Demographic Characteristics and Healthcare Utilization among Mothers with Under-5 Children in Rivers State Nigeria

*Asiegbu, Ucheoma A[1]; Fadupin, Grace T[2].

[1]Hospitality Management and Tourism department, faculty of Management Sciences,
 University of Port Harcourt
[2]Human Nutrition department, faculty of Public Health, University of Ibadan

Corresponding author: ucheoma.asiegbu@uniport.edu.ng

ABSTRACT

Background: *Nearly half of the children under five years of age globally die annually mostly from preventable and treatable causes. Adequate healthcare utilization has been identified as a means of child survival which is dependent on women's activities and empowerment.*

Objectives: This study was designed to investigate the influence of demographic characteristics on Healthcare Utilization (HCU) of mothers with under-5 children in Rivers state.

Methods: A descriptive cross-sectional survey was adopted to select data on 330 mother/child pairs in six Local Government Areas in Rivers state using a four-stage stratified random sampling method. An interview-administered structured questionnaire was used. HCU was scored. Descriptive statistics, the Chi-Square test and the general linear modelling were used to analyse the data.

Results: Mothers' age was 29.03 ± 5.66, about 52% had fair HCU and 48.4% had good utilization in the state. More mothers in the Riverine area (62.3%) had good healthcare utilization than mothers in the upland area (42.1%). Single mothers had lower healthcare utilization ($p = 0.018$) than married mothers. Maternal demographic characteristics generally accounted for about 14% variation in HCU among mothers with under-5 children in Rivers state.

Conclusion: Maternal healthcare utilization was fair. Maternal demographic characteristics are important factors that can influence healthcare utilization among mothers in Rivers state. This study, therefore recommends a sensitization program to improve healthcare utilization among mothers in Rivers state.

Keywords: Demographic characteristics, maternal healthcare utilization

INTRODUCTION

Healthcare utilization in Rivers state, Nigeria has received a growing consideration in recent years (1). This may be due to the increasing health challenges and the desire to lead a healthy life. Healthcare services refer to purposeful medical or remedial care given to sick individuals in order to improve their health situation (2). Such services are not only essential but central requirements to ensure a healthy and sustainably productive society. Studies (3, 4) have added that a comprehensive development can only be achieved when the health status of the populace is in good shape. No society can advance if its health system is weak and dysfunctional and a country that is blessed with healthy people will optimize development initiatives appropriately (4).

In 2019, about 5.2 million children under 5 years died globally mostly from preventable and treatable causes (5). Pneumonia, congenital anomalies, diarrhoea and malaria are the leading causes of death in children (6). These

health issues can be prevented or treated with access to simple, affordable interventions such as immunization, adequate nutrition and quality care by trained healthcare providers when needed. In order to achieve healthy development, children require significant preventive and developmental health services from birth to age five (7). Thus, this study was designed to investigate the influence of demographic characteristics on healthcare utilization of mothers with under-5 children in Rivers state.

Maternal socioeconomic status has been shown to associate positively with numerous child outcomes (8). Children's outcomes include learning and educational attainment; financial independence from public programs (9), such as welfare, food stamps, and Medicaid; (reduced) teen pregnancy; and adolescents and young adults' behavioural problems, such as fighting, truancy, and sexual activity (10, 11, 12, 13, 14). Studies have continued to show that the health and survival of children depend substantially on women's activities and women's empowerment. Thus, efforts to prevent malnutrition as well as enhance the health of the family depend substantially on the circumstances surrounding the woman. Maternal demographic factors have been identified to include the following characteristics: age, marital status, and parity (15). These factors have been previously (16, 17, 18) observed to have a graded influence on the decision-making ability of mothers in the use of healthcare services in places other than Rivers State hence, the need for this work.

Maternal Demographic Characteristics

Women throughout the world have the major responsibility for their families' nutrition and care. Since, maternal demographic factors include the following characteristics: age, ethnicity, marital status, parity (15), most of these maternal characteristics influence the choice of healthcare services to use (19). That is; the better the characteristic the better the access to and utilization of modern healthcare services. Thus, the maternal characteristics investigated in this study include; maternal age, ethnicity, marital status and parity.

