

Urban-rural differences in the family sociodemographic characteristics of diabetic patients in a tertiary hospital in south eastern Nigeria

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Abstract

Background: Diabetes mellitus is among the leading causes of morbidity and mortality in the world, with 90% of diabetic patients receiving care from primary care physicians. It has been known to be influenced by socio-demographic factors. The objective of this study was to describe the urban-rural differences in the family socio-demographic characteristics of diabetic patients attending a tertiary hospital.

Methods: This was a hospital-based descriptive cross-sectional study. Structured questionnaires developed by the researchers were used and administered to the respondents individually. The respondents consisted of adults aged 18 years and above already diagnosed with diabetes mellitus and seen in the hospital. The sample size consisted of consecutive 100 patients with diabetes mellitus seen in the hospital's general outpatient, internal medicine and endocrinology clinics, and emergency room between January and February 2015. The information collected included data on socio-demographic characteristics, family and social history. Univariate, bivariate and multivariate analyses were done. The level of significance was 5%. Statistical Package for Social Sciences (SPSS) version 26 was used for the statistical analysis.

Results: A total of 100 diabetic respondents were recruited into the study. The male to female ratio was 1:1. The urban respondents constituted 68% while respondents aged 50-69 years formed 48% of the total respondents. The mean age of the rural dwellers was significantly higher (67.9 ± 15.8 years) than the urban dwellers (51.2 ± 13.3 years). Majority of the respondents were currently married (p -value <0.001). Age, marital status, occupation and family history of diabetes mellitus were significantly associated with residence.

Conclusion: The preponderance of urban diabetic respondents in this study calls for improvement in healthcare services and policies, including preventive measures to help curb the menace of the disease and reduce its prevalence, especially in urban areas.

Keywords: Urban; Rural; Diabetes Mellitus; Family; Nigeria

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1. Introduction

Diabetes mellitus develops from a complex interaction of genetic and environmental factors [1]. It is now among the leading causes of morbidity and mortality throughout the world, apart from being one of the major contributors to the escalating healthcare cost and needs [2]. The global costs of diabetes mellitus and its consequences are large and will substantially increase by 2030, and even if countries meet international targets, the global economic burden will not decrease [3]. With 90% of diabetes mellitus patients receiving their care from primary care physicians, diabetes mellitus is the epitome of a chronic disease requiring a multi-disciplinary management approach [1]. In both men and women, the prevalence of diabetes mellitus increases with age, and the lifetime risk of acquiring it is high and is climbing [4]. Lifestyle change is the most efficacious and cost-effective treatment for this deadly disease [2].

Diabetes mellitus has been known to be influenced by socio-demographic factors [5]. Researchers have demonstrated that education, occupation, small family size and family history of diabetes mellitus type 2 were significantly associated with high utilization of healthcare services [1]. Arming the physician with the family socio-demographic characteristics of diabetes mellitus will make it easier to enlighten patients with diabetes mellitus so that they can take ownership of their conditions. This will lead to improvement in diabetic morbidity and reduction of diabetic mortalities and prevalence. The objective of this study was to describe the urban-rural differences in the family socio-demographic characteristics of diabetic patients attending a tertiary hospital in Umuahia, Nigeria.

2. Methods and materials

2.1. Study Design and Setting

This was a hospital-based descriptive cross-sectional study carried out in the Federal Medical Centre, Umuahia, Abia State. Umuahia is the capital city of Abia State. The hospital serves people of the state and adjoining States of Imo, Enugu, Ebonyi and Akwa-Ibom. The attending physicians that rendered care to this class of patients included the medical officers in the emergency room, family physicians and endocrinologists.

