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The Perception of Birth Defects among Women of Reproductive Age in a Rural Community in Nigeria

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Abstract

Background

Birth defects are a major global cause of morbidity and mortality, particularly in children under the age of five. In developing nations, newborn children are not regularly screened, so adequate information about birth abnormalities will be crucial for early detection.

Objective

This study was conducted to assess the knowledge, perception and prevention practices of birth defects among women of reproductive age in Igbo-Ora.

Methods

This was a descriptive cross-sectional study among 360 women between the age of 15-49 years in Igboora, Ibarapa Central Local Government, Oyo State, South-Western Nigeria. Data collection was by an interviewer-administered questionnaire. Data management was done using Statistical Package for Social Sciences (SPSS) Version 21

Results

360 responders in all were evaluated. The majority (54.7%) of women of childbearing age were well-informed on the risk factors for birth abnormalities. Good knowledge was found to significantly correlate with education level, occupational class, and religion. The majority of women of reproductive age (53.1%) had a positive attitude on birth defects.

Conclusion

Birth defects are preventable and more than half of the women that participated in this research had good knowledge and attitude towards birth defects.

Keywords: Birth Defects, Reproduction, Rural Community, Nigeria

Background

Birth defects are any structural or functional abnormalities, including metabolic defects, that are present at birth or are discovered later in life (WHO, 2022) [15]. Globally, birth defects account for 30% of under-five mortality, accounting for 240,000 neonatal deaths (UNICEF, 2022) [13]. In addition, it causes long term disabilities affecting individuals, families, health systems and communities. In 2013, the annual cost of hospital care for birth defect-related admissions in the United States of America was approximately $22.9 billion (Arth *et al*., 2017) [3]. Even more worrying is the fact that 90% of children with birth defects live in low-middle income countries where they might not have the requisite health care (WHO, 2022) [15].

Nigeria has approximately 262,000 infant deaths per year making her second in the world in terms of under-five mortality (Arth *et al*., 2017) [3]. According to Bakare *et al*., 2019 cross-sectional study, the incidence of external birth defects in South Western Nigeria is 6.9%. In another hospital-based study in Enugu, the prevalence is 17.5 per 1000 live births, with the musculoskeletal system being the most affected (Chukwubuike *et al*., 2020) [7]. The congenital defect causes significant emotional stress and financial burden on the family, and the consequences may last a lifetime.

Despite the burden and prevalence of birth defects in Nigeria, only a few women of reproductive age are aware of the risk factors and potential prevention methods. Adequate knowledge of birth defects is required for early detection and, in some cases, correction of the defects (Bello *et al*., 2013) [5]. Routine screening of newborn children for certain birth defects is well established in developed countries, leading to a reduction in neonatal and infant morbidity and mortality, whereas screening is absent or minimal in developing countries (Bradford *et al*., 2015) [6]. Some of these birth defects are even preventable, through maternal vaccination, adequate folic acid and iodine intake from fortified staple foods, and antenatal care (WHO, 2022; De la Fourniere *et al* 2020) [15, 8].

Understanding the general knowledge, perception, and preventive practice on birth defects among women in a community setting will provide information on what strategy and screening program will be beneficial as efforts are channeled into the prevention of birth defects. There is a scarcity of data from community studies on women's knowledge and perceptions of birth defects. This study will provide information on current birth defect prevention practices, attitudes, and knowledge among women of reproductive age, which can be used for public awareness and policy reform.

Materials and Methods

Study Design and Setting

This study was a descriptive cross-sectional study that was carried out in the rural setting of Igbo-ora, which is part of Ibarapa central local government area. The area's geography is primarily hilly, and as of 2013, 64,431 people lived there (Programme I. Ibarapa Programme 2013) [12] The Yoruba are the most common tribe. It is referred to as twinning capital of the world with dizygotic twinning rate of one in every 22 births (Akinboro *et al*., 2008) [1]. The Ibarapa Programme of the College of Medicine at the University of Ibadan provided ethical approval, and the respondents' and the community's leaders' informed consent was obtained.

Study Population, Sample Size and Sampling Methods

The study participants were women of reproductive age in Igbo-Ora community aged 15 to 49. This study excluded visitors who had lived in Igbo-Ora for less than six months, women with mental health issues, and health workers. The sample size was calculated using the formula for single proportion with a minimum sample size of 296 women estimated based proportion of good knowledge of 25.6% from a previous study (Lawal *et al*., 2015) [10] However, 360 women were given a questionnaire.

A two-stage cluster sample technique was used to select participants, with the first stage involving a balloting method to select one ward out of seven, and the second stage involving a sampling of the chosen ward by using a simple random technique to select household and women of reproductive age group in the house was then recruited for the study.

