

EFFECT OF RELIGIOSITY ON MATERNAL AND CHILD HEALTH PRACTICES IN CROSS RIVER STATE, NIGERIA

¹Ukweh Ikechukwu H, ²Ukweh Ofonime N, ³Ani Etokidem J

¹Department of Community Medicine, University of Calabar Teaching Hospital, Calabar, Cross River State, Nigeria

²Department of Radiology, University of Calabar

³Department of Community Medicine, University of Calabar Teaching Hospital, Calabar, Cross River State, Nigeria.

ABSTRACT

BACKGROUND: Maternal and child health care is very important and crucial in the monitoring and evaluation of various developmental agenda especially in developing nations.

AIM/OBJECTIVES: This study was carried out to ascertain the effects of religiosity on maternal and child health practices in rural and urban Cross River State, Nigeria.

METHOD: The study design was a comparative analytical cross-sectional study amongst mothers with under-five children in rural and urban households in Cross River State and the study populations comprise mothers of under-five children, traditional and traditional birth attendants in Cross River State. Sampling technique used to select respondents in the rural and urban sites was multistage sampling method and the sample size was determined using standard method of comparing two independent groups. For Focus Group Discussions (FGD), purposive sampling method was employed in both study sites. Religiosity was assessed using the ORA dimension of the Duke University Religion Index (DUREL), which is usually measured as frequency of attendance of organized religious activities. The study instrument was a semi-structured questionnaire and data obtained was analyzed using SPSS version 21.0.

RESULTS: Statistical analysis showed that the age of mother, husband and marriage of women from the rural communities was significantly higher ($P < 0.05$) than that of women from the urban communities. Religious practices to have safe pregnancy did not significantly predict women having complications in last pregnancy in both study settings while in the rural and urban communities ($P < 0.05$), religious practices significantly influenced family planning methods ($P < 0.05$). In child health practices, religious practices significantly influenced the rural communities practice of breastfeeding child ($P = 0.001$) and giving child colostrum ($P = 0.048$) while in the urban communities, it significantly influenced giving child colostrum ($P = 0.002$).

CONCLUSIONS: This study therefore concludes that religiosity significantly affects maternal and child health care practices in rural and urban communities of Cross River State, Nigeria and also serve as useful baseline for better understanding of the dynamics of influence of religiosity on maternal and child health practices in Cross River State of Nigeria.

RECOMMENDATION: Maternal health education as well as education and engagement of spiritual leaders are highly recommended.

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INTRODUCTION

Maternal and child health care is the care that aims at ensuring a healthy mother and baby throughout pregnancy and child birth.¹ It involves the screening of patients, and the treatment of diseases, as well as the identification and management of pregnancy related complications, care of the newborn baby and providing information about family planning and how and when to access medical care when complications arise.²

Studies in developed countries have reported the expression of mothers' religious beliefs as it relates to their maternal health. A qualitative study in Canada found that women with high risk pregnancies had strong beliefs in the direct relationship between their spiritual expressions, and their eventual health outcomes.³ A focus group discussion of birth experiences amongst Ecuadorian nursing mothers also identified dependence on God for positive maternal and newborn outcomes as well as the perception of pains during birthing as the price to pay to obtain the gift of a child.⁴

Another focus group discussion amongst Apostolic church faithful in Zimbabwe, identified

Correspondence to: Ukweh Ikechukwu Henry
Department of Community Medicine
University of Calabar Teaching Hospital, Calabar,
Cross River State, Nigeria
Email: ikeukweh@yahoo.com

the beneficial effect of the church providing the much needed financial and social support (especially at emergency periods), but adversely restricted women's health-seeking decision making power.⁵ A qualitative assessment of pregnancy-related health seeking behavior amongst women in Mozambique, identified that pregnancy complications were commonly perceived to be caused by witchcraft and sorcery.⁶

A cross-sectional study amongst women attending antenatal care in Calabar, showed a high rate of default, with about half of the women (48.2%), being delivered of their babies in the churches, due to 'prophetic' warnings and fear of 'spiritual attacks'. Despite significantly higher rates of maternal and neonatal morbidity and mortality in these spiritual centers (compared to orthodox health facilities), as seen in the study, they are still preferred by many women, probably due to the strong influence of religion on choice of health service.⁷

Recent DHS review in Kenya showed ANC utilization rate of 93% among adolescent mothers with religion and educational level of partners found to be among the significant predictors of ANC utilization.⁸ The use of tetanus toxoid for the prevention of neonatal tetanus has not only led to lower neonatal mortality but has also been associated with lower early childhood mortality.⁹ A relatively old study conducted in rural Bangladesh showed only small differences between acceptors and non-acceptors of tetanus immunization in terms of religion among other factors.⁹ However, a more recent survey in Kenya showed high tetanus immunization uptake among pregnant women with no association sought on the effect of religion. This report from Kenyan also showed that 52% of pregnant women used ITN while 35.8% reported uptake of IPT with religion being one of the factors that influenced use of ITN but not IPT uptake.¹⁰

In Cross River state, only (15.4%) of childbirths are attended to by skilled attendants.¹ Religious leaders remain strong influences in communities and are respected. Also, religious factors have been found to deter the utilization of skilled birth attendants in this part of Nigeria⁵. This study was conceived in view of the persistence of religious worship of indigenes of Cross River State though there is paucity of information on the effect of

religiosity on maternal and child health practices in the Niger-Delta region of Nigeria.

MATERIALS AND METHODS

Study Area

Cross River State is one of the 36 States in Nigeria located in the south-south geopolitical region of the country bordering Cameroon to the East and Ebonyi and Abia States to the West. It borders Benue State to the North and Akwa Ibom State to the South. Its capital is Calabar. The State is made up of 18 LGAs divided into five urban cities; Calabar Municipality, Calabar South, Akamkpa, Ikom, and Odukpani and 13 rural cities; Boki, Obanliku, Yakurr, Ogoja, Biase, Akpabuyo, Etung, Obudu, Abi, Obubura, Yala, Bekwara and Bakassi. A simple random sampling by balloting was done to select Calabar Municipality and Obubura as urban and rural sites respectively.¹¹

Calabar Municipality is in the southern senatorial zone and has an estimated population of 375,196 people, with 16 political wards. The inhabitants are mainly Efiks, Efuts, Quas, and Ibibios. The main occupational groups are civil servants, business men, farmers, traders and fishermen. Obubura is one of the rural LGAs in the central senatorial zone and has an estimated population of 128,298 by 2010, consisting of six sub-ethnic groups, in 78 villages.¹¹ Obubura is the administrative council headquarters of the LGA, it is part of Mbember, which is the main ethnic group. Others include Adon, Okom, Yala Okpambe, Isobo, and Edondon, with notable similarities and differences in their linguistic and cultural orientation.