2.2. Study Population and Sampling

Structured questionnaires developed by the researchers were used and administered to the respondents individually. The respondents consisted of only adults (aged 18 years and above) already diagnosed with diabetes mellitus seen in the hospital's general outpatient, internal medicine and endocrinology clinics and emergency room. The sample size consisted of consecutive hundred adult diabetes mellitus patients seen in the hospital between January and February 2015. All diabetes mellitus patients less than 18 years of age, non-diabetic patients and diabetes mellitus patients that refused consent or brought in dead were excluded from this study. All the consecutive subjects that met the inclusion criteria were interviewed until the required number of subjects was gotten.

2.3. Data Collection

The questionnaire administration was done after careful explanation of the study to ensure confidentiality and consent extraction. All items cited by respondents were checked before he/she left and data entered. The information collected included data on socio-demographic characteristics and family history.

2.4. Data Analysis

The data collected was fed into Statistical Package for Social Sciences (SPSS version 26). Statistical analysis employed included among others percentages and frequencies. Chi-square tests were used to determine level of significance. P-value of 0.05 or less was used as the criterion for statistical significance. Bivariate analysis was used to test for association between the socio-demographic variables and residence of the respondents. Factors significant at the bivariate level were added to the logistic regression model. The predictors of urban-rural differences among respondents with diabetes mellitus were identified at level of significance of 5% with the adjusted odds ratio and 95% confidence intervals computed. The results were displayed in tables and charts.

2.5. Ethical Consideration

The approval of the Hospital Ethics Committee was obtained. Consents of all the respondents were obtained before inclusion in the study.

3. Results

3.1. Socio-Demographic Characteristics of Respondents

Table 1 showed that a total of 100 respondents were recruited into the study. The male to female ratio was 1:1. The urban respondents constituted 68% while respondents aged 50-69 years formed 48% of the total respondents. The overall mean age of the respondents was 56.6 ± 16.1 years. The mean age of the rural dwellers was significantly higher (67.9 ± 15.8 years) compared to the urban dwellers (51.2 ± 13.3 years). Majority of the respondents (73%) were currently married while 47% had attained tertiary education status. The civil servants constituted 33% of the respondents in the study. Those with 1-5 years of disease diagnosis duration constituted 49% of the total respondents. The respondents with 7-8 household size formed 36% of the respondents in the study.

Table 1 Socio-Demographic Characteristics of Respondents with Diabetes Mellitus (N=100)

Characteristics	Frequency (n=100)	Percentage (%)
Gender		
Male	50	50
Female	50	50
Residential address		
Urban	68	68
Rural	32	32
Age (in years)		
<30	5	5
30-49	30	30
50-69	48	48
≥ 70	17	17
Marital status		
Single	8	8
Married	73	73
Divorced	2	2
Others	17	17
Educational status		
Non-formal	15	15
Primary	26	26
Secondary	12	12
Tertiary	47	47
Occupation		
Artisan	2	2
Civil servant	33	33
House wife	1	1
Traders	22	22
Farmers	6	6
Others	36	36

Family history of diabetes mellitus		
Yes	50	50
No	50	50
Duration of DM (years)		
1-5	49	49
6-10	37	37
11-15	11	11
16-20	2	2
>20	1	1
Household size		
1-2	7	7
3-4	16	16
5-6	35	35
7-8	36	36
9-10	3	3
>10	3	3

DM = Diabetes Mellitus

3.2. Distribution of Financial Support Sources

Figure 1 showed that the majority of the respondents (66%) had self-sponsored sources of treatment while about a third of the respondents (31%) got sponsorship from their families.