Maternal age is viewed as the mother's age at the time of childbirth (20). It was noted that younger mothers had higher chances of premature delivery and smaller infants. It has been observed and reported that the primary determinant for weaning practice was maternal age, the younger the mother the later the children were weaned

(18). Studies have supported the assertion that a child from a teenage mother was more likely to be undernourished (21). On the other hand, advanced maternal age may result in babies with birth defects that may impair proper growth and development. Maternal age has been classified based on the 2009 US delivery and postpartum classification as follows: 11-14years, 15-19 years, 20-24 years, 25-29 years, 30-34 years, 35-39 years and 40 years old having 25-29 as the reference group (22). Less than 19 years are considered to be young while less than 16 years (children having children) are very young and may likely have pregnancy and birth complications which may likely affect the nutritional status of the child. Advanced maternal age starts from 35years and above. 40 years and above belong to the group of very advanced maternal age. With this classification, the recommended maternal age falls within the 19 – 34 years. According to some studies (22, 23) increasing maternal age is associated with better nurturing, supportive, and stable home environments. These linkages between maternal and childhood environment explained most of the association between maternal age and later outcomes. The study further revealed that each year a mother delays a first birth is associated with better school achievement and a similar-sized reduction in behaviour problems. Thus, delaying the first birth beyond the teenage period enables mothers to attain more schooling, commence a career, and obtain a substantial level of experiences and skills that might enhance a healthier prenatal environment as well as a wealthier, safer, and more stimulating postnatal environment for their first children (11, 24, 8).

The state of being part of a social group that with a common national or cultural tradition is referred to as ethnicity according to the online Oxford English dictionary. These groups of people share common characteristics such as ancestors, culture, and language including national experience. Ethnicity may affect childcare practices due to cultural restrictions (25). In certain cultures, the food distribution pattern is faulty, allocating the better portion of the daily meals to the household heads while starving the under-5 children of essential nutrients. This practice may expose the children to under-nutrition if not properly addressed. It has been observed that parenting skills and childcare practices are passed down from generation to generation (16). When these practices are deficient in good care the child suffers from

generation to generation. It becomes a vicious cycle that needs to be broken. The environment where someone is born and grows determines to a large extent the person's attitude towards issues.

The maternal place of residency refers to the location where the mother resides with her children and probably other members of the family. Place of residence could be categorized as rural and urban, upland and riverine/coastal, and different LGAs depending on the researcher's interest. Place of residence has been identified to have a categorised influence on maternal behaviour in terms of the type of care practice to adopt (26). Studies have shown that a significant regional variation in stunting exists among children under age 5 (26, 27, 28). Rural children were less likely to be wasted compared with urban children. Similarly, households with unimproved toilet facilities (31%) and unimproved sources of drinking water (32%) recorded the highest stunting (28).

Parity refers to the number of children produced by a woman which is also known as the fertility rate. Infant death is greatly affected by fertility patterns and reproductive behaviours in Nigeria (29). Household members are likely to share the same amount of resources. Large household size may hinder proper care where resources are suboptimum.

Healthcare utilization

Healthcare utilization refers to the use of healthcare services by people, the type of healthcare used and the timing of use of such healthcare (30). It also describes the quantification of the use of health services by individuals for proper management of health problems, promotion and maintenance of health and well-being or obtaining information about one's health status (31). It includes Immunization (0- 12 months), the use of ORS for the management of diarrhoea and treatment of childhood diseases in approved healthcare facilities. The use of preventive health services includes vaccinations, iron supplementation, use of drugs for intestinal parasites. It also includes early identification and immediate response to health-threatening conditions. Reports have shown that people living in the poorer parts of the world have a heightened susceptibility to illness (26, 27). This could be as a result of poor access to optimum healthcare (32). This scenario has been corroborated by some studies (28, 33) adding that maternal income, education and some other maternal characteristics influence maternal access to healthcare services.

METHODOLOGY

This study adopted a descriptive cross-sectional survey to randomly select Ikwerre, Khana, Abua, Oyigbo, Okrika and Bonny Local Government Areas (LGAs) in Rivers state, Nigeria. Rivers state is made up of twenty-three LGAs, fifteen of which are mostly upland while the remaining eight are mostly riverine LGAs. The area was stratified into upland and riverine LGAs. Six LGAs were randomly selected in the ratio of 2:1 for better representation. Because the population was too large for the limited resources thus, the six selected LGAs were selected to provide quick and reliable information. In each LGA, five wards were randomly selected using a table of random numbers so every ward stood a chance to be selected. In each ward, eleven households with under-5 children who were above six months of age were randomly selected using calculated interval selection. In each household a mother-child pair was selected. According to National Population Commission (34), 8.1% of children in Rivers State were underweight. This reference figure was used to calculate the sample size and a total of 316 mother-child pairs were recruited to participate in this study. Informed consent was obtained from the mothers by signing the informed consent forms. The UI/UCH ethics committee approved the study protocol with the number: UI/EC/19/0102. A structured questionnaire was used to collect the data. The measuring tape, length board, pencil and the weighing scale were used as data collection tools. The mothers were made to stand straight against a straight wall with their heads held straight and touching the wall, feet placed flat on the floor with the heels against the corner where the wall and the floor meet. A mark was made on the wall where the highest point of their heads met the wall. The height in meters was taken as the distance between this mark and the floor. The same procedure was repeated for children who could stand unaided but height was recorded in centimetres. The children who could not stand unaided were made to lie straight on the length board. The pencil was used to make two marks on the board where their heads and soles touched the board. The length in centimetres was taken as the distance between the two marks. The weighing scale was used to measure the weight of mother-child pairs in kilogram. The children who could not stand were weighed with their mothers.

