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AN ASSESSMENT OF UNMET NEED FOR MANAGEMENT OF DIABETES MELLITUS AMONG ADULTS IN AN URBAN AREA IN SOUTHERN RAJASTHAN.

Community medicine

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ABSTRACT

Diabetes is the leading cause of end stage renal disease, nontraumatic lower limb amputation and preventable blindness, it is also a major risk factor for coronary artery disease (CAD) and cerebro vascular disease In this context, the study aimed to assess the Unmet Need for management of Diabetes in adults in southern Rajasthan. A hospital-based, Cross-sectional study was conducted for 300 subjects - male and female cases aged 30 years and above chosen by purposive sampling. 24.7% subjects were diabetic. 59.5% of them presented with unmet need for management. Out of 44 subjects with unmet management need, 72.7% were not counselled by health workers.31.8%subjects were never checked BSL even once a year. Unmet need for management was higher among the old age, male gender, lower literacy level and low Socio-Economic Status subjects. The main predictors for unmet need were mostly behavioural- like presently no symptoms and no Complain, taking herbal medicine, have to depend on someone to accompany to Health care center, Diet control is enough to control BSL.

KEYWORDS

Unmet Needs, Diabetes, Management.

The term diabetes mellitus describes a metabolic cum vascular syndrome of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion, insulin action or both leading to changes in both small blood vessels (microangiopathy) and large blood vessels (macroangiopathy).[1]

It is the leading cause of end stage renal disease, nontraumatic lower limb amputation and preventable blindness, it is also a major risk factor for coronary artery disease (CAD) and cerebro vascular disease (CVD).[2]

Worldwide, more than 425 million adults suffer from diabetes; this number is likely to go up to 625 million by 2045.[2] Diabetes was the direct cause of 1.6 million deaths and in 2012 high blood glucose was the cause of another 2.2 million deaths.[3] Changes in lifestyles, behavioral patterns, demographic profile (aging population), socio-cultural and technological advancements are leading to sharp increases in the prevalence of Diabetes. [4] Most people with diabetes have Type 2 Diabetes (T2D) also known as Adult Onset Diabetes .[2] Indians succumb to diabetes 5-10 years earlier than their western counterparts, during their most productive years. This leads to considerable loss of productive years, to the country.[4]The International Diabetes Federation has reported that the prevalence of diabetes in adults in India is 7.1%. The prevalence in urban areas is 9%. This study shows a greater prevalence among the middle-class urban Indians.[5] Unless urgent preventive steps are taken, By 2030, nearly 21% of the new cases of Diabetes in world will be from India [6]and By the year 2045, the number of people diagnosed with type 2 diabetes in India will rise to 134 million, thus making it the highest diabetic prone country in the world[7]. M.O. and health workers like ASHAs and ANMs who play a pivot role for starting management of diabetes are trained under this program and evaluations done frequently to ensure quality control, but several barriers related to patients, society and health care system exist, which need to be addressed by the government and health care providers. The National Family Health Survey-2015-16 report found that 3.5 percent women and 5.7 percent men were diabetic in 2015-16 in Rajasthan.[8] A preliminary intervention assessment conducted by Medtronic during 2012-2015 revealed that the prevalence of Diabetes was 4% in Udaipur district in that period.[9]The Rajasthan Government provides free medicines and free diagnostic facility through all government health centers under MNDY (since 2011)[10] and MNJY (SINCE 2012).[11] Under the light of above facts management of Diabetes are expected to have gained momentum. The present study is an effort to assess Unmet Need for management of diabetes mellitus in adults (>30 years age) in southern Rajasthan. It will be an effort to identify the barriers in reaching the community for early management.

MATERIALS AND METHODS:

Study Type: Hospital based study.

Study Design: Cross sectional in design.

Study Area: Urban Field practice area of the Department of Community Medicine**:** Urban Health Training Centre (UHTC), Dhanmandi, Udaipur (Rajasthan).

Study Period: The total duration for the study was 120 days (4 months)**.** Data collection was accomplished within 90 days (3 months) from 1st July, 2020 – 30th September, 2020. For next, additional 31 days, data coding and analysis were laid hold off from 1st to 31st October,2020.

Study Population: All individuals aged 30 years & above residing in the field practice area of RNT medical college Udaipur who had visited the UHTC OPD during the study period.

STUDY SUBJECTS:

The study subjects were selected based on:

INCLUSION CRITERIA:

1. Adults of both the sexes aged 30 years or above residing in that area for six months or more.
2. Willing to participate in the study and gave written consent for the same.
3. Able to understand and respond.