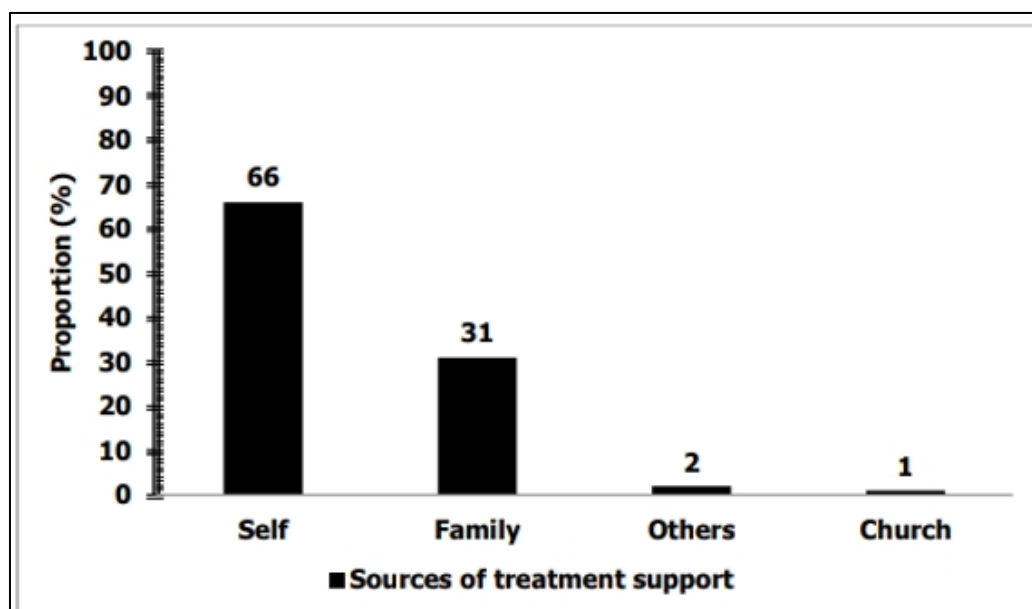


Figure 1 Distribution of financial support sources

Figure 2 showed that, half of the respondents had no financial support (50%) while 45% of them get financial support from families (45%). It was only one respondent that had financial support from friends.