Data Collection and Study Variables

Data collection took over two weeks which was conducted by the investigators who were undergraduate medical students. An interviewer-administered questionnaire was used to collect information on five sections: socio-demographics and obstetric characteristics, knowledge of birth defects, identification of birth defects, attitudes toward birth defects, and birth defect prevention practices. This study's questionnaire was adapted from a previous study by Bello *et al*., 2013 [5]. The questionnaire was pretested in another ward not selected for the study, to check for clarity of questions, gain preliminary insight into their construct validity and refine any ambiguity. The questionnaire was translated to the most predominant language, Yoruba and back-translated to English to ensure that its original meaning was retained thereby ensuring the retention of validity.

The main exploratory variables were age, level of education, occupational class, marital status, religion, previous pregnancy and ANC attendance, and ethnic background. Knowledge of risk factors, prevention knowledge, and overall knowledge of birth defects, preventive practices and attitude towards birth defects were the main outcome variables.

Data Management and Analysis

At the end of data collection, the questionnaires were manually sorted and checked for errors and omissions. The statistical package for social sciences (SPSS) version 21 was used for analysis. Descriptive statistics were used to present the variables, and Chi-square was used to test the associations. The threshold for significance was set at p of 0.05. The Logistic Regression model included variables that were found to be statistically significant using Bivariate Analysis. For knowledge, scores were assigned to the various sections; each correct answer received a 1 while an incorrect answer received a 0. Respondents with scores lower than the mean were classified as having poor knowledge, while those with scores higher than the mean were classified as having good knowledge. The maximum attitude score possible was 10. Respondents with less than the mean score were classified as having a bad attitude, while those with more than the mean score were classified as having a good attitude.

Ethical Consideration

The Ibarapa Programme of the College of Medicine at the University of Ibadan provided ethical approval for the study. Permission was also gotten from the community's leaders' and prior to interviewing the respondents, an informed consent was taken.

Results

A total of 360 respondents were surveyed, and the mean age of the women was 28.3 +/- 2.0 years. The majority of the respondents (74%) were in the 15–19 years age range. Twenty-two (6.1%) had no formal education while, 55 (15.3%) had primary as the highest level of education. About half, 181 (50.3%) were Christians, more than half 231 (64.2%) were married and majority 345 (95.2%) of the population were Yoruba. Most, 250 (69.4%) of the participants had previously been pregnant; the majority, 233 (93.2%) had previously had antenatal care, and 204 (81.6%) were multigravida. The respondent's median number of children is 3. (Table 1)

Table 1: Sociodemographic and Reproductive Characteristics of the Respondents (N = 360)

Variable	Frequency	Percentage
Age		
>/=19	74	20.6
20-29	132	36.7
30-39	89	24.7
40-49	65	18.1
Mean age	28.3±9.6	
Highest level of education		
No Formal Education/Arabic	22	6.1
Primary	55	15.3
Secondary	171	47.5
Tertiary	112	31.1
Occupational class		
Skilled	59	16.4
Semi-Skilled	219	60.8
Unemployed	82	22.8
Marital status		
Currently Married	231	64.2
Not Currently Married	129	35.8
Religion		
Christianity	181	50.3
Islam	179	49.7
Ethnic background		
Yoruba	345	95.2
Others	15	4.8
Previous pregnancy		
Yes	250	69.4
No	110	30.6
Ever attended Antenatal clinic (n =250)		
Yes	233	93.2
No	17	6.8
Number of pregnancies (n =250)		
1	46	18.4
2	69	27.6
3	62	24.8
≥4	73	29.2
Number of children (n =250)		
0	14	5.6
1	44	17.6
2	73	29.2
3	63	25.2
4	40	16.0
>4	16	6.4

