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A CROSS-SECTIONAL STUDY TO ASSESS UNMET SCREENING NEEDS FOR ADULTS HAVING DIABETES MELLITUS IN AN URBAN AREA OF UDAIPUR DISTRICT OF RAJASTHAN

Community Medicine

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ABSTRACT

A very high number of people are living with undetected diabetes, so its early detection through screening is needed to reduce the disease burden including its complications. In this context, the study aimed to assess the Unmet Need for screening 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. Study tool used was a self-designed, semi-structured, pre-piolet tested interview schedule. tool. Data was coded on MS Excel sheet and its analysis done on SPSS version 17. 75.3% subjects were non diabetic. 38.9% of them presented with unmet need for screening. 50.9% of the subjects were from S.E. Class IV followed by 30.9% S E Class III. Out of 88 subjects with unmet screening need, 59 .1% were habitual Tobacco and /or alcohol users and 36.4% were physically inactive. For most of the subjects (78.4%), BSL was never tested. Unmet need for screening was higher among the economically and educationally underprivileged people and those above 60 years. The main predictors for unmet need were mostly behavioural- like lack of time, no felt need, no one to accompany and lack of diabetes awareness.

KEYWORDS

Unmet Needs, Diabetes, Screening.

INTRODUCTION:

Diabetes Mellitus is a chronic, metabolic disorder characterized by elevated blood glucose levels, the sequalae of which has adverse consequences on heart, blood vessels, eyes, kidneys and nerves. **(1)** it is also one of the leading causes of end stage renal disease, non-traumatic lower limb amputation and blindness (preventable). Diabetes is further a major risk factor for coronary artery diseases (CAD) and Cerebral-vascular diseases (CVD)**.(2)** The upsurge in prevalence of Diabetes and other Non-Communicable Diseases (NCDs) is by virtue of negative changes in lifestyles, behavioural patterns, demographic profile (aging population), socio-cultural and technological advancements.**(3)** In past thirty years, this menace has switched from being a mild disorder of the elderly to one of the leading causes of morbidity and mortality affecting youth and middle aged people**.(4)**

These obvious and clinically diagnosed folks are equitable only to the tip of the iceberg. The gigantic concealed masses with undiagnosed or asymptomatic diabetes form an important public health issue of concern and amongst significant challenges to be met. The need of the hour is to plan and execute the early diagnosis of diabetes by early detection of its risk factors**. (5)**

Screening is the process of identifying those individuals who are at sufficiently high risk of a specific disorder to warrant further investigation or direct action. Screening tests for type 2 diabetes include risk assessment questionnaires, biochemical tests (BSL) and combinations of the two.

The prolonged latent asymptomatic period of type-2 Diabetes mellitus and it being undiagnosed in an enormous proportion of cases, are another two foremost reasons that call for its screening. **(6)**

Prediabetic condition is defined by having IGT (2-h PG in the 75-g OGTT: 140-199 mg/dL) or IFG (FPG: 100-125 mg/dL); an intermediate hyperglycaemic state associated with increased risk of developing diabetes and associated CV complications.

The clinical management of Diabetic cases have been a much talked about issue but there have been very few studies on its early detection by screening tools. This study intends to bridge this research gap.

Evidence from existing literature suggest that early detection of diabetes/prediabetes through screening increases the likelihood of identifying asymptomatic individuals and provides adequate treatment to reduce the burden of diabetes and its complications for which strong health system is required as the care continuum- the diabetes cascade of care, right from screening and early detection to treatment and adherence to it. **(7,8).**

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 screening of Diabetes Mellitus was used as study tool for data procurement.

The investigator/interviewer was well versed with Hindi, English and the vernacular language of the locals, henceforth the interview was conducted in the language the subject was most comfortable to answer. Due attention was given on maintaining the core essence of the interview schedule without any pursuance from the investigator/ interviewer. No leading questions were asked and honest opinions of the participants were recorded.

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 screening 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.

RESULTS:

Result: 1. Distribution of subjects -who were non-diabetic at the time of study, according to their general profile and Unmet need for Screening for Diabetes (N=226)