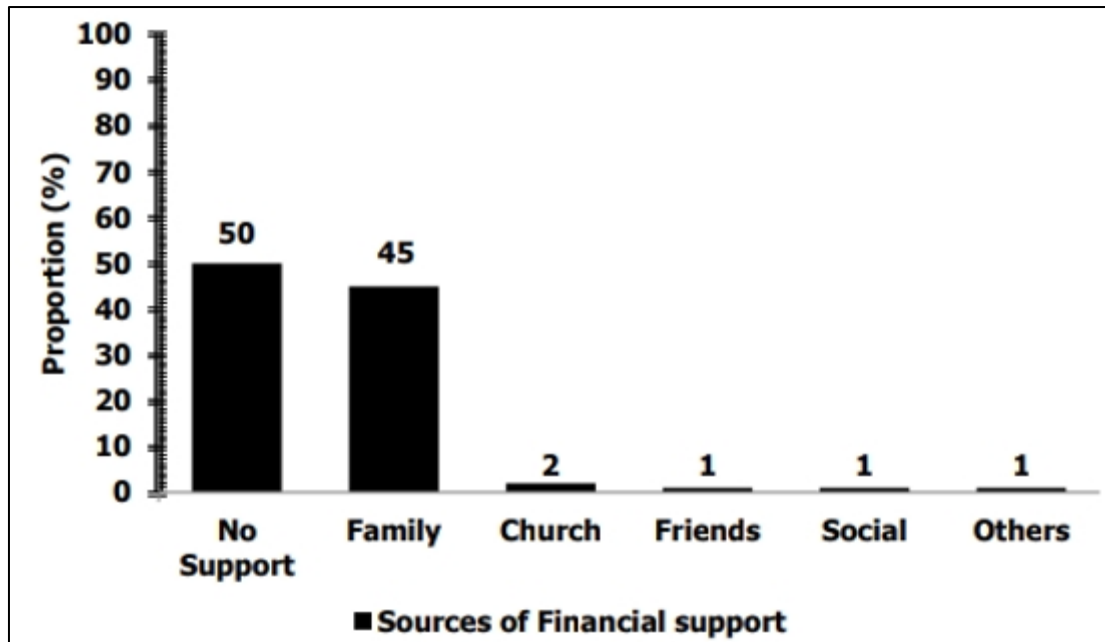


Figure 2 Distribution of financial support sources

3.3. Distribution of Socio-Demographic Characteristics by Residence

Table 2 showed the distribution of socio-demographic characteristics by residence among the respondents. Respondents less than 60 years of age were more likely to be urban residents compared to their counterparts (OR = 4.39, 95% CI: 1.80 – 10.70). Similarly, the urban dwellers had a higher odd of being skilled workers (OR = 3.78, 95% CI: 1.30 – 11.01) and currently married (OR = 5.18, 95% CI: 2.01 – 13.24). However, the respondents who lived in urban areas were less likely to have lower educational status (OR = 0.12, 95% CI: 0.04 – 0.33). The odds of having no family history of DM were 3.14-fold higher among the urban dwellers compared to the rural dwellers (OR = 3.14, 95% CI: 1.29 – 7.65).

Table 2 Distribution of Socio-Demographic Characteristics by Residence among Respondents with Diabetes Mellitus

Characteristics	Urban n=68(%)	Rural n=32(%)	COR	95% CI	P-Value
Gender					
Male	37(74.0)	13(26.0)	1.74	0.74–4.09	0.198
Female	31(62.0)	19(38.0)	1		
Age (years)					
<60	51(79.7)	13(20.3)	4.39	1.80–10.70	<0.001*
≥60	17(47.2)	19(52.8)	1		
Marital status					
Currently married	57(78.1)	16(21.9)	5.18	2.01–13.34	<0.001*
Not Married	11(40.7)	16(59.3)	1		
Educational status					
Below Tertiary	26(49.1)	27(50.9)	0.12	0.04–0.33	<0.001*
Tertiary	42(89.4)	5(10.6)	1		
Occupation					
Skilled	28(84.8)	5(15.2)	3.78	1.30–11.01	0.011*

Semi/unskilled	40(59.7)	27(40.3)	1		
Family history of DM					
No	40(80.0)	10(10.0)	3.14	1.29–7.65	0.010*
Yes	28(56.0)	22(44.0)	1		
Duration of DM (years)					
1–5	36(73.5)	13(26.5)	1.64	0.70–3.85	0.250
>5	32(62.7)	19(37.3)	1		
Treatment sponsor					
No	47(71.2)	19(28.8)	1.53	0.64–3.67	0.337
Yes	21(61.8)	13(38.2)	1		
Financial support					
Self	47(71.2)	19(29.8)	1.95	0.83–4.62	0.125
Other sources	19(55.9)	15(44.1)	1		
Household size					
1–6	42(72.4)	16(27.6)	1.62	0.69–3.77	0.266
>6	26(61.9)	16(38.1)	1		

*p-value <0.05 are considered significant; DM = Diabetes Mellitus; COR = Crude Odds Ratio; CI = Confidence Interval

3.4. Logistic Regression of Diabetes Mellitus among Urban and Rural Dwellers

Table 3 showed the predictors of DM among the urban and rural dwellers. The respondents with Diabetes Mellitus in an urban area, in comparison to those with Diabetes Mellitus in rural areas, were more likely to be currently married (aOR = 8.33, 95% CI: 2.47 – 28.08), less likely to have a low education status (aOR = 0.06, 95% CI: 0.01 – 0.31), and more likely to be less than 60 years (OR = 3.57, 95% CI: 1.09 – 11.65).