EXCLUSION CRITERIA

1. Those having any acute illness or injury presently.
2. Currently having concurrent complicated physical chronic conditions.
3. Individuals with serious mental illness.

Sample Size:

A total of 300 subjects participated in the study out of which 226 were then non diabetic and 74 were frank diabetic cases. The non-response rate obtained was 20%.

Sampling Technique: To pull off the major objective of the study, purposive sampling technique a type of non-probability sampling was employed.

Study tool, Data collection and Study Procedure: The study was carried forward after approval from Institutional Ethical Committee (IEC). Research Ethics were taken care of on each and every step of the study. Data confidentiality was maintained and subjects were assured of the non-revelation of their identity. The participants were interviewed only after obtaining a written informed consent.

A self-drafted, pre-designed and pre piolet tested interview schedule prepared by thorough analysis of literature review elaborating various factors associated with unmet need for management of Diabetes Mellitus was used as study tool for data procurement.

STATISTICALANALYSIS:

The data was compiled on MS Excel Sheet. Data analysis was done on SPSS version 17 for the proportion of adults with unmet need for management of diabetes mellitus, descriptive statistics were computed, for quantitative data, Mean and SD were calculated. For qualitative data percentage were calculated. Pearson's Chi Square test was applied for statistical inference to identify the determinants of unmet need. P value <0.05 was considered as statistically significant.

RESULT

Table 1. Distribution of currently diabetic subjects according to their general profile and unmet need for management (n=74)

Sr. no.	General profile	Sub group	Number of subjects presenting with		Total	Chi square	Df	P value
			Unmet need	Met need				
			(n=44)	(n= 30)	(N= 74)			
1.	Age in years	30-40	1 (50.0)	1 (50.0)	2 (2.7)	1.40	1	0.7
		41-50	4 (19.0)	17 (81.0)	21 (28.4)	7.03	1	**0.001**
		51-60	11 (91.7)	1 (8.3)	12 (16.2)	6.16	1	**0.01**
		>60 above	28 (71.8)	11 (28.2)	39 (52.7)	18.9	1	**0.02**
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			
		Mean ±SD	**63.7±13.6**	**54.7±12.4**	**59.8±13.1**			
2.	Gender	Male	28 (71.8)	11 (28.2)	39 (52.7)			
		Female	16 (45.7)	19 (54.3)	35 (47.3)			
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**	5.20	1	**0.02**
3.	Religion	Hindu	40 (59.7)	27 (40.3)	67 (90.5)	0.01	1	0.81
		Muslim	2 (40.0)	3 (60.0)	5 (6.8)	0.84	1	0.35
		Christian	2 (100)	0 (0.0)	2 (2.7)	1.40	1	0.24
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			
4.	Education	Illiterate	20 (54.1)	17 (45.9)	37 (50.0)	5.6	1	0.34
		Primary	10 (90.9)	1 (9.1)	11 (14.9)	5.3	1	**0.02**
		Secondary	6 (46.2)	7 (53.8)	13 (17.8)	0.62	1	0.42
		Higher secondary	7 (70.0)	3 (30.0)	10 (13.7)	0.53	1	0.46
		Graduate and above	1 (33.3)	2 (66.7)	3 (4.1)	0.34	1	0.34
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			
5.	Current marital status	Married	35 (67.3)	17 (32.7)	52 (70.3)	4.46	1	**0.03**
		Un Married/widowed/ divorced	9 (40.9)	13 (59.1)	22 (29.7)			
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			
6.	Type of family	Joint	14 (51.9)	13 (48.1)	27 (36.5)	1.02	1	0.31
		Extended	13 (44.8)	16 (55.2)	29 (39.2)	4.23	1	**0.039**
		Nuclear	6 (100)	0 (0)	6 (8.1)	4.45	1	**0.037**
		Living alone	11 (91.7)	1 (8.3)	12 (16.2)	6.16	1	**0.01**
		Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			

Figures in parenthesis are percentage

Table 2. Distribution of currently diabetic subjects according to their occupation and unmet need for management (n=74)

