AVAILABILITY, ACCESSIBILITY AND AFFORDABILITY OF DIABETES HEALTH CARE FACILITIES IN LATUR, INDIA

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ABSTRACT

Despite the enormous burden, diabetes care in the community is still substandard. According to studies conducted in the Latur District, there is a significant gap between recommended and actual diabetes care, which results in poor health outcomes. A cross-sectional survey was undertaken in the Latur District of Maharashtra. A sample of 505 self-reported persons with diabetes from 413 households were interviewed from May to October 2017. The study used total samples of self-reported diabetes for the bivariate and multivariate analyses. Only 19% of respondents reported that they accessed government hospital facilities for treatments of diabetes. Elderly, belonging to SC/ST, working as a farmer/labour, and poor categories accessed government facilities for diabetes treatment. Most of the people could not access healthcare facilities because more than a third of respondents live more than 31km from hospital facilities because of poor transportation, lack of connectivity, and highly unaffordable healthcare expenses and time access to healthcare facilities. The adjusted odds ratios show that after controlling for important background factors find the link between unaffordability, distance, and poor transportation to healthcare institutions. The government and private sector must urgently decentralize healthcare facilities, and the government must enhance the health system by making health check-ups available at sub-centres, PHCs, rural hospitals, and special diabetic departments in the district and sub-district hospitals. Furthermore, the private sector and non-governmental organizations (NGOs) have to take steps to raise diabetes awareness and provide healthcare services at the grassroots level.

KEYWORDS

Health care, availability, accessibility, affordability, diabetes

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INTRODUCTION

The healthcare system's new challenges in geared management of noncommunicable illnesses. However, realign healthcare services strategically to face the rising threat of NCDs, particularly diabetes. Nearly 47 percent of diabetes cases in India are undiagnosed, with 73 million individuals living with diabetes and another 37 million pre-diabetes.[1] This is especially important in India, where the number of people suffering from diabetes is on the rise. Furthermore, in the context of NCDs in general, there is great variation in the course of diabetes.[2] This research has also proved the availability and accessibility of healthcare facilities.[3] People entering primary care should be comprehensive and continuous, focusing on individual health needs and preferences and enabling care from a trusted provider, according to the WHO.[1]

In the context of the Indian population, the primary healthcare system will play a critical role in lowering diabetes health concerns. Due to a high proportion of the population living in rural and urban slums, and a lack of health literacy concerning chronic illnesses such as diabetes. In 1946, the Health Survey and Development Committee report acknowledged the necessity of primary care in serving the healthcare requirements of the rural people. Due to a lack of trained diabetes educators and team-based support, as well as the absence of community linkages, public primary care facilities in India, particularly in rural and suburban areas, are frequently unable to provide patient care for diabetes self-management through education and support.[1] The management of diabetes and the control of diabetes complications and comorbidities are dependent on ongoing interactions between healthcare providers and patients. Patients and health care providers exchange information about how to improve diabetes treatment and control through this interaction. In addition, a lack of access to healthcare facilities has had detrimental health consequences.[3]

Healthcare system has a lot of opportunity to enhance population health outcomes by intervening early in the illness process and providing integrated care. In various nations, community-level care systems have been linked to lower morbidity, longer patient survival, and improved health equity. Rapid urbanisation is resulted in a greater choice of providers, the growth of unregulated private providers, shifts in epidemiology that change the profile of the typical patient needing primary care, and people's increasing expectations for highly effective care are all putting pressure on the traditional model of primary care as the first point of contact for most health needs.[4]

MATERIALS AND METHODS

The research was conducted in the Latur District of Maharashtra and was based on primary data. Latur is a district in Maharashtra's southeast area, close to the state's Karnataka border. This research included a community-based cross-sectional survey of person with self-reported diabetes patients aged 18 and above. They were drawn- at random from a wide range of ages and social backgrounds, all of whom reported diabetes. Based on the proportion of diabetes patients, a community-based cross-sectional survey of self-reported diabetes patients was conducted; the estimated required sample size is 497. According to the DLHS-4 Latur district factsheet, 14% of the population aged 18 and above in the Latur district has blood sugar levels greater than 140 mg/dl (high),[5] with a 95% confidence level of 4%, the margin error was 4%. The study's effective sample size is 497 after accounting for the 1.5 design effect and a 10% non-response rate. As a result, 505 as the sample size for this investigation after rounding off.