Study Design and Population

The study design was a comparative analytical cross-sectional study amongst mothers with under-five children in rural and urban households in Cross River State. The study populations comprise mothers of under-five children, traditional and spiritual leaders, and traditional birth attendants in Cross River State.

Eligibility Criteria

All women of child bearing age 15- 45 years who gave birth within five years before the day of survey whether these children were alive or dead were studied. All Spiritual leaders, Traditional leaders and Birth Attendants practicing within the locality of respondents.

Sample Size Determination

The sample size was calculated using the formula for comparing two independent groups.¹²

$$n = \frac{2(Z_{\alpha} + Z_{\beta})^2 \bar{\pi}(1 - \bar{\pi})}{(\pi_1 - \pi_2)^2} = \frac{2(Z_{\alpha} + Z_{\beta})^2 \bar{\pi}(1 - \bar{\pi})}{\Delta^2}$$

Where:

n = minimum sample size for one study group

Z_{α} = Critical ratio at significance level of 5% = 1.96

Z_{β} = Statistical power for one-sided test at 90% (choice of one-sided test is due to sufficient evidence of adverse maternal and child health practices and worse mortality outcomes in rural compared with urban settings) = 0.84

π_1 = 12.8% (proportion of women that delivered by unskilled personnel in an urban setting).¹³

π_2 = 25.0% (proportion of women delivered by unskilled personnel in a rural setting).¹⁴

With assumption of a design effect of 1.5 due to use of cluster sampling technique, minimum sample size for each group will be $178.1 \times 1.5 = 267.2$, approximately 270 mothers in each study group. This yields a total sample size of $270 \times 2 = 540$. Hence, 540 mothers of under-five children will be recruited into the comparative study.

SAMPLING TECHNIQUE

Sampling in Urban Study Site

A multistage sampling technique consisting of three stages was used to select the respondents from Calabar municipality (LGA) as the urban study site, where the houses are numbered, within streets and wards. There are a total of 16 political wards and at least 12 streets in each of these wards.

In stage 1, six out of sixteen wards were selected by balloting.

In stage 2, one street was selected from each of the six wards.

In stage 3, 45 houses were selected from each of the selected streets to arrive at 270 houses in the urban site. From each selected house one respondent was selected by balloting, if there were more than one eligible respondent.

Sampling in Rural Study Site

The multistage sampling technique was also used to select the respondents from the rural study site. There are six sub-ethnic groups in this LGA, i.e., six autonomous communities and each of the sub-ethnic groups has at least 8 villages.

In stage 1, two villages were selected randomly from each of the six sub-ethnic groups by balloting.

In the second stage, by simple random sampling 45 houses were selected from each of the villages making a total of 270 houses. From each selected house one mother or respondent was selected by balloting if they were more than one eligible respondent.

Selection of participants for the Focus Group Discussion

Purposive sampling method was used to recruit community members to participate in each of the 12 focus groups discussion (FGD) sessions conducted in the rural and urban study sites. Hence, 95 community members were selected as shown in Table 1 below. Prospective mothers for recruitment were identified and contacted. These mothers would have had at least two childbirth experiences, or at least would have had a sick child in the last 5 months or delivered either in a church or TBA and were able to communicate or express themselves in pidgin English.

Table 1: Distribution of Sub-groups for Focus Group Discussion Sessions

Site	s/n	Focus Group	# of participants
Urban	Group 1	Mothers of U -5 children < 30years	Eight (8)
	Group 2	Mothers of U - 5 children > 30 years	Eight (8)
	Group 3	Religious Leaders 5 - 14 years in service	Eight (8)
	Group 4	Religious Leaders 15 - 34 years in service	Eight (8)
Rural	Group 5	Mothers of U -5 children < 30years	Eight (8)
	Group 6	Mothers of U - 5 children > 30 years	Eight (8)
	Group 7	Traditional Birth Attendants	Eight (8)
	Group 8	Traditional Birth Attendants	Seven (7)
	Group 9	Religious Leaders 5 - 14 years in service	Eight (8)
	Group 10	Religious Leaders 15 - 34 years in service	Eight (8)
	Group 11	Traditional Leaders 5 - 14 years in leadership	Eight (8)
	Group 12	Traditional Leaders 15 - 34 years in leadership	Eight (8)
Total			Ninety five (95)

Study Instrument

Semi-structured interviewer-administered questionnaire was used to obtain quantitative data. This questionnaire, was adapted from validated instruments, used to assess religiosity / spirituality, comprising the SpREUK-SF10 questionnaire, as well as the questionnaire used in the European Social Survey.^{15, 16} Findings from previous similar studies, as well as the socio-cultural and religious peculiarities of the study settings were considered in the development of the study instruments.¹⁵ The questionnaire was translated to the local languages and back-translated to English, to authenticate its adequacy.

The first section (section A) of the questionnaire assessed the socio-demographic characteristics of the respondents. Section B, assessed the maternal health practices, concerning pregnancy, childbirth, post-partum care, and family planning, that may directly or indirectly influence wellbeing of the pregnant woman or her child. Section C, assessed the childbirth, post-partum, nutritional, and health access practices that may directly or indirectly influence the well-being of the child. Section D assessed the religious practices that may directly or indirectly influence maternal and/or child health. Focus group discussion was used to obtain qualitative data using guide protocol. The FGD guide was developed in view of findings from previous studies, as well as consideration of the socio-cultural peculiarities of the study settings.^{17,18}

Data Collection Procedure

Ten research assistants were trained for three days to collect the data from the selected households, using interviewer-administered questionnaire (for quantitative data).