S. no	General profile	Sub group	Number of subjects with		Total (N= 226)	Chi square	Df	P value
			Unmet need (n=88)	Met need (n=138)				
1.	Age in years	**30-40**	4 (44.4)	5 (55.6)	9 (3.9)	0.119	1	0.72
		41-50	24 (37.5)	40 (62.5)	64 (28.3)	0.077	1	0.78
		51-60	41 (33.3)	82 (66.7)	123 54.4)	3.56	1	**0.05**
		>60	19 (63.3)	11 (36.7)	30 (13.3)	8.65	1	**0.003**
		Mean ±SD	**55.1±9.7**	**53.1±7.6**	**53.8±8.5**			
2	Gender	**Male**	56 (36.8)	96 (63.2)	152 67.3)	0.85	1	0.35
		Female	32 (43.2)	42 (56.8)	74 (32.7)			
3	Religion	**Hindu**	72 (37.2)	114 (62.8)	186 (87.2)	0.02	1	0.8
		Muslim	15 (46.2)	24 (53.8)	39 17.4)	0.004	1	0.9
		Christian	1 (100)	0 (0.0)	1 (0.4)	1.57	1	0.20
4	Education	**Illiterate**	14 (58.3)	10 (41.7)	24 (10.6)	4.24	1	**0.03**
		Primary	55 (35.5)	100 (64.5)	155 68.6)	2.47	1	0.11
		Secondary	12 (46.2)	14 (53.8)	26 (11.5)	0.64	1	0.42
		Higher secondary	6 (35.3)	11 (64.7)	17 (7.5)	0.53	1	0.74
5	Current marital status	**Married**	71 (37.2)	120 (62.8)	191 (84.5)			
		Un Married/ Widowed / divorce	17 (48.6)	18 (51.4)	35 (15.5)			
6	Type of family	**Joint**	24 (36.4)	42 (63.6)	66 (29.2)	0.25	1	0.61
		Extended	53 (36.6)	92 (63.4)	145 (64.2)	0.96	1	0.32
		Nuclear	6 (75.0)	2 (25.0)	8 (3.5)	4.53	1	**0.03**
		Living alone	5 (71.4)	2 (28.6)	7 (3.1)	3.20	1	**0.05**

Figures in parenthesis are percentage

Table 2. Distribution of currently non diabetic subjects according to their occupation and Unmet need for Screening for Diabetes (N=226)

Sr. no.	Occupation	Subjects presenting with		Total (N=226)	Chi square	Df	P value
		Unmet need (n=88)	Met need (n=138)				
1	**Daily wagers**	38 (50.7)	37 (49.3)	75 (33.2)	6.41	1	**0.01**
2	**Self-employed**	18 (27.7)	47 (72.3)	65 (28.8)	4.85	1	**0.02**
3	**Homemaker**	12 (22.2)	42 (77.8)	54 (23.9)	8.33	1	**0.003**
4	**Salaried employees**	8 (44.4)	10 (55.6)	18 (7.9)	0.24	1	0.6
5	**Unemployed**	12 (92.9)	2 (7.1)	14 (6.2)	13.7	1	**0.003**
	Total	**88 (38.9)**	**138 (61.1)**	**226 (100)**			

Figures in parenthesis are percentage

Table 3. Distribution of currently non diabetic subjects according to their Socio-Economic Class and Unmet need for Screening for Diabetes (N=226)

S.No.	Socio Economic (SE) Class*	Per Capita Monthly Income in INR**	Currently non diabetic subjects (N=226)		Total (N=226)	Chi square	Df	P value
			Unmet need (n=88)	Met need (n= 138)				
1	**I**	**≥7008**	0 (0.0)	0 (0.0)	0 (0.0)			
2	**II**	**3504-7007**	1 (25.0)	3 (75.0)	4 (1.8)	0.33	1	0.56
3	**III**	**2102-3503**	11 (15.7)	59 (84.3)	70 (30.9)	20.3	**1**	**0.002**
4	**IV**	**1051-2101**	55 (47.8)	60 (52.2)	115 (50.9)	7.77	**1**	**0.005**
5	**V**	**≤1050**	21 (56.8)	16 (43.2)	37 (16.3)	5.90	**1**	**0.01**
	Total		**88 (38.9)**	**138 (61.1)**	**226 (100)**			

Figures in parenthesis are percentage

* Modified BG Prasad Socio Economic classification, updated in 2020
**Indian National Rupee

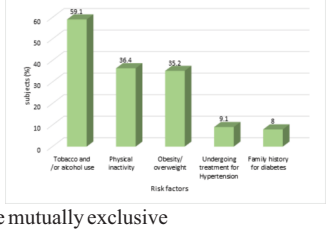

Fig 1. Distribution of currently non diabetic subjects by their Unmet need of Screening for Diabetes and presence of risk factors for occurrence of Diabetes (n=88)

* Responses are mutually exclusive

Table 4.Missed Components of Diabetes screening among participants with unmet need for screening (n=88)

Sr. no.	Missed component of screening	Subjects with unmet need for screening (n=88)	Percentage
1.	**BSL* test**	69	78.4
2.	**Family and medical History**	21	23.9
3.	**Lifestyle history (diet and physical activity)**	32	36.4

4.	**H/O Addiction to tobacco or Alcohol**	28	31.8
5.	**Waist measurement**	55	62.5
6.	**All components**	11	12.5