In the cross-sectional survey, the self-reported diabetes respondents were identified using a multistage stratified sampling procedure. which had a target sample size of 505 diabetic respondents from 413 households. Latur district is divided into two administrative sub-divisions: Latur and Udgir. The study was conducted in Latur Tehsil, Latur Sub-division because it is the district's headquarters and has comparably better healthcare facilities. Nilanga tehsil in Udgir Sub-division was chosen at random for the study. Following the selection of two tehsils (Latur and Nilanga), one urban ward, three villages, and three census enumeration blocks (CEB) from each tehsil were chosen for the study based on the proportion of population size (PPS). Following the selection of three CEBs from the urban ward and three villages, a comprehensive home listing was conducted in order to identify persons aged 18 and up who have diabetes. Following the house listing, 42 self-reported diabetes respondents were randomly selected for the study from each CEB/village. Six CEBs and six villages were chosen for the study from the two tehsils in total. From May 15 to November 15, 2017, data was collected from person with diabetes. Finally, the self-reported diabetes patients from each CEB/village were included based on the following criteria. The study included people over the

age of 18 who have Type 1 or Type 2 diabetes. The study excludes those under the age of 18 years old, pregnant women with diabetes, and anyone who are critically unwell.

Bivariate and multivariate logistic regression analyses were performed in IBM's SPSS-17. Bivariate analysis was used to measure the association between diabetes and background characteristics. Multivariate analysis was used for assessing the effect of individual background characteristics of respondents after controlling for remaining factors on diabetes. In case of categorical background characteristics, the choice of a reference group was guided by theoretical deliberations as well as the findings of bivariate analysis. For instance, for wealth quintile, place of residence and religion, the reference categories are poor, rural and Hindu religions respectively. Individual background characteristic was assessed at 1%, 5% and 10% level of significance.

Informed consent was obtained from community heads before the survey was initiated. Consent of individual respondents was also obtained before the interviews. Assurances were given to the respondents that they were free to withdraw from the study at any time. Since the study covered the health aspects the diabetic persons. So, consent was also taken from the head of the household and the diabetics to speak to their doctors. The purpose of the study was explained to the individual before the survey and the promise to maintain the privacy and confidentiality of data. Moreover, it would be used only for the purpose of academic study.

RESULTS

According to demographic and socioeconomic parameters, Table 1 shows the percentage distribution of respondents by accessibility of hospital facilities for treatments (blood sugar level check-up, urine sugar level check-up, blood pressure examinations, and taking medicine). The results revealed a significant relationship between the location of people with diabetes and the healthcare facility (P<0.01). Around 87% of respondents received treatment from private facilities in metropolitan areas. It was discovered that just 12% of urban respondents seek treatment in government hospitals, whereas 26% persons of rural seek treatment in government institutions. The age group of respondents has a significant relationship with healthcare facility accessibility (P<0.05). Additionally, higher percentage of respondents in rural (26.2%), widowed/divorced/separated/

never married (31.8%), not educated (33.3%), belongs to OBC castes, (24.4%) and poor wealth quintile have accessed government facility. Table 2 shows the distance between hospital facilities and people with diabetes based on socioeconomic factors. The results revealed a significant relationship between respondent location and distance to hospital facilities (P<0.01). Urban respondents have a higher (56.9%) access to hospital facilities within a 10-kilometer radius, whereas rural respondents have a lower (42.9%) access to hospital facilities within a 30-kilometer radius. The results revealed a significant relationship between respondent age and distance to hospital facilities (P<0.01).