Table 3 Logistic Regression of Diabetes Mellitus among Urban and Rural Dwellers

Variable	aOR	95% CI	p-value
Marital Status			
Currently married	8.33	2.47–28.08	<0.001
Not Married	1		
Education Status			
Below Tertiary	0.06	0.01–0.31	<0.001
Tertiary	1		
Age (years)			
<60	3.57	1.09–11.65	0.035
≥60	1		

*p-value <0.05 are considered significant; DM = Diabetes Mellitus; aOR = adjusted Odds Ratio; CI = Confidence Interval

4. Discussion

Diabetes mellitus imposes a tremendous burden on families with diabetic patients both financially and health-wise [6]. This study was aimed at describing urban-rural differences in the family socio-demographic characteristics of diabetic patients in a tertiary hospital in Umuahia, southeastern Nigeria, with a view of helping health policy makers and clinicians including family physicians to develop more appropriate interventions in curbing the disease and its menace.

Though there were more male and female respondents in the urban than in the rural areas, the female respondents were more in the rural areas than males. This finding was not statistically significant. This finding could be a reflection of the increasing level of diabetic education and higher level of educational status among the respondents and increasing westernization. This observation was different from that found in the rural population of Vindhya region of India in which the female diabetic respondents were less than the male ones [7]. Also, gender was not statistically significant in a study on diabetes mellitus in rural Kerala, India [8]. Residence has been found to be a major determinant of diabetes mellitus in Sub-Saharan Africa with urban residents having higher prevalence of diabetes than their rural counterparts as was observed in this study [9].

In this study, there were more adult diabetic respondents in the urban areas than in the rural areas and more elderly diabetic respondents in the rural than in the urban area. This observation was statistically significant. This finding could be attributed to urban migration in search of greener pasture and better educational institutions and high physical activities among the adults in the rural areas. This observation is in accord with the low prevalence of diabetes mellitus among the rural Fulanis of Northern Nigeria [9]. This finding is also similar to that found in Vietnam in which among the younger population, urban residents were significantly more likely to have diabetes mellitus [10]. This finding is contrary to that found in rural Vindhya region in which majority of the diabetic respondents were adults [7]. It is also not in tandem with that found in a rural community in Pakistan in which majority of the diabetic respondents were 40-60 years of age [2].

This study showed that there were more currently married respondents in the urban compared to the rural area. This finding was statistically significant and could be attributed to low physical activities with increasing sedentary lifestyle in the urban areas and pregnancies in the female respondents. This finding is similar to that found in Abuja, Nigeria in which married diabetic respondents formed majority of the study population [11]. Similar finding was also found in Assam, India [6]. Incidence of the disease has been found to be more in the married, thus caution is necessary with respect to feeding among the married population to avoid developing the disease [12].

In this study, education was found to be statistically significant with majority of the urban respondents having tertiary education while there was predominance in below tertiary education among the rural dwellers. This finding could be due to the availability of many educational institutions in this environment resulting to the low prevalence of no formal education. This observation was consistent with that found in a rural community in Pakistan where education was found to be significantly associated with diabetes mellitus [2]. This observation was contrary to that found in central Gujarat [13]. Also, the finding was not in consonance with that found in Assam, India and Saudi Arabia [6,14]. Diabetic education is important in the prevention and progression of the disease and thus clinicians involved in providing healthcare services to this class of patients should not miss the opportunity to educate them on the disease too. Glycaemic control has been shown to be better in more educated diabetic patients. There is a positive impact of education in diabetes mellitus control and inverse relationship with development of complications indicating that the more education a diabetic patient has, the less the diabetic complication [15].

There were more skilled, unskilled and semi-skilled respondents in the urban areas than rural areas. This finding was statistically significant. This observation could be attributed to the paucity of skill acquisition centres in our environment. Similar observation was found in central Gujarat in which majority of the diabetic respondents were of lower income group [13]. Diabetes mellitus has been found to be more prevalent in people in the lower socio-economic rank [16]. Also, poor diabetic control was significantly associated with socio-economic rank in a study on role of the patients' demographic characteristics in disparities in diabetic care [16]. Researchers in Pakistan also agreed that occupation was significantly associated with high healthcare services utilization rates among diabetic patients [2]. In contrary, in the rural population of Kerala, India, it was observed that occupation was not significant [8]. Thus, there is the urgent need to curb the menace of this non-communicable disease by empowering diabetic patients through job creation and skill acquisitions.