Their weights were taken as the difference between mother's weight and mother plus child's weight. The Frequency distribution, percentages and Chi Square tests were used to describe the data. The multivariate general linear modelling was used to analyse the data. Maternal age was classified as 15-19, 20-24, 25-29, 30-34, 35-39 and 40-49 years. Marital status was classified as single and married. Parity was classified as low (less than 2 children), moderate (2-4 children), high (above 4 children).

RESULTS

The Frequency distribution (descriptive statistics) of the demographic characteristics of the mothers as presented in Table 1 reveals that the mean age of the mothers was 29.03±5.66 years and they belonged to various ethnic groups. The mothers were predominantly Christians (99%). Although single motherhood (17.09%) was low in the state, singlehood (25.51%) was significantly (p<0.05) more in the riverine area than in the upland area (13.30%).

Table 2 presents the descriptive statistics for mothers' healthcare utilization. It reveals that the difference in the place of the treatment of childhood diseases was significant. The use of oral rehydration solution (ORS) was significantly different in the two groups. The predominant place of the childhood treatment was the chemist in the upland region and health centre in the riverine.

Table 3 presents the effect of maternal demographic characteristics on healthcare utilization stratified by place of residence. Mothers who were 40 years and above were

Table 1: Demographic characteristics of the mothers (1/2)

Variables	Upland n(%)	Riverine n(%)	Total n(%)	X^2	p-value
Age Group					
Mean age	29.18±5.57	28.87±5.88	29.03±5.66	4.59	.470
Age range	16-48	16-46			
15-19	7(3.21)	2(2.04)	9(2.85)		
20-24years	38(17.43)	23(23.47)	61(19.30)		
25-29years	72(33.03)	35(35.71)	107(33.86)		
30-34years	63(28.90)	22(22.45)	85(26.90)		
35-39years	31(14.22)	12(12.24)	43(13.61)		
40-49	7(3.21)	4(4.08)	11(3.48)		
Total	218(100)	98(100)	316(100)		
Ethnicity					
Igbo	65(29.82)	10(10.20)	75(23.73)	193.200	.000
Ikwerre	21(9.63)	0(0)	21(6.65)		
Efik/ibibio	19(8.72)	17(17.35)	36(11.39)		
Abua	40(18.35)	1(1.02)	41(12.97)		
Okrika	0(0)	50(51.02)	50(15.82)		
Ogoni	56(25.69)	2(2.04)	58(18.35)		
Others	17(7.80)	18(18.37)	35(11.08)		
Total	218(100)	98(100)	316(100)		
Religion					
Christianity	216(99.1)	97(99.0)	313(99.05)	.335	.563
Trad. worshippers	2(.9)	1(1.0)	3(.95)		
Total	218(100)	98(100)	316(100)		

Table 1: Maternal demographic characteristics (2/2)

Variables	Upland n(%)	Riverine n(%)	Total n(%)	X²	p-value
Marital Status					
Single	29(13.30)	25(25.51)	49(17.09)	9.52	.023
Married	189(86.70)	73(74.49)	262(82.91)		
Total	218(100)	98(100)	316(100)		
LGA of residence					
Ikwerre	55(25.23)	0(0)	55(17.41)	316.00	.000
Khana	55(25.23)	0(0)	55(17.41)		
Abua	55(25.23)	0(0)	55(17.41)		
Oyigbo	53(24.31)	0(0)	53(16.77)		
Okrika	0(0)	55(56.12)	55(17.41)		
Bonny	0(0)	43(43.88)	43(13.61)		
Total	218(100)	98(100)	316(100)		
Parity					
≤2	106(48.62)	50(51.02)	156(49.37)	7.08	.528
3-4	76(34.86)	33(33.67)	109(34.49)		
>4	36(16.51)	15(15.31)	51(16.14)		
Total	218(100)	98(100)	316(100)		