Table 3 shows the number of times people with diabetes went to the hospital for diabetes treatment in the previous year, broken down by background characteristics. The results revealed a significant relationship between the respondent's location and the length of time spent in the hospital treatment component (P<0.05). Rural respondents have taken 62.7 percent and 21.8 percent one-time and two-time diabetes treatments, respectively, whereas urban respondents have taken 53 percent and 30.8 percent one-time and two-time diabetes treatments, respectively. The gender of the respondent has a significant relationship with the number of visits to the hospital for treatment (P<0.01). Only 8.6% of female respondents have visited the hospital three or more times for treatment, compared to 61.5 percent of female respondents who had only been once in the previous year.

Table 4 shows the biggest barrier to accessing healthcare facilities among people with diabetes, broken down by demographic and socioeconomic variables (expensive hospital visits, too far to travel, insufficient transportation). The wealth index, types of hospital facilities, and distance to access hospital facilities were all found to be significantly associated with the cost of not being able to afford healthcare facilities (P<0.01). The proportion of people with diabetes who can't afford to go to the hospital is higher (50.8%) in rural areas than in urban areas (47.8%). The focus of the findings is on the relationship between diabetes and the problem of too far access to healthcare facilities, as determined by background variables. The problem of being too far away from healthcare facilities is significantly associated with the location of people with diabetes (P<0.01). Among rural persons with diabetes has higher 73.8% face the problem of being too far to access healthcare facilities than 46.6% in the urban area. The

Table 1: Percentage distribution of respondents by accessibility of hospital facilities for treatments of diabetes according to background characteristics, Latur District, 2017

Background Characteristics	Private	Government	χ^2	N
Locality				
Rural	73.8	26.2	15.8***	252
Urban	87.8	12.3		253
Sex				
Male	79.6	20.4	0.6	284
Female	82.4	17.7		221
Age				
18-40	81.9	18.1	5.9**	83
41-59	85.7	14.3		189
60 and above	76.4	23.6		233
Marital status				
Currently married	84.3	15.7	14.4***	395
Widowed/divorced/separated/never married	68.2	31.8		110
Education Status				
Illiterate	66.7	33.3	38.3***	174
1-9 years	84.2	15.8		184
10 and more	93.2	6.8		147
Religion				
Hindu	80.2	19.8	1.1	358
Muslim	80.0	20.0		90
Buddhist and other	86.0	14.0		57
Caste				
SC/ST	81.6	18.4	2.6	136
OBC	75.7	24.4		115
General	82.7	17.3		254
Working Status				
Currently not working	80.9	19.1	0.9	256
Farmer/ daily wage labour	83.3	16.7		114
Other	78.5	21.5		135
Wealth Quintile				
Poor	76.2	23.8	5.0	168
Middle	85.8	14.2		169
Rich	80.4	19.6		168
Distance (Km)				
Less than 10	89.8	10.2	14.4***	177
11 to 30	75.3	24.7		170
31 and more	76.6	23.4		158
Total	80.8	19.2		505

*Note: Chi-Square (χ2)- P value *** <0.01, P value ** <0.05,*

study's findings focus on the challenges of poor transportation among people with diabetes, as measured by demographic and socioeconomic factors. The problem of insufficient transportation has a strong relationship with the respondent's location (P<0.01). Rural people with diabetes had a greater rate of poor transportation (61.5%) than those in urban areas (23.3%).

The adjusted odds ratios after controlling for important background factors are shown

Background Characteristics	Less than 10 km	10 to 30 km	31 and more km	χ^2	N
Locality	Percent	Percent	Percent		
Rural	13.1	44.1	42.9	106.8***	252
Urban	56.9	23.3	19.8		253
Sex					
Male	33.8	35.6	30.6	1.1	284
Female	36.7	31.2	32.1		221
Age					
18-40	38.6	32.5	28.9	17.9***	83
41-59	40.7	23.3	36		189
60 and above	29.2	42.5	28.3		233
Marital status					
Currently married	38.2	29.6	32.2	14.5***	395
Widowed/divorced/separated/never married	23.6	48.2	28.2		110
Education Status					
Illiterate	21.8	36.8	41.4	31.2***	174
1-9 years	35.9	32.6	31.5		184
10 and more	49.7	31.3	19.1		147
Religion					
Hindu	41.1	27.4	31.6	30.5***	358
Muslim	23.3	43.3	33.3		90
Buddhist and other	15.8	57.9	26.3		57
Caste					
SC/ST	31.6	37.5	30.9	5	136
OBC	32.2	39.1	28.7		115
General	38.2	29.1	32.7		254
Working Status					
Currently not working	30.9	37.9	31.3	5.9	256
Farmer/ daily wage labour	39.5	27.2	33.3		114
Other	39.3	31.1	29.6		135
Wealth Index					
Poor	32.7	25	42.3	64.1***	168
Middle	41.4	20.7	37.9		169
Rich	31	55.4	13.7		168
Hospital facility					
Government	18.6	43.3	38.1	14.4***	97
Private	39	31.4	29.7		408
Total	**35.1**	**33.7**	**31.3**		**505**