The family history of diabetes mellitus was found more in urban respondents than in the rural respondents though in 50% of the respondents and this was statistically significant. This finding could be attributed to the fact that family members eat from same pot, exposed to same environmental risk factors of diabetes mellitus and share genetic issues that predispose individuals to diabetes mellitus. Family history of diabetes mellitus was found to be significantly associated with Type 2 Diabetes mellitus in Kanungu District, Uganda and this was in tandem with the above observation [17]. Though the researchers concluded that family history increases the risk of getting Type 2 Diabetes mellitus, adjusting environmental factors such as lifestyle modification were seen to alter that [17]. Similar observation was also made by researchers in Turin, Italy [18].

In this study, more urban respondents had five or less years duration of diabetes mellitus than the rural respondents. Diabetic duration was not statistically significant in this study and this could be a reflection of the improving diabetes mellitus healthcare services and availability of universal health insurance programme though limited. This finding was similar to that found in North West population of Saudi Arabia [14].

This study showed that 66% of the respondents sponsored their treatment while 31% had their treatment sponsored by their families. The 47% of those who sponsored their treatment lived in the urban areas. This finding was not statistically significant. This finding could be ascribed to the fact that good health is very important to everyone and so in the event of health problem most individuals sponsor their treatment but when there is difficulty in doing this, families support especially in healthy family functioning. This finding was not consistent with that found in Abuja which was statistically significant [11]. In Umuahia, Nigeria, it was found that diabetes mellitus patients from functional (healthy) families were 12.5 times more likely to have controlled blood glucose when compared with those from dysfunctional (unhealthy) families [19]. Thus, healthcare providers including family physicians need to encourage families with diabetic members to be functional (healthy) and participate actively in the healthcare of their diabetic members in order to improve disease outcome and slow the disease prevalence.

Majority of the respondents in the urban and rural areas had self-financial support while only 45% had financial support from families. However, financial support was not statistically significant. This finding could be a reflection of the emphasis and priority diabetic patients place on their healthcare without relying much on family members and outsiders for financial support for their wellbeing. This observation was consistent with the 72.85% respondents without health insurance coverage observed in Nagpur [20]. This finding is contrary to observation in Uganda where financial contribution by family members to cost related to hospital care was observed to have a statistically significant association with diabetic management [21]. Financial constraints have been found to create financial obstacles to managing diabetes mellitus, a problem that is common in developing countries like Nigeria [22]. Thus, there is the need for universal healthcare insurance policy for this class of patients so that they would have access to quality healthcare services.

Respondents with household sizes of 1-6 and more than 6 were more in the urban than in rural areas. Also, majority of the household in this study lived in the urban areas. Household size was not statistically significant. This observation could be attributed to the fact that the study was conducted in the city and many families have their children and even relatives living with them and going to schools and work from there because of the high cost of living and education. This observation was different from that found in rural community in Pakistan which was statistically significant [2]. Also in Nigeria, a study showed that household family structure was statistically significant [19]. However, living in urban areas has been shown to make diabetic treatment difficult [23].

5. Conclusion

The preponderance of urban diabetic respondents in this study calls for improvement in healthcare policies and services to help reduce the disease prevalence and curb its menace especially in the urban areas. Healthcare providers especially family physicians should make use of every opportunity they have to educate and counsel their practice populations especially this class of patients on the prevention and progression of the disease to help reduce and curb the disease, bearing in mind the urban-rural disparity in its predictors and family socio-demographic factors. The empowerment of this class of patients will go a long way in curbing the disease and its complications which should be given a priority.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

Statement of ethical approval

This study received ethical approval from the Hospital Health Research Ethics Committee.

Statement of informed consent

Informed consent was obtained from all the respondents involved in this study.

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