Table 2: Frequency distribution of maternal healthcare utilization

Variables	Upland n(%)	Riverine n(%)	Total n(%)	X²	P value
Completely immunized					
No	37(17.43)	23(22.45)	60(18.99)	1.80	.179
Yes	180(82.57)	76(77.55)	256(81.01)		
Use nutrient supplement					
No	40(18.35)	19(19.39)	59(18.67)	.04	.841
Yes	177(81.65)	80(80.61)	257(81.33)		
Use ORS					
No	148(68.35)	56(57.14)	205(64.87)	3.72	.044
Yes	69(31.65)	42(42.86)	111(35.13)		
Place of treatment					
Home	7(3.21)	4(4.08)	11(3.48)	19.74	.001
Chemist	127(58.26)	35(35.71)	162(51.27)		
maternity	7(3.21)	9(9.18)	16(5.06)		
Health Centre	77(35.32)	50(51.02)	127(40.19)		
Healthcare utilization categorization					
Poor use	0(0)	0(0)	0(0)	10.875	0.001
Fair use	126(57.79)	37(37.75)	163(51.6)		
Good use	92(42.1)	61(62.25)	153(48.4)		
Total	218(100)	98(100)	316(100)		

Table 3: Effects of maternal demographic characteristics on healthcare utilization stratified by place of residence

Variables	Use of healthcare P-value (estimate)	
	Upland	**Riverine**
Maternal age		
< 20 years	0.227(-0.132)	0.753(-0.070)
20-24 years	Ref	Ref
25 – 29 years	0.485(-0.035)	0.022(-0.180)
30 – 34 years	0.967(0.002)	0.660(-0.037)
35 – 39 years	0.501(-0.045)	0.168(0.149)
≥40 years	0.026(0.240)	0.892(-0.022)
Ethnicity		
Efik/Ibibio	0.693 (0.033)	0.794(-0.072)
Abua	Ref	Ref
Igbo	0.526(-0.047)	0.848(-0.055)
Ikwerre	0.901(0.011)	0.989(-0.005)
Ogoni	0.589(0.045)	0.493(-0.185)
Others	0.964(-0.004)	0.841(0.056)
Marital status		
Single	0.036(-0.411)	0.394(-0.058)
Married	Ref	Ref
LGA		
Abua	Ref	-
Ikwerre	0.777(0.019)	
Khana	0.781(0.022)	-
Oyigbo	0.098(0.114)	-
Okrika	-	0.181(0.089)
Bonny	-	Ref
Parity level		
Low (<2)	0.200(0.027)	0.937(-0.007)
Moderate (2-4)	0.110(0.035)	0.391(-0.084)
High (>4)	Ref	Ref

observed to significantly (p< 0.05) use healthcare services more than younger mothers in the upland area. Ethnicity was observed not to significantly (p>0.05) associate with maternal healthcare utilization. Marital status had a significant (p<0.05) influence on healthcare utilization. LGA and parity were also observed not to significantly (p>0.05) influence healthcare utilization in the two groups.

Table 4 shows the Adjusted R Squared and p-values of maternal demographic characteristics and healthcare utilization by place of residence. About 20% of the variations observed in maternal healthcare utilization can be explained by maternal demographic characteristics in the upland region and about 40% in the riverine region.

Table 4: Adjusted R Squared and p-values of maternal demographic characteristics and healthcare utilization by place of residence

Place of residence	Model performance measures	Healthcare utilization
Upland	R in %	21.2
	Model p-value	**0.02444***
Riverine	R^2 in %	39.9
	Model p-value	**0.0305***

Table 5: Effect of maternal demographic characteristics on childcare in Rivers State

Variables	Use of healthcare
Maternal age	
<20yrs	0.088(-0.159)
20-24 yrs	Ref
25 - 29yrs	0.040(-0.083)
30 - 34yrs	0.767(-0.013)
35 - 39yrs	0.986(-0.001)
≥40yrs	0.099(0.136)
Ethnicity	
Efik/Ibibio	0.722(-0.027)
Abua	Ref
Igbo	0.569(-0.040)
Ikwerre	0.863(0.014)
Ogoni	0.281(0.086)
Okirika	0.106(-0.139)
Others	0.773(0.023)
Marital status	
Single	0.018(-0.379)
Married	Ref
LGA	
Bonny	0.068(0.131)
Abua	Ref
Ikwerre	0.746(0.021)
Khana	0.824(-0.017)
Okrika	0.003(0.235)
Oyigbo	0.109(0.108)
Parity level	
Low (<2)	0.547(0.027)
Moderate (2-4)	0.643(0.021)
High (>4)	Ref