Quantitative Data Collection in Urban and Rural Study Sites

In the urban study site, interviewer-administered questionnaire were used to obtain data from respondents at their homes during the weekends while in the rural study site, the questionnaire were administered at their homes during the non-market days. As much as possible, the time and location for the interview was made to be as convenient as possible for the respondents. An initial introduction of the research assistant and

purpose of the study was made and a signed or oral informed consent duly obtained before proceeding in the interview. Confidentiality of information obtained was communicated before during and after the interview. Respondents were encouraged to seek clarification of any areas or statements that were unclear.

QUALITATIVE DATA COLLECTION

There were twelve sub-population groups in conducted in the urban and rural study sites, through which qualitative data was obtained using focus group discussions (i.e. 12 FGD sessions).

Qualitative Data Collection in Urban and Rural Study Site

In the urban study site, four focus group discussion sessions were held on weekends, among selected participants, following quantitative data collection. On the day of the FGD, introductions were and an informed consent was obtained from them before proceeding in the discussion session. Each of the sessions lasted between 1hour to 1 hour 30minutes, with use of the FGD guide for better organization and regulation. The researcher was the moderator in each of the sessions, while the research assistants assisted in the sitting arrangements, time keeping, and recording of the verbal and non-verbal responses and events that occurred.

Participants were encouraged to communicate freely, with respect for each other's opinions. Clarifications of unclear statements or comments were also sought during the sessions.

Data Analysis

The questionnaires used to obtain quantitative data were sorted and cross-checked for errors and omissions, which were corrected before data coding, entry and analysis using SPSS version 21.0. Rural-urban comparison of percentage of each of the socio-demographic, maternal and child health practices, were presented using cross-tables and charts.

Maternal and child health practices were dependent or outcome variables while religiosity was key independent or predictor variable. Religiosity was assessed using frequency of attendance of religious activities (as proxy to

religiosity as a categorical predictor variable). Religiosity or spirituality is commonly assessed using the Duke University Religion Index (DUREL).^{19, 20} This instrument assesses four main dimensions, consisting of Organized Religious Activities (ORA), Non-organized Religious Activities (NORA), Intrinsic Religiosity (IR) and Extrinsic Religiosity (ER). Of all these dimensions, ORA usually measured as frequency of attendance of organized religious activities was used as a measure of religiosity in this study.

Ethical Consideration/Approval

Ethical consent was obtained from the Research Ethics Committees of the Cross River State Ministry of Health, Calabar and the University of Calabar Teaching Hospital before commencement of the study. Written or oral informed consent was obtained from the respondents, with due statement of non-compulsory participation and confidentiality before obtaining data from them.

RESULTS

Socio-demographic characteristics of respondents

The socio-demographic characteristics of study respondents are shown in Table 1. Five hundred and seventy- three respondents were studied comprising 291 rural and 282 urban respondents. Completed questionnaires were obtained from 270 respondents in each of the rural and urban study sites, yielding response rates of 92.8% and 95.7%, respectively.

Overall mean age was 23.1 ± 4.6 years, ranging from 16 to 42 years. Mean age of rural respondents (21.3 years) was significantly less than mean age of urban subject (27.7 years) ($P=0.03$). The commonest age group ($n=157$, 29.0%) was 20-24 years. Most respondents ($n=321$, 59.4%) had secondary level of education. Trading and civil service were the most common occupations, while farming and being housewife were commoner among rural compared with urban respondents (Table 1).

Most respondents were married, with the common ethnic groups being Ekoi, Ibibio and Efik. All respondents were Christians, most of whom were Pentecostal or Orthodox worshipers. Most respondents attended religious activities once weekly.

Table 1: Socio-demographic characteristics of respondents

Variable	Rural n (%) N=270	Urban n (%) N=270	Total n (%) N=540
Maternal age groups (in years)			
<20	24 (8.9)	4 (1.5)	28 (5.2)
20-24	126 (46.6)	31 (11.5)	157 (29.0)
25-29	28 (10.4)	92 (34.0)	120 (22.2)
30-34	26 (9.6)	83 (30.7)	109 (20.2)
35-39	55 (20.4)	42 (5.6)	97 (18.0)
≥ 40	11 (4.1)	18 (6.7)	29 (5.4)
Educational level			
None	2 (0.7)	1 (0.4)	3 (0.6)
Primary	31 (11.5)	19 (7.0)	50 (9.3)
Secondary	153 (56.7)	168 (62.2)	321 (59.4)
Tertiary	84 (31.1)	82 (30.4)	166 (30.7)
Occupation			
Trader	71 (26.3)	91 (33.7)	162 (30.0)
Civil servant	61 (22.6)	67 (24.8)	128 (23.7)
Farmer	43 (15.9)	11 (4.1)	54 (10.0)
Housewife	51 (18.9)	22 (8.1)	73 (13.5)
Student	24 (8.9)	33 (12.2)	57 (10.6)
Others	20 (7.4)	46 (17.0)	66 (12.2)
Marital status			
Married	238 (88.1)	242 (89.6)	480 (88.9)
Single	22 (8.1)	19 (7.0)	41 (7.6)
Separated	6 (2.2)	3 (1.1)	9 (1.7)
Divorced	1 (0.4)	4 (1.5)	5 (0.9)
Widowed	3 (1.1)	2 (0.7)	5 (0.9)
Ethnic group			
Ekoi	192 (71.1)	87 (32.2)	279 (51.7)
Efik	11 (4.1)	64 (23.7)	75 (13.9)
Ibibio	29 (10.7)	76 (28.1)	105 (19.4)
Annang	10 (3.7)	12 (4.4)	22 (4.1)
Ibo	14 (5.2)	5 (1.9)	19 (3.5)
Others*	14 (5.2)	26 (9.6)	40 (7.4)
Religion/denomination			
Roman catholic	45 (16.7)	36 (13.3)	81 (15.0)
Pentecostal	127 (47.0)	140 (51.9)	267 (49.4)
Orthodox	84 (31.1)	77 (28.5)	161 (29.8)
Other denominations	14 (5.2)	17 (6.3)	31 (5.7)
Attendance of religious services			
> Once weekly	75 (27.8)	62 (23.0)	137 (25.4)
Once weekly	160 (59.3)	182 (67.4)	342 (63.3)
< Once weekly	35 (12.9)	26 (9.6)	61 (11.3)

