, education, occupation and duration of physical activity was not statistically significant ($p>0.005$).

Monitoring for glucose is reported to be high 399 (86.4%) i.e., <3 months of duration followed by 51(11%) once in 3-6 months. Study population the place for monitoring of blood glucose was done highest at the rural health center (87.2%) followed by laboratory (8.7%) least was done at home (4.1%) as shown in table 6.

The association between socio demographic factors and frequency of blood glucose monitoring was examined (table 7) were a strong and significant association between SES and frequency of Blood Glucose Monitoring ($p<0.015$). However, the association between marital status, SES, age, sex and frequency of fruit consumption was not statistically significant ($p>0.005$).

Table 1: Age and sex wise distribution of study subjects (n=462)

Gender	Males		Females		Total	
Age in years	No	%	No.	%	No.	%
30-39	16	5.8	10	5.4	26	5.6
40-49	52	18.8	33	17.8	85	18.4
50-59	60	21.7	42	22.7	102	22.1
60-69	89	32.1	64	34.6	153	33.1
70-79	44	5.8	28	15.1	72	15.6
≥80	16	5.8	8	4.3	24	5.2
Total	277	100	185	100	462	100

Table 2: Religion and Education wise distribution of study Subjects (n=462)

Religion	Frequency	Percentage (%)
Hindu	440	95.2
Muslim	17	3.7
Christians	05	1.1
Educational Status		
Illiterate	221	47.8
Primary	153	28.8
Middle	38	8.2
High school	43	9.3
Graduate	27	5.8
Total	462	100

Table 3: Distribution of study subjects according to their Occupation and Socio-Economic Status (n=462)

Occupation	Frequency	Percentage (%)
Government Employee	11	2.4
Non- Government Employee (Private job)	21	4.5
Business	217	47.0
Homemaker	105	22.7
Retired (Pension)	88	19.0
Daily labor	20	4.3
Socio economic status		
Lower	25	5.4
Lower middle	212	45.9
Middle	147	31.8
Upper Middle	77	16.7
Upper	01	0.2
Total	462	100

Table 4: Distribution of study subjects according to the duration of physical activity (Walking and Cycling) per day (n= 462)

Duration of walking	Frequency	Percent
<30 minutes	407	88.1
≥30 minutes	30	6.5
No Physical activity	25	5.4
Duration of cycling		
<30 minutes	47	10.2
≥30 minutes	07	1.5
No physical activity	408	88.3
Total	462	100

Table 5: Association between Socio-Demographic factors and duration of physical activity(n=462)

		Duration Of Physical Activity			
		<30 Minutes	**≥30 Minutes**	**NA**	**Significance**
Age	<50Years	181(85%)	17(8%)	15(7%)	0.578
	≥50Years	226(90.8%)	13(5.2%)	10(4%)	
Sex	Male	238(85.9%)	23(8.3%)	16(5.8%)	**<0.001**
	Female	169(91.4%)	7(3.8%)	9(4.9%)	
Education	Literate	194(87.8%)	16(7.2%)	11(5%)	0.144

	Illiterate	213(88.4%)	14(5.8%)	14(5.8%)	
Occupation	Unemployed	389(84.3%)	28(6%)	25(5.4%)	0.209
	Employed	18(3.8%)	2(0.5%)	0(0%)	
Religion	Hindu	385(83.3%)	30(6.4%)	25(5.4%)	0.177
	Others	22(4.9%)	0(0%)	0(0%)	
Marital Status	Married	350(75.7%)	28(6%)	25(5.4%)	0.198
	Others	57(12.3%)	2(0.6%)	0(0%)	
SES	Lower Class	24(5.4%)	1(0.2%)	0(0%)	0.845
	Lower Middle	183(39.6%)	14(3%)	15(3.4%)	
	Middle	133(28.7%)	11(2.4%)	3(0.6%)	
	Upper Middle	66(14.2%)	4(0.8%)	7(1.5%)	
	Upper	1(0.2%)	0(0%)	0(0%)	

Table 6: Distribution of study subjects based on the Frequency and place of Self-Monitoring Blood Glucose Monitoring (SMBG) (n=462)

Duration	Number	Percentage (%)
<3months	399	86.4
Once in 3 months	02	0.4
Once in 3-6months	51	11
Once in 7-12 months	05	1.1
>1year	05	1.1
Place of SMBG		
Home	19	4.1
Tertiary Care Institute	403	87.2
Laboratory	40	8.7
Total	462	100