*BSL- blood sugar level
Responses are mutually exclusive

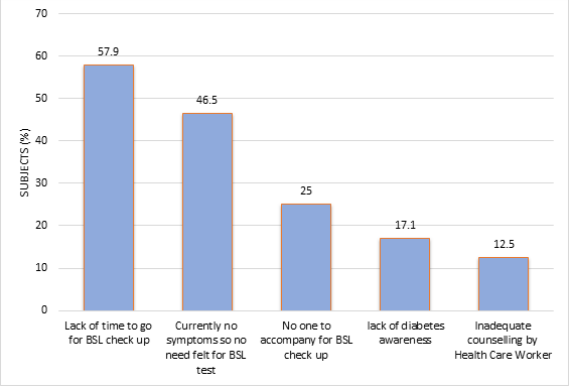

Fig 2. Subjects' perspective on Predictors for unmet need of screening for diabetes (n=88)

Out of the 226 non diabetic subjects at the time of study, majority 123/226 (54.4%) were in age group 51-60 years. **(Mean Age in years = 53.8±8.5).** only 30/226 (13.3%) subjects were above 60 years of age, significantly more with unmet need for screening 19/30 (63.3%). **(p value=0.003).** most of the subjects were members of extended family 145/226 (64.2%) Significantly more Subjects living in nuclear family6/8 (75.0) or living alone 5/7 (71.4) had unmet need for diabetes screening. **(p value= 0.03 and 0.05 respectively).**

Most of the subjects 155/226 (68.6%) were educated up to primary school level. about one fifth, 24/226 (10.6%) were illiterate more with unmet need for screening 14/24 (58.3%). **(p value=0.03) (TABLE 1)**

Workers on daily wages 38/75 (50.7) and those who had present unemployed status -12/14 (92.9%) showed significantly more Unmet need for screening. **(p value= 0.01 and 0.003 respectively) (TABLE 2)**

Majority 115/226 (50.9%) of the subjects were from S.E. Class IV followed by S E Class III 70/226 (30.9%) and S E class V 37/226 (16.3%) more subjects from V 21/37 (56.8%), presented with unmet need for screening and this distribution was highly significant **(p value= 0.01).**

Contrarily less than half 55/115 (47.8%) subjects from S E Class IV and only 11/70 (15.7%) from SE Class III had unmet met need for screening. **(p value = 0.005 and 0.002 respectively). (TABLE 3)**

Out of 88 subjects with unmet need for screening, majority 52/88 (59 .1%) were habitual users of Tobacco and /or alcohol. 32 /88 (36.4%) were physically inactive. 31/88 (35.2%) were obese or overweight. 8 (9.1%) were taking management for Hypertension and 7 (8%) had family history of diabetes**. (figure 1)**

In most of the subjects 69/88 (78.4%) BSL was not tested. The health workers had missed to take medical history and Family h/o diabetes in 21 /88 (23.9 %) subjects, Lifestyle habits and history of addiction was missed in one third subjects, 32/88 (36.4%) and 28/88 (31.8%) respectively. Waist measurement was not done in 55/88 (62.5%) subjects and All components of screening were missed in 11/88 (12.5 %) subjects. **(TABLE 4)**

Out of 88 subjects Majority 51/88 (57.9%) subjects with unmet need for screening mentioned Lack of time to go for BSL check-up, 41/88 (46.5%) felt no need for BSL test as they had no symptoms of diabetes. lack of diabetes awareness and Inadequate counselling by Health Care Worker emerged as predictors of unmet need in 15/88 (17.1%) and 11/88 (12.5%) subjects respectively. One fourth subjects 22/88 (25.0%) had no one to accompany them for BSL check-up. **(figure 2)**

DISCUSSION:

The study limits itself in its design and hospital-based setting as well as the criteria to identify unmet needs were not based on HbA_1c-the gold standard investigation for assessment. Moreover, the predictors so far in the study were assessed sheerly on the basis of beneficiaries and not infrastructure and service providers. However, this study is the only initiative one of its kind in the region. The study can be carried forward as a community-based study aiming to screen for veiled cases of diabetes and pre diabetes along with the risk factors.

Government and private health sectors should initiate screening programmes along with health educational programmes in interest of public health to achieve a declining trend in the incidence of new cases and reducing the morbid diabetic complications in existing prevalent cases.

CONCLUSION:

Unmet need for Diabetes screening was 38.9%. It was higher among the economically and educationally underprivileged people and those above 60 years, living in nuclear family or alone.

59.1% of subjects with unmet need had risk factors for occurrence of diabetes like habitual alcohol consumption, smoking and chewing tobacco (gutkha), Physical inactivity, obesity or over weight. BSL Test was the major missed component of diabetes screening followed by measurement of waist. The main predictors for unmet need were mostly behavioural- like lack of time, no felt need, no one to accompany and lack of diabetes awareness.

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