Table 6: Adjusted R Squared for maternal demographic characteristics and healthcare utilization

Maternal demographic characteristics	Use of Healthcare
Adjusted R^2	0.137
Adjusted R^2 in %	13.7
Model p-value	**0.046**

The effect of maternal demographic characteristics on childcare in Rivers State is presented in table 5. It was observed that maternal age between 25-29 years was characterized by lower use of healthcare services by 0.08. There was no significant difference between the other age groups. Use of healthcare services was found to be significantly lower among single mothers (p = 0.018). Mothers in Okrika LGA significantly (p= 0.003) accessed more healthcare services than mothers in Abua LGA. Ante-natal visits of 3 or more times was significantly associated with the use of healthcare services positively.

Table 6 displays the Adjusted R Squared for maternal demographic characteristics and healthcare utilization. It was observed that maternal demographic characteristics accounted for about 14% of the variations observed in maternal healthcare utilization in Rivers state.

DISCUSSION

This study was designed to determine the relationship between maternal demographic characteristics and healthcare utilization of mothers with under-5 children in Rivers state.

  The findings of this study revealed that the mothers were mainly between 25-34 years and predominantly Christians. The waiting time experienced in healthcare centres (which is not encouraging) may be a contributing factor to the lower use of healthcare centres for the treatment of childhood diseases observed in the upland region. Also, patent medicine dealers have increased points of sale in the upland region in relation to the riverine areas. This movement might have paved way for this trend (low HCU) as well. Some of the mothers who did not use ORS reported that their children had not had diarrhoea. While some others reported that their children didn't like the taste and consequently rejected the ORS vehemently once offered, resulting in discontinuous use by their mothers. Healthcare utilization can be appropriate or

inappropriate, of high or low quality, and of high or low cost. The healthcare utilization in this study was found to improve with maternal age maybe because as maternal age increases maternal knowledge improves through experience which may likely translate to better life choices. This finding is in line with earlier studies which stated that middle-aged and the elderly were more likely to use primary health services (35, 36, 37). Another study also identified maternal age as one of the determinants of maternal healthcare utilization (38). Thus, maternal age was an important factor that influenced the use of healthcare services for the treatment of childhood diseases.

The variations observed in healthcare utilization of the mothers contradict the conclusions of a study in Ethiopia (27). Hence, ethnicity did not significantly influence healthcare utilization in Rivers state.

The lower utilization of healthcare services observed among single mothers in both regions was found to be consistent with some previous studies (36, 38, 39) which identified marital status as one of the determinants of maternal utilization of healthcare services. They found that single women were less likely to receive institutionalised delivery and postnatal care than married women. According to a study in Zimbabwe, the type of marriage influences the use of healthcare facilities for child delivery (38). Whereas in Kenya, marital status had no significant influence on whether a woman delivers her baby in the hospital or not (40). Thus, this study finds that married mothers utilized healthcare services better than single mothers.

The differences observed in healthcare utilization among mothers living in various LGA may be because there were fewer observed healthcare facilities in Abua LGA per square Kilometre of land than in the other groups, but in Okrika Island, the style of settlement was such that households were clustered around fewer locations where solid land could be found and, in such locations, healthcare facilities were reported

to be sited within. Thus, mothers living in Okrika LGA had better healthcare utilization than the other mothers.

Mothers with lower parity had lesser utilization of healthcare services than mothers with more than four children in the upland region. This may be as a result of the fact that mothers with more children are more likely to be older with more experience than mothers with fewer children who may likely be younger.

About 14 % of the variations observed in healthcare utilization could be accounted for by maternal demographic characteristics in Rivers state. This figure was statistically significant. This implies that maternal demographic characteristics are important factors to be considered in efforts to improve healthcare utilization of mothers with under-5 children. This finding is in support of some earlier studies (17, 19).

CONCLUSION

Good healthcare utilization in Rivers state was somewhat below average. The use of ORS for diarrhoea treatment was low. Mothers preferred Pharmacy/chemist stores for the treatment of childhood diseases than healthcare centres in the upland area. Whereas in the riverine area, the use of the services of the healthcare centres was fair and preferred. The age of the mothers and marital status were strong contributing factors to the use of healthcare services. The study, therefore, recommends a comprehensive sensitization program to improve healthcare utilization among mothers.

Recommendations
1. Further investigation may decide to venture into the reason for which mothers' proper use of healthcare services was below average.
2. More studies could extend to other women and mothers with older children as this study was limited to mothers with under-5 children.

Declaration of interest:
There was no form of conflict of interest encountered in this study

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