*Note: Chi-Square ($\chi2$)- P value *** <0.01,P value ** <0.05, P value *<0.10*

Table 3: Percentage of number of Times visited to hospital for diabetes treatment in last year by according to Background characteristics of respondents, Latur District, 2017

Background Characteristics	One time	Two time	Three and more time	χ^2	N
Locality					
Rural	62.7	21.8	15.5	11.1**	252
Urban	53.0	30.8	14.2		253
Sex					
Male	54.9	24.7	19.7	12.5***	284
Female	61.5	28.5	8.6		221
Age					
18-40	67.5	18.1	13.3	14.9***	83
41-59	63.0	21.2	14.3		189
60 and above	50.2	33.5	15.9		233
Marital status					
Currently married	59.2	23.8	16.0	6.6*	395
Widowed/divorced/separated/ never married	52.7	35.5	10.9		110
Education Status					
Illiterate	66.1	25.9	6.9	20.3***	174
1-9 years	50.5	31.5	17.4		184
10 and more	57.1	20.4	21.1		147
Religion					
Hindu	57.3	26.5	14.8	3.8062	358
Muslim	63.3	23.3	13.3		90
Buddhist and other	52.6	29.8	17.5		57
Caste					
SC/ST	55.2	32.4	12.5	9.1565	136
OBC	56.5	27.0	16.5		115
General	59.8	22.8	15.4		254
Working Status					
Currently not working	57.8	30.9	10.9	14.8**	256
Farmer/ daily wage labour	64.0	17.5	16.7		114
Other	52.6	25.2	20.7		135
Wealth Index					
Poor	76.2	19.6	4.2	94.2***	168
Middle	67.5	21.3	10.1		169
Rich	29.8	38.1	30.4		168
Hospital facility					
Government	55.7	36.1	7.2	9.1**	97
Private	58.3	24.0	16.7		408
Distance (Km)					
Less than 10	56.5	32.2	10.7	130.8***	177
11 to 30	30.0	38.2	30.6		170
31 and more	89.2	7.0	2.5		158
Total	57.8	26.3	14.8		505

*Note: Chi-Square (χ^2)- P value *** <0.01,P value ** <0.05, P value *<0.10*

Table 4: Percent distribution of respondents by problem faced for access to health care facilities, according background characteristics, Latur District, 2017

Background Characteristics	Unaffordable cost to visit hospital	χ^2	Too Far	χ^2	Poor transportation	χ^2	N
Locality							
Rural	50.8	0.4	73.8	38.9***	61.51	75.4***	252
Urban	47.8		46.6		23.32		253
Sex							
Male	46.5	2.1	58.5	0.8	40.14	1.3	284
Female	52.9		62.4		45.25		221
Age							
18-40	38.6	4.6	54.2	2.5	39.76	4.3	83
41-59	51.9		58.7		37.57		189
60 and above	51.1		63.5		47.21		233
Marital status							
Currently married	48.9	0.1	55.2	19.0***	38.23	12.8***	395
Widowed/divorced/ separated/never married	50.9		78.2		57.27		110
Education Status							
Illiterate	56.3	5.7	69.5	9.9**	51.15	10.5**	174
1-9 years	47.3		56.5		41.3		184
10 and more	43.5		53.7		33.33		147
Religion							
Hindu	50.6	3.0	55.0	17.3***	39.94	6.6**	358
Muslim	51.1		78.9		54.44		90
Buddhist and other	52.6		63.2		38.6		57
Caste							
SC/ST	66.9	4.2	69.1	9.1**	47.0	1.6	136
OBC	41.7		60.8		42.0		115
General	39.7		50.3		38.0		254
Working Status							
Currently not working	52.0	6.6	66.4	11.1**	44.9	12.5**	256
Farmer/ daily wage labour	54.4		48.3		56.1		114
Other	40.0		58.5		25.9		135
Wealth Index							
Poor	64.9	49.1***	82.1	17.5***	54.8	33.7***	168
Middle	55.0		69.7		47.3		169
Rich	28.0		38.6		25.0		168
Hospital facility							
Government	37.1	7.1**	56.4	12.9***	36.52	29.8***	97
Private	52.2		76.3		67.01		408
Distance (Km)							
Less than 10	52.5	78.7***	23.2	156.1***	17.5	117.2***	177
11 to 30	24.1		79.4		43.5		170
31 and more	72.8		81.0		69.0		158
Total	**49.3**		**60.2**		**42.38**		**505**