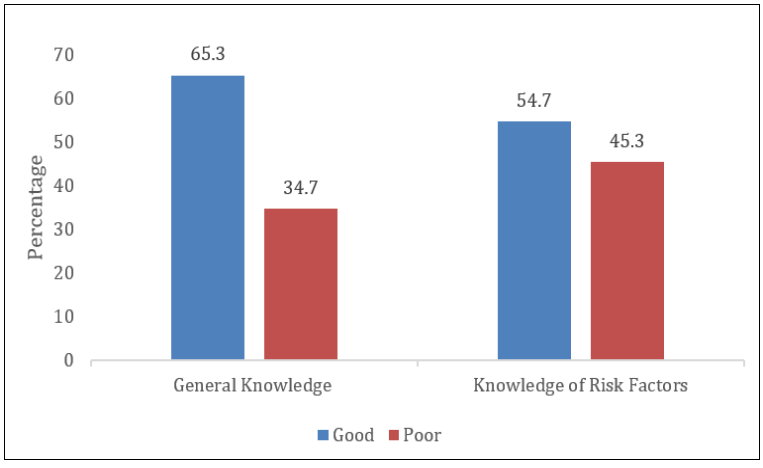

Fig 1: Knowledge on birth defects among participants

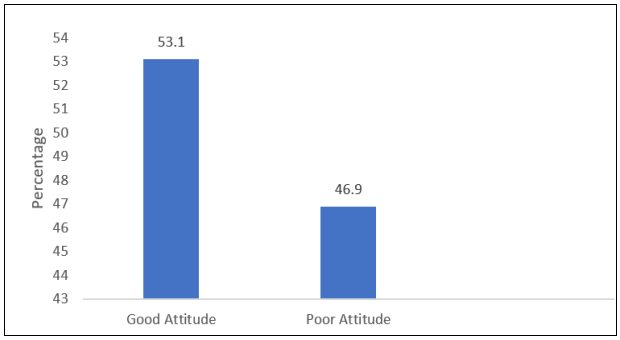

Fig 2: Attitude of participants towards birth defects

Table 2: Attitude of Participant Towards Birth Defects

	Agree (%)	Undecided (%)	Disagree (%)
They should be abandoned	4.4	1.9	93.6
They should be killed	3.1	2.5	94.4
They should be taken to seek medical care	95.3	1.7	3.1
They should be taken to seek spiritual care	78.3	8.9	12.8
They may require special education	90.6	2.8	6.7
They should be pitied	90.0	3.3	6.7
They will amount to nothing	16.1	2.5	81.4
They can be managed if identified early	91.4	5.3	3.3
They constitute huge financial burden	87.5	2.8	9.7
Public education will reduce the effects of birth defects	86.4	5.8	7.8

Table 3: Prevention Practices of Birth Defects Among Women of Reproductive Age

	Yes (%)	No (%)	I don't know (%)
Consume iodine salt during pregnancy	41.4	36.9	21.7
Use folic acid before, during and after pregnancy	57.2	24.7	18.1
Pre-conceptional counseling	71.9	21.9	6.2
Attend antenatal clinic regularly	78.9	18.6	2.5
Avoid contact with your in-law	22.2	72.2	5.6
Use of traditional herbs and concoctions	45.8	45.8	8.2
Take good nutrition during pregnancy	74.4	23.3	2.2
Avoid smoking during pregnancy	73.6	24.4	2.2
Avoid alcohol consumption during pregnancy	74.2	22.5	3.3
Complete immunization before pregnancy	79.7	17.2	3.1

Table 4: Association between sociodemographic, reproductive characteristics and knowledge of birth defects

Variable	Poor Knowledge (%)	Good Knowledge (%)	X^2	P value
Age:				
15-19	58.1	41.9		
20-24	50.0	50.0		
25-29	41.4	58.6	7.559	0.272
30-34	47.8	52.2		
35-39	39.5	60.5		
40-44	37.5	62.5		
45-49	39.4	60.6		
Level of Education:				
No formal education/Arabic	50.0	50.0		
Primary	58.2	41.8	23.991	<0.001
Secondary	55.0	45.0		
Tertiary	27.7	72.3		
Occupational class of respondent:				
Skilled	27.1	72.9	12.254	0.002
Semiskilled	48.4	51.6		
Unskilled	56.1	43.9		
Marital Status:				
Currently Married	45.5	54.5	0.381	0.537
Not currently Married	48.8	51.2		
Religion:				
Christianity	39.2	60.8	8.096	0.004
Islam	54.2	45.8		
Ethnic Background:				
Yoruba	45.5	54.5	4.472	0.034
Others	73.3	26.7		

Table 5: Association between Sociodemographic and Attitude of participants towards birth defects

Variable	Poor Attitude (%)	Good Attitude (%)	X^2	P value
Age:				
15-19	47.3	52.7		
20-24	52.7	47.3		
25-29	41.4	58.6	16.268	0.012
30-34	54.3	45.7		
35-39	25.6	74.4		
40-44	40.6	59.4		
45-49	66.7	33.3		
Level of Education:				
No formal education/Arabic	59.1	40.9		
Primary	47.3	52.7	3.967	0.265
Secondary	42.1	57.9		
Tertiary	51.8	48.2		
Occupational class of respondent:				
Skilled	52.5	47.5	1.668	0.434
Semi skilled	44.3	55.7		
Unskilled	50.0	50.0		
Marital Status:				
Currently Married	46.8	53.2	0.009	0.923
Not currently Married	47.3	52.7		
Religion:				
Christianity	49.7	50.3	1.129	0.288
Islam	44.1	55.9		
Ethnic Background:				
Yoruba	46.4	53.6	1.071	0.301
Others	60.0	40.0		