Sr. no.	Occupation	Subjects presenting with		Total (N=74)	Chi square	Df	P value
		Unmet need (n=44)	Met need (n=30)				
1.	**Daily wages**	17 (60.7)	11 (39.2)	28 (37.8)	10.5	1	0.86
2.	**Self-employment**	10 (55.5)	8 (44.5)	18 (24.3)	1.60	1	0.205
3.	**Homemaker**	14 (66.7)	7 (33.3)	21 (28.4)	5.6	1	0.42
4.	**Salaried employment**	1 (25)	3 (75)	4 (5.4)	0.15	1	0.14
5.	**Unemployed/ Retired**	2 (66.7)	1 (33.3)	3 (4.1)	0.06	1	0.691
	Total	**44 (59.5)**	**30 (40.5)**	**74 (100)**			

Figures in parenthesis are percentage

Table 3. Distribution of currently diabetic subjects according to their Socioeconomic Class and unmet need for management (n=74)

Sr. no.	Socio Economic (SE) Class*	Per Capita Monthly Income	Subjects presenting with		Total (N=74)	Chi square	Df	P value
			Unmet need (n=44)	Met need (n= 30)				
1.	**I**	**≥7008**	2 (50)	2 (50)	4 (5.4)	0.15	1	0.691
2.	**II**	**3504-7007**	1 (33.3)	2 (66.7)	3 (4.1)	0.88	1	0.357
3.	**III**	**2102-3503**	19 (46.3)	22 (53.7)	41 (55.4)	6.56	1	**0.01**
4.	**IV**	**1051-2101**	5 (100)	0 (0.0)	5 (6.8)	3.65	1	**0.05**
5.	**V**	**≤1050**	17 (81.0)	4 (19.0)	21 (28.4)	5.61	1	**0.01**
	Total		**44 (59.5)**	**30 (40.5)**	**74 (100)**			

Figures in parenthesis are percentage
*Modified BG Prasad social classification, updated in 2020,
**Indian National Rupee

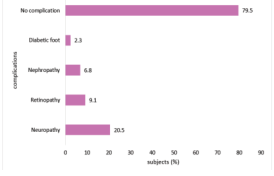

Fig 1. Distribution of participants with unmet need for management and existing complications of Diabetes

Table 4. Distribution of participants with unmet need for management according to the missed component of Diabetes counselling (n=44)

Sr no.	Component of Counselling missed	Subjects with Unmet Need	
		Number (n=44)	Percentage (100)
1.	Importance of Taking anti diabetic medicines regularly as prescribed	NIL	Nil
2.	Importance of Regular Physical activity	32	72.7

3.	Diabetic diet and Diet control	22	50.0
4.	identifying symptoms of hypoglycemia and Complications of ill diabetes	31	70.5
5.	Follow up visits	19	43.2
6.	Referral if required	7	15.9

Mutually exclusive response

Table 5. Distribution of participants with unmet need of management according to their BSL monitoring practice (n=44)

Sr. no.	Q 1 How often do you check your blood sugar		
		Number	Percentage
1	Twice a year	9	20. 5
2	Once a year	10	22.7
3	Not even once a year	14	31.8
4	When I am not well	11	25
	Total	44	100.0
	Q 2 When was the last time you checked your blood sugar level		
1	6 weeks - 6 months before	9	20.5
2	Six Months to 1 Year Before	17	38.6
3	>One Year	18	40.9
	Total	44	100
	Q 3 Where do you get your BSL checked mostly		
1	Home	8	18.2
2	Nearby Health centre	12	27.3
3	Pvt Lab	24	54.5
	Total	44	100
D	Q4 What was your Blood Sugar level at the last time		
1	Normal	13	29.5
2	Abnormal	31	70.5
	Total	44	100
E	Q5 If BSL was abnormal*, did you seek health care		
1	Yes	13	41.9
2	No	18	58.1
	Total	31	100

*Hypoglycaemia / hyperglycaemia

Table 6. Self-identified barriers to adherence to medication among participants with unmet need for management of diabetes

Sr. no.	Self-identified Barriers	Subjects presenting with Unmet need (n=44)	Percentage
1.	No symptoms and no Complain at present	19	43.2%
2.	Taking herbal medicine	17	38.6%
3.	Have to depend on someone to accompany to HCC*	14	31.8%
4.	Diet control is enough to control BSL	11	25.0%
5.	OPD hours are inconvenient	8	18.2%
6.	Distance of HCC from home	8	18.2%
7.	Affordability (cost)	6	13.7%

Mutually exclusive response, *HCC – health care center

Majority of currently diabetic subjects 39/74 (52.7%) were more than 60yrs of age. 21/74 (28.4%) subjects were between 41-50 yrs. of age and 12/74 (16.2%) were between 51 to 60 years age. (Mean age in years = **59.8±13.1**).