*Note: p- value *** <0.01, p- value ** <0.05,*

Table 5: Result of binary logistic regression models: effect of background characteristics on the faced problem of unaffordable cost, too far and poor transportation for access health care facilities by respondents

Background Characteristics	Unaffordable cost		Too Far		Poor transportation	
	Odds Ratio	95% conf. Interval	Odds Ratio	95% conf. Interval	Odds Ratio	95% conf. Interval
Locality						
Rural®						
Urban	0.8	(0.5,1.3)	0.8	(0.5,1.3)	0.3***	(0.2,0.5)
Sex						
Male®						
Female	1.8	(0.6,1.6)	1.2	(0.6,2.1)	1.2	(0.7,2.1)
Age (years)						
18-40®						
41-59	1.6	(0.9,2.9)	1.8*	(0.9,3.8)	1.4	(0.7,2.8)
60 and above	1.9**	(1,3.7)	1.1	(0.5,2.4)	0.9	(0.4,1.9)
Marital status						
Currently married ®						
Widowed/divorced/separated/ never married	1.2	(0.7,2.2)	2.6***	(1.3,5.4)	1.3	(0.7,2.3)
Education						
Illiterate®						
1-9 years	0.8	(0.5,1.4)	1.2	(0.7,2.3)	1.5	(0.8,2.6)
10 and more	0.9	(0.4,1.7)	0.4	(0.2,0.8)	1.3	(0.6,2.6)
Religion						
Hindu®						
Muslim	1.1	(0.6,1.9)	2.3**	(1,4.9)	2.1**	(1.1,4.2)
Buddhist and other	0.8	(0.4,1.7)	1.2	(0.5,2.7)	0.8	(0.3,1.8)
Caste						
SC/ST®						
OBC	0.7	(0.4,1.4)	2.2	(1.1,4.4)	1	(0.5,2)
General	1.1	(0.6,1.9)	0.7**	(0.3,1.5)	1	(0.5,1.9)
Working Status						
Currently not working®						
Farmer/ daily wage labour	1.1	(0.6,2)	0.5**	(0.2,0.9)	0.5**	(0.3,0.9)
Other	0.6*	(0.3,1.1)	0.7	(0.4,1.5)	0.5**	(0.2,0.9)
Wealth Index						
Poor®						
Middle	0.6**	(0.4,1)	0.3***	(0.2,0.6)	0.4***	(0.2,0.7)
Rich	0.3***	(0.2,0.5)	0.4***	(0.2,0.8)	1.2	(0.7,2.1)
Hospital facility						
Government®						
Private	2.3***	(1.4,4.2)	0.5**	(0.3,1)	0.3***	(0.2,0.6)
Distance (Km)						
Less than 10®						
11 to 30	1.3***	(1.2,1.8)	16.7***	(8.4,34)	9.3***	(4.8,17.8)
31 and more	2.0***	(1.2,3.5)	17.5***	(9,34)	3.6***	(1.9,6.9)
_cons	0.9	(0.3,2.9)	0.4	(0.1,1.5)	1.0	(0.3,3.7)