Relationship between religiosity and maternal health practices in Cross River State

The relationship between maternal health practices in rural Cross River State is shown in Table 2. Among rural subjects, the percentage that practiced artificial family planning method was significantly lower among those that attended religious activities more than once weekly ($n=11$, 14.7%) compared with those that attended once weekly ($n=32$, 20.0%) and less than once weekly ($n=13$, 37.1%) ($P=0.001$). Husband active involvement in last pregnancy was commoner among subjects that attended religious activities less than once weekly ($n=13$, 37.1%) compared with those that attended once weekly ($n=8$, 5.0%) and more than once weekly ($n=7$, 9.3%) ($P=0.001$). Preparedness for possibility of cesarean section delivery was commoner among subjects that

attended religious activities more than once weekly (n=35, 46.7%), compared with once weekly (n=54, 33.8%) and less than once weekly (n=8, 22.9%). The percentage of subjects that practiced each of the other maternal health practices were not significantly different comparing those that attended religious activities more than once weekly, once weekly and less than once weekly (P>0.05).

Table 2: Relationship between attendance of religious services and maternal health practices of rural mothers.

Variables	>Once weekly n (%) N=75	Once weekly n (%) N=160	< Once weekly n (%) N=35	P value‡
Family planning practice				
Use natural methods	57 (76.0)	106 (66.3)	10 (28.6)	0.00
Use artificial methods	11 (14.7)	32 (20.0)	13 (37.1)	
Use none	7 (9.3)	22 (13.7)	12 (34.3)	
Husband involvement in last pregnancy				
Yes	7 (9.3)	8 (5.0)	13 (37.1)	0.00
No	68 (90.7)	152 (95.0)	22 (62.9)	
ANC attendance last pregnancy				
Yes	51 (68.0)	125 (78.1)	23 (65.7)	0.13
No	24 (32.0)	35 (21.9)	12 (34.3)	
≥4 ANC visits last pregnancy				
Yes	25 (49.0)	57 (45.6)	10 (43.5)	0.88
No	26 (51.0)	68 (54.4)	13 (56.5)	
Received IPT during last pregnancy				
Yes	15 (20.0)	19 (11.9)	8 (22.9)	0.12
No	60 (80.0)	141 (88.1)	27 (77.1)	
Used LLIN during last pregnancy				
Yes	2 (2.7)	3 (4.0)	2 (5.7)	0.43
No	73 (97.3)	157 (96.0)	33 (94.3)	
Received tetanus toxoid in last pregnancy				
Yes	67 (89.3)	131 (81.9)	31 (88.6)	0.27
No	8 (10.7)	29 (18.1)	4 (11.4)	
Planned to deliver in health facility				
Planned	49 (65.3)	112 (70.0)	21 (60.0)	0.47
Not planned	26 (34.7)	48 (30.0)	12 (40.0)	
Preparedness for possibility of C-section				
Prepared	35 (46.7)	54 (33.8)	8 (22.9)	0.04
Unprepared	40 (53.3)	106 (66.2)	27 (77.1)	
Identified a suitable blood donor				
Identified	22 (29.3)	34 (21.3)	7 (20.0)	0.35
Not identified	53 (70.7)	126 (78.7)	28 (80.0)	
Last delivery by skilled birth attendant				
Yes	51 (68.0)	108 (67.5)	22 (62.9)	0.85
No	24 (32.0)	52 (32.5)	13 (37.1)	

‡ P value as determined by Chi-square test or Fishers Exact test

Among urban subjects, the percentage that practiced artificial family planning method was significantly lower among those that attended religious activities more than once weekly (n=18, 29.0%), compared with those that attended once weekly (n=61, 33.5%) and less than once weekly (n=17, 65.4%) (P=0.001).

Husband active involvement in last pregnancy was commoner among subjects that attended religious activities more than once weekly (n=56,

90.3%) compared with those that attended once weekly (n=44, 24.2%) and less than once weekly (n=7, 26.9%) (P=0.001). Among urban subjects that attended ANC, attendance of at least four ANC visits was commoner among those that attended religious activities more than once weekly (n=37, 68.5%), compared with those that attended once weekly (n=94, 62.3%) and less than once weekly (n=8, 36.4%) (P=0.03, Table 6).

Preparedness for possibility of cesarean section delivery was less common among subjects that attended religious activities less than once weekly (n=16, 61.5%), compared with once weekly (n=149, 81.9%) and more than once weekly (n=50, 80.6%), though this difference was marginally statistically significant (P=0.05, Table 3).

The percentage of subjects that practiced each of the other maternal health practices were not significantly different comparing those that attended religious activities more than once weekly, once weekly and less than once weekly (P>0.05, Table 3).

Table 3: Relationship between attendance of religious services and maternal health practices of urban mothers