Table 7: Association between Socio-Demographic factors and Frequency of Self-Monitoring Blood Glucose(N=462)

		Frequency of Self-Monitoring of Blood Glucose (SMBG)		
		<3 Months	**>3 Months**	**Significance**
Age	<50 Years	186(40.4%)	27(5.8%)	0.816
	≥50 Years	215(46.5%)	34(7.3%)	
Sex	Male	249(54%)	28(6%)	0.527
	Female	152(33%)	33(7%)	
Education	Literate	186(40.2%)	35(7.5%)	0.706
	Illiterate	215(46.5%)	26(5.6%)	
Occupation	Unemployed	385(83.3%)	57(12.4%)	0.298
	Employed	16(3.5%)	4(0.8%)	
Religion	Hindu	381(82.4%)	59(12.7%)	0.218
	Others	20(4.5%)	2(0.4%)	
Marital Status	Married	359(77.7%)	44(9.5%)	0.963
	Others	42(9.2%)	17(3.6%)	
SES	Lower Class	23(4.9%)	2(0.4%)	**0.015**
	Lower Middle	187(40.4%)	25(5.4%)	
	Middle	117(25.3%)	30(6.4%)	
	Upper Middle	73(15.8%)	4(1%)	
	Upper	1(0.4%)	0(0%)	

DISCUSSION

Total subjects 462 of their age and sex wise distribution (table 1) of them majority of the participants (33.1%) were in the age group of 60-69 years. Maximum participants among males (32.1%) and females (34.6%) were also from the same age group. Similar results were observed in other studies which will be discussed. Endalew Hailu et al,[14] studied a total of 343 diabetic participants in which 60.2% of the subjects were males. The mean age of the participants in years was 45.2 ± 15.9; nearly half of them were older than 44 years (183, 53.3%). Among 462 subjects, 440(95.2%) subjects belonged to Hindu community and 17(3.7%) subjects belonged to Muslim community.

In a study conducted by Prateek Saurabh Shrivastava,[15] among 143 participants, Hindus constituted (98) 68.6% of the study subjects followed by Muslims (37,25.8%) and others (8,5.6%) respectively.

Education wise distribution showed that among 462 subjects ,153(28.8%) subjects have done primary schooling followed by illiterates (221,47.8%) and those who were graduated (27,5.8%) respectively.

In a study conducted by Peraje Vasu Dinesh et al,[16] among 400 participants, it was found that only 38 (9.5%) subjects were illiterates. Among the study participants 86(21.5%) subjects had Upper primary education followed by lower primary education 81(20.5%).

In our study the distribution of study subjects based on Socio-economic status revealed that among a total of 462 subjects, 212(45.9%) subjects belong to the lower middle class family, followed by 147(31.8%) subjects who belong to middle class.

In a study done by Kalaiselvi Selvaraj et al,[17] a total of 162 diabetics were interviewed, 107(66%) participants belonged to the lower middle class as per

the modified Kuppuswamy scale, followed by lower class (44,27.2%) participants. Among 462 study participants, duration of time spent on walking was <30minutes, ≥30 minutes and no walking among 88.1% (407), 65% (30) and 88.3% (408) subjects respectively.

Yujuan zhou et al,[18] has observed that among the total participants of 163 ,91(56%) participants were least active followed by 65(40%) participants who were moderately active and ,7(4%) participants who were most active in physical activity both in non-leisure and leisure time.

Among 462 subjects in the present study ,399(86.4%) participants were following the practice of SMBG for every 3 months, followed by 51(11%) participants who were doing the SMBG once in every 3-6 months. Only 5(1.1%) subjects are irregular due to unavailability of transport facilities or financial problems etc. Endalew Hailu et al,[19] in his study has observed that among the total 342 participants 9(2.2%) undergo SMBG regularly by self, where as other 338(98.8%) participants will be following the practice when they come for a visit. In our study, when relation between socio demographic factors and physical activity were examined, there was a significant association between sex of the participants and physical activity by walking ($p<0.001$). In our study, when relation between socio demographic factors and self-monitoring of blood glucose (SMBG) was examined, there was a significant relationship between sex of the participant and SMBG($p<0.015$).

CONCLUSION

The association between socio demographic factors and duration of physical activity shows that there was a strong and significant association between Sex and Duration of physical activity ($p<0.001$). Association between socio demographic factors and frequency of Blood Glucose shows that there was a strong and significant association between SES and Frequency of Blood Glucose Monitoring ($p<0.015$).

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