*Note: p-value *** <0.01, p-value ** <0.05, p-value *<0.10*

in Table-5. It summarizes the results of binary logistic regression to find the link between unaffordability, distance, and poor transportation to health-care institutions. The age of the respondent was shown to be substantially associated with the cost of using hospital facilities (P<0.05). Respondents aged 60 and more are twice as likely as those

aged 18 to 40 to encounter the problem of costly hospital costs. The findings revealed a significant relationship between respondents' working status and their experience with the problem of unaffordable hospital costs (P<0.01). Respondents in other employment status have 40% fewer possibilities of being not availing hospital services due to higher costs than those who are unemployed. Furthermore, the respondent's wealth status was found to be substantially associated with the problem of unaffordable healthcare costs (P<0.01). Those with a middle or high wealth status face a 40% and 70% higher risk of being unable to afford hospital care, respectively, than those with a low wealth position. Furthermore, distance to hospital facilities is highly connected with the problem of unaffordable healthcare facility access (P<0.01). Long-distance (11 to 30 km) and long-distance (31 and more km) respondents have one- and two-times greater problems with unaffordable costs to access hospital facilities than those who live less than 10 km away.

DISCUSSION

Due to the lack of healthcare facilities, huge rush, and huge trust deficit between patients and healthcare providers higher proportion of respondents taken availing treatment from private hospitals, compared to government healthcare facilities.[6] The result shows that the poor wealth quintile respondents preferred government healthcare facilities to the middle and wealthy classes. Further illiterate respondents preferred to utilize or access government healthcare facilities. This can be attributed to higher health expenditure and low level of income status and unaffordable healthcare facilities; thus, poor and illiterate respondents use government healthcare facilities.[7]

The study findings suggest that half of the respondents receive once treatment in the last year. Among rural study participants, old age, SC/ST, and poor wealth quintile respondents who had received the check (Blood sugar, urine, and blood pressure examination) only once last year. This is because diabetes specialized hospitals are available in urban areas. So, people are faced problem to access the health care facility, like poor transportation, lack of connectivity, lack of awareness regarding availability and accessibility of health care facilities. Hence, poor wealth quintile respondents were visited only one time for treatment in last year, due to higher health expenditure than consumption expenses.[8]

The study findings also found around two thirds of illiterate respondents were taking treatment irregularly. This could be due to lack of awareness regarding health care facility and health management.[9] Distance of health care facilities from home were significantly associated with frequencies of visits to hospital for treatment. More than one fourth of respondents were staying far away (31 km and more) from treatment facilities. Hence, decentralization of health care facilities is critical. Moreover, rural respondents were not frequently visiting a hospital for treatment due to high cost of travel.[10]

Elderly respondents reported that as diabetes is a lifelong condition and expensive treatment. Due to poverty, other health issues and inability to travel, elderly people were more ignorance by other family members. Elderly was likely to visit healthcare facility annually.[11] Furthermore, due to the distance to access the health care facilities and need to be fasting for sugar checking is another barrier for frequent healthcare visits. Moreover, lack of transportation, and unaffordable transportation costs. So, rural, illiterate, SC/ST and poor-class respondents rarely visited for health treatment.

In conclusion, three fourth of persons with diabetes reported utilization of private healthcare facilities in the Latur District of Maharashtra. Lower utilization of government health care facilities by persons with diabetes due to the lack of availability of government health care facilities. A large proportion of respondents only had visited one-time to the hospital for treatment as the health facilities were far away, and healthcare was unaffordable. In rural localities, old age, widowed/divorced/separated and unmarried, SC/ST and poor class persons with diabetes reported problems of unaffordable cost for distance and poor transportation.

Policy implication: There is a need for government to improve the health system by availability of health check-up at sub center, PHC, rural hospital and special department of diabetes in District and sub- District hospital. Moreover, Private sector and NGOs have taken initiative to provide health care facilities to rural, illiterate and poor diabetic persons. respondents have faces problem regarding unaffordability of health care facilities, So far and poor transportation due to centralization of health care facilities. So, government and private sector must to decentralisation of health

care facilities and improve to transportations facilities.

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