Variables	>Once weekly n (%) N=75	Once weekly n (%) N=160	<Once weekly n (%) N=35	P value‡
Family planning practice				
Use natural methods	33 (53.2)	106 (58.2)	6 (23.1)	0.00
Use artificial methods	18 (29.0)	61 (33.5)	17 (65.4)	
Use none	11 (17.8)	15 (8.3)	3 (11.5)	
Husband involvement in last pregnancy				
Yes	56 (90.3)	44 (24.2)	7 (26.9)	0.00
No	6 (9.7)	138 (75.8)	19 (73.1)	
ANC attendance last pregnancy				
Yes	54 (87.1)	151 (83.0)	22 (84.6)	0.74
No	8 (12.9)	31 (17.0)	4 (15.4)	
≥4 ANC visits last pregnancy				
Yes	37 (68.5)	94 (62.3)	8 (36.4)	0.03
No	17 (31.5)	57 (37.7)	14 (63.6)	
Received IPT during last pregnancy				
Yes	47 (75.8)	139 (76.4)	18 (69.2)	0.73
No	15 (24.2)	43 (23.6)	8 (30.8)	
Used LLIN during last pregnancy				
Yes	3 (4.8)	6 (3.3)	2 (7.7)	0.54
No	59 (95.2)	176 (96.7)	24 (92.3)	
Received tetanus toxoid in last pregnancy				
Yes	56 (90.3)	171 (94.0)	24 (92.3)	0.62
No	6 (9.7)	11 (6.0)	2 (7.7)	
Planned to deliver in health facility				
Planned	58 (93.5)	172 (94.5)	23 (88.5)	0.49
Not planned	4 (6.5)	10 (5.5)	3 (11.5)	
Preparedness for possibility of C-section				
Prepared	50 (80.6)	149 (81.9)	16 (61.5)	0.05
Unprepared	12 (19.4)	33 (18.1)	10 (38.5)	
Identified suitable blood donor				
Identified	21 (33.9)	69 (37.9)	9 (34.6)	0.83
Not identified	41 (66.1)	113 (62.1)	17 (65.4)	
Last delivery by skilled birth attendant				
Yes	59 (95.2)	162 (89.0)	25 (96.2)	0.22
No	3 (4.8)	20 (11.0)	1 (3.8)	

‡ P value as determined by Chi-square test or Fishers Exact test

Religiosity and Child Health Practices in Rural and Urban Cross River State

Among rural subjects that ever breastfed their last child, exclusive breastfeeding was commoner among those that attended religious activities more than once weekly (n=52, 69.3%), compared with those that attended once weekly (n=83, 52.2%) and less than once weekly (n=20, 57.1%), though this was marginally statistically significant P=0.05, Table 4). There was a statistically significant association between attendance of religious activities and taking their sick children to health facility. Taking child to health facility during last serious childhood illness was significantly commoner among subjects that attended religious services less than once weekly (n=27, 77.1%), compared with once weekly (n=82, 51.3%) and more than once weekly (n=22, 29.3%) (P=0.001). The proportion of subjects that practiced each of the other child health practices were not significantly different comparing those that attended religious activities more than once weekly, once weekly and less than once weekly (P>0.05, Table 4).

Table 4: Relationship between attendance of religious activities and child health practices in rural Cross River State.

Variable	>Once weekly n (%) N=75	Once weekly n (%) N=160	<Once weekly n (%) N=35	Pvalue‡
Preparedness for newborn care				
Prepared	68 (90.7)	145 (90.6)	31 (88.6)	0.93
Unprepared	7 (9.3)	15 (9.4)	4 (11.4)	
Husb. active participation in childcare				
Yes	41 (54.7)	67 (41.9)	21 (60.0)	0.06
No	34 (45.3)	93 (58.1)	14 (40.0)	
Ever breastfed last child				
Yes	75 (100)	159 (99.4)	35 (100)	0.71
No	0 (0.0)	1 (0.6)	0 (0.0)	
Exclusively breastfed last child				
Yes	52 (69.3)	83 (52.2)	20 (57.1)	0.05
No	23 (30.7)	76 (47.8)	15 (42.9)	
Gave colostrum to last child				
Yes	69 (92.0)	146 (91.8)	28 (80.0)	0.09
No	6 (8.0)	13 (8.2)	7 (20.0)	
Child taken to health facility last illness				
Yes	22 (29.3)	82 (51.3)	27 (77.1)	0.00
No	53 (70.7)	78 (48.7)	8 (22.9)	
All U5 immunized up-to-date (from card)				
Yes	39 (52.0)	103 (64.4)	23 (65.7)	0.42
No	25 (33.3)	42 (26.3)	9 (25.7)	
Missing (card not seen)	11 (14.7)	15 (9.3)	3 (8.6)	
Hand washing after using toilet				
Most times / always	65 (86.7)	147 (91.9)	28 (80.0)	0.10
Sometimes	10 (13.3)	13 (8.1)	7 (20.0)	
Hand washing before food preparation				
Most times / always	62 (82.7)	127 (79.4)	26 (74.3)	0.73
Sometimes	12 (16.0)	32 (20.0)	9 (25.7)	
Never/rarely	1 (1.3)	1 (7.4)	0 (0.0)	
Hand washing before feeding child				
Most times / always	63 (84.0)	131 (81.9)	27 (77.1)	0.69
Sometimes	12 (16.0)	29 (18.1)	8 (22.9)	
Circumcised any female child				
Yes	24 (32.0)	37 (23.1)	14 (40.0)	0.08
No	51 (68.0)	123 (76.9)	21 (60.0)	
ITN use for child/children				
Yes	4 (5.3)	5 (3.1)	2 (5.7)	0.63
No	71 (94.7)	155 (96.9)	33 (94.3)	

‡ P value as determined by Chi-square test or Fishers Exact test

Among urban subjects, there was a statistically significant association between attendance of religious activities and husbands' involvement in childcare. Husband active involvement in childcare was significantly commoner among subjects that attended religious activities more than once weekly (n=43, 69.4%), compared with those that attended once weekly (n=94, 51.6%) and less than once weekly (n=11, 42.3%) (P=0.02). There was also a statistically significant association between attendance of religious activities and taking their sick children to health facility. Taking child to health facility during last serious childhood illness was significantly less common among subjects that attended religious services more than once weekly (n=30, 48.4%), compared with once weekly (n=139, 76.4%) and less than once weekly (n=18, 69.2%) (P=0.001). The proportion of subjects that practiced each of the other child health practices were not significantly different comparing those that attended religious activities more than once weekly, once weekly and less than once weekly (P>0.05, Table 5).

Table 5: Relationship between attendance of religious activities and child health practices in urban Cross River State.