Significantly more subjects between 51 to 60 years age 11/12 (91.7%) and above sixty years age 28/39 (71.8%) had unmet need for management**. (p value= 0.01 and 0.02 respectively)**

On the other hand, less number of subjects in age group 41 to 50 years 4/21 (19.0%) had unmet need for management, **(p value = 0.001).**

Majority 39/74 (52.7%) of subjects were male, more male subjects 28/39 (71.8%) had unmet need for management as compared to female subjects 16/35 (45.7%) and the difference in distribution was significant. **(p value = 0.02).** All six subjects (100%) from nuclear family and 11/12 (91.7%) subjects living alone had unmet need for management. **(p value < 0.05) (TABLE 1)**

Out of the 74 currently diabetic subjects, more than one third 28/74 (37.8%) were on daily wages, more with unmet need for management 17/28 (60.7%) compared to met need 11/28 (39.2%). More than one fourth 21/74 (28.4%) were home makers, more with unmet need 14/21 (66.7%) compared to those with met need 7/21 (33.3%). **(TABLE 2)**

Majority 41/74 (55.4%) of the subjects were from S.E. Class III. More than one fourth 21/74 (28.4%) from S.E. class V. Significantly more subjects from SE class V, 17/21 (81.0%) and all five subjects from S E class IV had unmet need for management **(p value = 0.05 and 0.01 respectively),** while less number of subjects from S E class III 19/41 (46.3%) emerged with unmet need **(p value= 0.01) (TABLE 3)**

Among 44 subjects of unmet need for management majority had no complication with diabetes 35 (79.5%). One fifth 9/44 (20.5%) had neuropathy followed by retinopathy 4/44 (9.1%) and nephropathy 3/44 (6.8%). One case presented with diabetic foot. **(FIG 1)**

Out of the 44 currently diabetic subjects with unmet need for management, most 32/44 (72.7%) mentioned that they were not advised by HWs regarding importance of regular Physical activity for diabetes control and diabetic complications 31/44 (70.5%). Half of the subjects 22/44 (50%) were not explained about diabetic diet and diet control. 19/44 (43.2%) were not advised on when to return for follow up and counselling regarding referral if required was missed in 7/44 (15.9 %) subjects**. (TABLE 4)**

Inquiry about frequency of getting BSL checked showed that among the 44 participants with unmet need for management, One third 14/44 (31.8%) were not checking their blood sugar level even annually. 11/44 (25.0%) were checking their BSL only when they were not well. Majority 31/44 (70.5%) of the participants had abnormal (high or low) blood sugar level when last checked out of these 18 (58.1%) did not seek health care from doctor or Health Worker. Majority of participants 24/44 (54.5%) got their BSL checked at private laboratories mostly. **(TABLE 5)**

Out of the 44 currently diabetic subjects with unmet need for management common barrier emerged were presently no symptoms no complain 19/44 (43.2%) and taking herbal medicine 17/44 (38.6%). Nearly one third 14/44 (31.8%) had to depend on someone. One fourth 11/44 (25.0%) had felt only diet control is enough for diabetes, followed by distance 8/44 (18.2%) and affordability 6/44 (13.7%). **(TABLE 6)**

DISCUSSION:

Over the last thirty years, the problem of diabetes has changed from being a mild disorder of the elderly to one of the major causes of morbidity and mortality affecting youth and middle-aged people.[5] The chronic hyperglycemia of diabetes is associated with long-term dysfunction, damage, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels. We tried to explain the unmet need for management by individual level variables and observed that more Older adults (Mean age in years = 63.35±13.6) had Unmet need for diabetes management, (p value< 0.02) It was also significantly associated with male gender, 28/39 (71.8%) (p value= 0.02), was inversely proportional with level of education. (p value= 0.02) and Socio-Economic Status of the subjects (p value< 0.05**)**

CONCLUSION:

Unmet need for management identified was 59.5% it was significantly associated with individual level variables like Old age, male gender, lower literacy level and low Socio-Economic Status. Extended family emerged as a supportive factor for regular BSL monitoring and management. One third were not monitoring their BSL even annually. 25% monitored it only when they were not well. Most participants did not seek health care when BSL was high or low. About one third subjects showed non adherence to regular medication and follow up reasons cited were relying on Complimentary and Alternate Medicine (CAM) and diet control. need for someone to accompany, distance of the health center and OPD hours also emerged as user side factors for unmet need for management.

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