Variable	>Once weekly n (%) N=62	Once weekly n (%) N=182	<Once weekly n (%) N=26	Pvalue‡
Preparedness for newborn care				
Prepared	60 (96.8)	176 (96.7)	25 (96.2)	0.99
Unprepared	2 (3.2)	6 (3.3)	1 (3.8)	
Husb. active participation in childcare				
Yes	43 (69.4)	94 (51.6)	11 (42.3)	0.02
No	19 (30.6)	88 (48.4)	15 (57.7)	
Ever breastfed last child				
Yes	59 (95.2)	179 (98.4)	24 (92.3)	0.14
No	3 (4.8)	3 (1.6)	2 (7.7)	
Exclusively breastfed last child				
Yes	44 (74.6)	114 (63.7)	18 (75.0)	0.21
No	15 (25.4)	65 (36.3)	6 (25.0)	
Gave colostrum to last child				
Yes	59 (100)	178 (99.4)	24 (100)	0.79
No	0 (0.0)	1 (0.6)	0 (0.0)	
Child taken to health facility last illness				
Yes	30 (48.4)	139 (76.4)	18 (69.2)	0.00
No	32 (51.6)	43 (23.6)	8 (30.8)	
All U5 immunized up-to-date (from card)				
Yes	53 (85.5)	147 (80.8)	21 (80.8)	0.71
No	8 (12.9)	26 (14.3)	3 (11.5)	
Missing (card not seen)	1 (1.6)	9 (4.9)	2 (7.7)	
Hand washing after using toilet				
Most times / always	59 (95.2)	174 (95.6)	24 (93.3)	0.76
Sometimes	3 (4.8)	8 (4.4)	2 (7.7)	
Hand washing before food preparation				
Most times / always	51 (82.3)	123 (67.6)	21 (80.8)	0.18
Sometimes	11 (17.7)	58 (31.9)	5 (19.2)	
Never/rarely	0 (0)	1 (0.5)	0 (0)	
Hand washing before feeding child				
Most times / always	52 (83.9)	162 (99.0)	19 (73.1)	0.07
Sometimes	10 (16.1)	20 (11.0)	7 (26.9)	
Circumcised any female child				
Yes	1 (1.6)	2 (1.1)	0 (0.0)	0.80
No	61 (98.4)	180 (98.9)	26 (100)	
ITN use for child/children				
Yes	9 (14.5)	14 (7.7)	5 (19.2)	0.09
No	53 (85.5)	168 (92.3)	21 (80.8)	

‡ P value as determined by Chi-square test or Fishers Exact test

FOCUS GROUP DISCUSSION WITH MOTHERS AND SPIRITUAL LEADERS

Two FGDs were held among mothers of U-5 children and spiritual leaders in each rural and urban study area. The thematic analysis revealed nine themes bordering on maternal and child health practices, and the influence of religion on these practices. Key maternal health practice themes were as follows: preparedness for childbirth (access, CS, blood donor), place of childbirth, ANC attendance and family planning practice. Key child health practices were as follows: preparedness for newborn care, breastfeeding, management of childhood illness, and female circumcision.

PREPAREDNESS FOR CHILDBIRTH

Most mothers (n=29, 90.6%) did not like, and therefore did not prepare for blood transfusion and caesarean section (CS). All of them (32, 100%) however reported that they would have consented to CS or blood transfusion (BT) if it was required to save their lives and that of their babies. It was also generally considered that God was the ultimate determinant of maternal outcomes. Some participants (n=7, 21.9%) considered preparation for coping with intense labour pains to be more important than other aspects of preparation for childbirth.

"I don't like blood transfusion and caesarean operation, so I don't usually prepare for them. However, if my doctor says that is what will save my life, then it's okay to have them" (FGD1 rural mother).

"I always prepare for my baby very early, even six months before my time of delivery. I have never had difficulty going to hospital or getting delivery things ready" (FGD1 urban mother).

"Even if I prepare very well, it is only God that prepares the body for delivery" (FGD2 rural mother).

"Yes, I usually prepare well both physically and spiritually, because I know that I have to settle my childbirth delivery spiritually through prayer, before I can have safe delivery" (FGD 2 rural mother).

"No woman likes CS – we only allow it because we don't have alternative choice, and we don't want to die" (FGD 2 rural mother).

"It is not to prepare that is the thing. It is not to have transport to go there, have blood transfusion or even have surgery – those are not my challenge or problem. My trouble is that my labour pains are usually very painful. Until that baby comes out nothing is more important". (FGD 2 Urban Mother).

Most spiritual leaders (n=11, 68.8%) considered CS and BT to be good to save lives, and therefore recommend it for their church members. Some leaders (n=7, 43.8%) maintained that the Bible said women in their congregation must deliver as Hebrew women and therefore they don't support CS and BT. However, some spiritual leaders considered that maternal deaths especially at poorly equipped health centres, was almost as bad as what may be obtained at TBA centres. Most leaders (n=14, 87.5%) also believed that God's mercies were responsible for eventual safety at childbirth, rather than sole reliance on human effort.

"You people say CS is good, but sometimes our women die when they go to theatre, that is my problem with hospital operation. I lost two of my relatives within one year at the hospital!". (FGD 1 Rural Spiritual Leader)

"None of my church members can have problem with going to hospital when in labour. We have church bus standby at any time if they cannot afford transport, with everyone around them". (FGD 1 Rural Spiritual Leader)

"We pray fervently for our pregnant women and believe the Almighty God is in perfect control. So If doctor says there must be blood transfusion or operation we say it's okay, no argument. This is because whatever the hospital people do we know that our God will not allow any bad thing to happen to our mothers. God has remained faithful". (FGD2 Urban spiritualSpiritual Leader)

"Doctor, you know that blood is life. If you give blood to pregnant woman, will it not affect the new life that is coming (newborn baby), especially through breast milk? However, if it is the only way left to save a mother's life then I think it must be done – because, life first!". (FGD 2 Rural Spiritual Leader)

PLACE OF CHILDBIRTH

Religion was found to significantly influence place of childbirth among rural as well as urban

respondents. Rural respondents' perceived past history of nil church-based maternal mortality and scriptural reference to the 'primitive' childbirth delivery of Eve, may have been significant drivers of the adverse maternal health practice. Spiritual leaders (pastors) were found to have significant influence on respondents' decision on place of childbirth.

"My pastor usually say we can go to hospital for check-up, but must come to church for prayers and possibly delivery" (rural subject). "Since I have been worshipping in my church for about 12 years now, nobody has lost baby or died due to childbirth" (rural subject). "Though I always deliver at the hospital, I think God was silent on where to be delivered. See Eve, was it not in the bush she was delivered, even without any external help" (urban subject). "My pastor said that if I go to the hospital, me and my baby will not return alive, so I had to stay at church where they were praying for me until I was delivered by Mama Iseh (TBA). However, the baby became sick and still died when we took her to the UCTH" (urban subject).

Most spiritual leaders (14, 87.5%) believed that God's care, rather than human effort was key determinant of maternal outcome, irrespective of place of childbirth. Some of the factors identified as deterrents to facility-based health access for childbirth delivery were inefficiency of healthcare workers, lack of services and inaccessibility of health centres.

"Hmm, this issue of where to deliver again! I ask you, where did Eve deliver Cain and Abel? Was there any problem at childbirth? You see, safety is of the Lord, no matter the efforts of the watchmen. There are women that go to that your hospital and still die of childbirth. True or false? So yes we support going to hospital, but natural delivery by someone who has experience at childbirth (whether at church or TBA center) is not bad" (spiritual leader rural) "Childbirth at hospital, TBA, church, etc., each of which have their advantages and disadvantages in our setting. If I have my way, I will say let us have only the hospitals and do away with all other places of childbirth. But how many hospitals are functional and accessible to the vast majority of citizens? So women have to make do with other readily available and affordable non-hospital alternatives including TBAs" (spiritual leader urban).

ANC ATTENDANCE

All participant mothers in both settings generally attended ANC during their last pregnancy. They generally considered it to be a good practice.

"It does not take anything from me to go to ANC only that I will not be able to go to farm that day" (rural subject). "I lost my child in the TBA because they said I had long labour for 3 days, so in this last pregnancy I went to the hospital" (rural subject). "If you don't go to hospital to check your baby (at ANC clinic), if anything happens they will blame you" (urban subject).

"We hardly take medicine in my church, that is why I did not go to the hospital for ANC, our pastor's wife prays with us every Wednesday till you deliver" (rural respondents). "My pastor always encourage us to go and check our baby at the hospital (ANC clinic)" (rural subject). "My pastor usually ensures that every pregnant womenwoman show their hospital card during Thursday prayers for pregnant women" (urban subject). "After prophesying that I would have a male child, pastor asked me to go to hospital (ANC clinic) to confirm, and it was true" (urban subject)

All spiritual leaders considered ANC attendance as essential part of pregnancy care. They generally considered ANC as a necessary action, while prayers and commitment of pregnancy to God was key.

"Certainly going for check-up is a duty of all pregnant women. If she does not go to hospital to receive all the check-up, injections and medicines, then she will be blamed when anything goes wrong in future". (spiritual leader urban).

"All those measures are very good. Every woman should go for check-up at the hospital (ANC), take all the medicines and injections. Not that we depend on the medicines and injections for childbirth safety, because safety is of the Lord". (spiritual leader rural).

FAMILY PLANNING PRACTICE

Compared with urban respondents, rural respondents more commonly engaged in poor practice of family planning methods

"I don't like to use any family planning method. See my friend that was taking injection, and till

now she cannot have another child again" (rural subject). "We use natural methods because my religion said so" (rural subject). "If I don't use any family planning method, my husband and I will not be 'free' together. Even natural methods like withdrawal didn't work, so I use injections" (urban subject).

"I have five children because I believed God had a male child for me (my last born) which I was prayerfully seeking Him for" (rural subject). "I believe God created and loves nature, and will therefore approve of natural family planning rather than artificial (man-made) methods". "My church and culture has no say in my choice of family planning method. Only my husband and I take the decision considering known advantages and disadvantages" (urban subject). "My religion says I should 'multiply' and have children. They did not say how many I should have" (urban subject). "There is no mention of family planning in the Bible, though I have been using both natural and artificial methods" (urban subject)

About two-thirds of participants (11, 68.8%) believed in modern rather than natural family planning methods, with most of them having scriptural basis for their beliefs.

"For me as a pastor, I prefer and support artificial family planning methods, which I know to be more effective than the natural methods. When people feel the Bible says we should 'multiply', so they go ahead to have too many children as God's will, they misinterpret the Bible. The context of 'multiply' in the Bible refers to spiritual replication of godly nature and character, as a strategy for filling the earth and dispelling darkness". (urban spiritual leader).

"If you ask me, I will prefer natural family planning methods because its natural from God. But because it's the same God that gave man the wisdom to discover artificial methods, I still support and recommend it's use, especially by women who have more children than they want". (rural spiritual leader).

PREPAREDNESS FOR NEWBORN CARE

All mothers admitted to preparing adequately for their newborn care. Most of them however did not expect possibility of adverse perinatal or neonatal outcome (especially as to possibly require hospital admission).

"I always prepare for my baby as early as six

(6) months before my delivery time".

"Just like I also prepare physically and spiritually for delivery; I also prepare likewise for newborn care". (FGD 1 Rural Mother)

"I don't expect my baby to be sick just after childbirth, so I don't plan for it or to stay in the hospital after delivery because of sick baby" (FGD 1 Urban mother)

"I am accustomed to newborn care, so I can handle it very well". (FGD 1 Urban Mother)

"Is it possible for a mother not to prepare for newborn care? So why did she become pregnant?". (FGD 1 Urban Mother).

Most spiritual leaders considered newborn care to be essential scriptural responsibility of both parents and other family members.

"Child care, including newborn care, is a scripturally recognized responsibility of parents. Example, bible instructions are clear that a mother should not forget her suckling child".

"If you fail to prepare for care of your baby, then you prepare to fail, because even God will not be able to help that mother when bad things happen".

BREASTFEEDING

Breastfeeding which was practiced by all respondents was generally perceived to be God-given and natural method that should not have any alternative. Exclusive breastfeeding was however viewed as an optional practice, which was considered to be good but quite a silent issue in the Scriptures.

"Though I did not do exclusive breastfeeding, I think God will prefer it since it's natural" (rural subject). "I did exclusive breastfeeding even if my religion is silent about it" (rural subject).

"God indicates and emphasizes breastfeeding (especially in the Book of Psalms) but not exclusive breastfeeding. So I think it is not a sin if someone does not exclusively breastfeed" (urban subject). "Doctor, tell me where the Bible say you must do exclusive breastfeeding – this is all man-made idea" (urban subject)

Spiritual leaders considered breast milk and breastfeeding to be good and recommended natural God-given food for babies. However, they did not see scriptural basis for exclusive breastfeeding, though they agreed it was beneficial.

Breast milk is natural food from God, just

like manna which He gave to the Israelites while in the desert. Therefore, children must not be denied of it for any reason, though the Bible is silent on its duration or position on exclusive breastfeeding". (spiritual leader urban). Only a wicked mother would not breastfeed her child. However, exclusive breastfeeding or its duration depends on the parents' preferences" (spiritual leader rural).

MANAGEMENT OF CHILDHOOD ILLNESS

Among respondents in both settings, hospital was commonly preferred when their children were seriously ill, but usually with prior or concurrent engagement of their spiritual leaders (pastors). There was however the general belief that God was the ultimate decider of health outcomes, irrespective of place of health access or intervention measures taken.

"When my children are seriously sick, I first inform my pastor, then take him/her to the hospital while I keep praying on my own" (urban subject). "God will not forgive you as a mother if your child dies because you refuse to take him/her to the hospital for treatment" (urban subject). "If you don't have faith in God, even if you go to hospital or anywhere you child can still die – so it's just God" (rural subject). "Again, I believe it's God that protects our children, whether we go to hospital or herbalist" (rural subject).

There was general support for facility-based health access for child care among spiritual leaders. They however stressed that dependence on God was the ultimate determinant of child health outcomes.

"Though it is good to go to hospital for treatment of childhood illness, we must always remember that doctors and nurses only treat – it's God that heals".

"Any sickness in a child must be taken seriously. Since you don't know or cannot be sure of the one that can potentially kill a child, it is good precautionary measure to always take your sick child to hospital".

IMMUNIZATION

Most spiritual leaders admitted that childhood immunization was good practice and recommended it to their church members. Some leaders however wished they had a real scriptural

basis for its practice, while others considered its practice as God-given wisdom to mankind.

"For me, I agree that immunization is good oh. But I have not seen any mention of it in the entire bible". "Since our children are our heritage, we must do everything possible to keep them alive and strong, so as to continue as our physical and spiritual seeds for future generations".

"I believe every child should receive immunization because it is God that has given Man the wisdom, so that we can reduce disease".

FEMALE CIRCUMCISION

The practice or non-practice of female circumcision was commonly based on cultural rather than religious belief or disposition. Unlike for males, female circumcision was considered to be a silent issue in the Scriptures.

"I did it, not because of my religion or church, but because of my culture" (rural subject). "Though I did it and will ask my children to do it for their children, I don't know if God likes it" (rural subject). "My church has never talked about – they only talk about male circumcision and circumcision of the heart" (urban subject). "Unlike for males, silence on female circumcision indicates disapproval by God, so I also disapprove of it" (urban subject).

All spiritual leaders did not believe nor recommend female circumcision. They particularly discouraged it on the basis that only male circumcision was mentioned in the Holy Bible. Some participants also discouraged it since its purpose of conferring chastity was better achieved by grace through circumcision of the heart, rather than clitoral circumcision to reduce physical pleasure.

"There is no such thing as female circumcision in the whole bible – therefore it is unscriptural and should not be done".

"Female circumcision is like circumcising the flesh in order to treat or prevent the sexual challenges of the flesh, instead of circumcising the heart".

"The bible says 'my people perish due to lack of knowledge'. That is why some of our communities are still doing female circumcision. If the gospel gets there they will stop it".

DISCUSSION

In this study only 46.7% of the respondents that attended religious activities more than once a week were prepared for possibility of caesarean. This finding is at variance with the results from the FGD in which most participants said they were not prepared for caesarean section but can only consent if it was the required to save their lives. The findings in this study showed that husband's active involvement in last pregnancy was commoner among urban respondents that attended religious activities more than once weekly. This is contrary to a previous study which reported that 40% of men from other religion other than Hindu were actively involved in pregnancy care.²¹ The higher proportion found in our study could be attributed to the age of the husband and their level of education.

The WHO recommends that pregnant women make a minimum of 8 ANC visits throughout the entire duration of her pregnancy. This is aimed at identifying dangers or health risks associated with the pregnancy. In this study among urban respondents that attended ANC, attendance of at least eight (8) ANC visits was commoner among those that attended religious activities more than once weekly. This finding is lower when compared to a recent DHS review in Kenya which showed ANC utilization rate of 93% among adolescent mothers with religious affiliations found to be among the significant predictors of ANC utilization.²²

This study found out that among rural respondents that ever breastfed their last child, exclusive breastfeeding was commoner among respondents that attended religious activities more than once weekly. However, this finding is at variance with reports of a cross-sectional facility-based study in India, which found that Muslims compared with Hindus, were unlikely to practice pre-lacteal feeding and delay in initiation of breastfeeding.²³ Non-comparability of these religions may account for this difference in findings.²⁴

Taking child to health facility during last serious childhood illness was commoner among respondents that attended religious activities less than once weekly. Religious activities did not influence health facility access during childhood illness, even majority of the participants during the FGD session alluded to this fact.

CONCLUSION

Some maternal and child health practices are associated with more frequent attendance of religious activities among respondents in both rural and urban settings, while others are associated with less frequent attendance of religious activities among respondents in both rural and urban settings. These findings are useful baseline for better understanding of the dynamics of influence of religiosity on maternal and child health practices in Cross River State of Nigeria. Maternal health education as well as education and engagement of spiritual leaders are highly recommended.

LIMITATIONS OF THE STUDY

This study examined and compared the influence of traditional beliefs on the adoption of key maternal and child health practices amongst rural and urban mothers in Cross River state. The major limitation of this work was the paucity of literature on related topics, non-availability of many publications in libraries and the absence of accurate and up to date statistical figures.

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