Table 6: Binary logistics regression analysis to show predictor of knowledge

Variable	Categories	Odds Ratio	P Value	95% C.I
Occupation	Skilled	1.60	0.274	0.692-3.677
	Semi skilled	1.60	0.096	0.919-2.913
	Unskilled			
Religion	Christianity	1.71	0.010	1.090-2.660
	Islam			
Ethnicity	Yoruba	4.32	0.019	1.270-14790
	Others			
Level of Education	None/Arabic			
	Primary	0.7(1.40)	0.490	0.260-1.920
	Secondary	0.98(0.02)	0.970	0.390-2.450
	Tertiary	2.76	0.060	0.980-7.740

Fig 1 shows the knowledge on birth defects among respondents. Above half of the participants (65.3%) had good knowledge understanding of birth abnormalities. Amelia, absence of anus, limb shortening, and intestinal protrusion are among commonly identified birth defects by the participant. In addition, 54.7% demonstrated knowledge of the individual risk factors for birth abnormalities. Fig 2 shows that 53.1% had a good attitude towards birth defect. Over 90% of respondents had a positive attitude, which included believing in the importance of early identification, the need for medical care, the need for special education, and not abandoning or killing such children (Table 2). The majority, 71.5%, believe in conventional medicine, such as laboratory tests, ultrasound scans, and seeking medical help to detect birth defects, while 11.4% believe in indigenous doctors (Fig 3). Preventive practices identified by more than 70% of respondents included good nutrition, avoidance of smoking and alcohol during pregnancy, preconception counseling, and frequent antenatal visits. Iodine in salt and folic acid, according to 41.4% and 57.2% of respondents, can help avoid birth abnormalities. (Table 3). On bivariate analysis, a statistically significant association exist between good knowledge and level of education (X2= 23.991, P<0.001), occupational class (X2=12.254, P=0.002), religion (X2= 8.096 P= 0.004) and ethnic background (X2=4.472, P= 0.034). There is no significant association between good knowledge and age, marital status and ethnic background. (Table 4). Also, there is a significant association between attitude and age (X2= 16.268, P=0.012) (Table 5). Following logistics regression analysis, religion (CI=1.090-2.660 and odd ratio=1.71) and ethnicity (CI= 1.270-1.4790 and off rating of 4.32) were found to be significant predictors of knowledge towards birth defects (Table 6).

Discussion

This study found that, 65.3% of respondents had a good general knowledge, while 54.7% had a good knowledge of risk factors of birth defects. Our findings were consistent with studies conducted on women in Ghana, Ethiopia, and Sri Lanka (Bello *et al*., 2013; De silva *et al*., 2019; Wake *et al*., 2022) [5, 9, 14]. Exposure to X-rays while pregnant was the risk factor with the lowest frequency identified in our study. On the other hand, a study on congenital abnormalities knowledge conducted in Northern Iran in by Masoumeh *et al*., 2015 revealed that this was the most identified risk

factor (93.3%). More has to be done to inform women about various risks for birth abnormalities.

According to our findings, 53.1% of people have a positive attitude toward children with birth defects. 90% thought that children with birth defects should be pitied, while the majority thought they should be abandoned or killed. The majority of respondents agreed that the children should be taken to seek medical and spiritual care. These findings were similar to those of Aniekan *et al*., 2013, who conducted a study among pregnant women attending ANC in the South-South region of Nigeria. According to the report, the majority of them think they should be transferred to a hospital rather than abandoned. Both researches came to the conclusion that having children with birth defects puts a tremendous financial strain on the parents. Our cultural beliefs had a significant impact on people's attitudes toward children with congenital anomalies

In terms of prevention practices, many people believe that immunization and regular attendance at ANC will reduce the risk of potential anomalies. This belief that regular antenatal clinic attendance prevents birth defects was also consistent with the high percentage (93.2%) of antenatal clinic visits by women who had previously been pregnant. Unprescribed medication use, smoking, and alcohol consumption were commonly identified cause of birth defects. Bello *et al*., 2013 [5] reported similar trend. There appears to be an increase in awareness of the negative effects of unprescribed medication, smoking, and alcohol consumption on health, which appears to be naturally and synchronously transferred to knowledge of birth defects, not necessarily because they have any particular knowledge of birth defect risk factors the least identified prevention practice was the use of ionized salt and folic acid. This is consistent with the findings of a study on pregnant women's knowledge of congenital anomalies conducted in North Iran by Massoumeh *et al*., 2015, who discovered a low use of iodized salt. This is also comparable to 42.2% of respondents in the Bello *et al*., 2013 [5] study. Health professionals and the general public need to be continuously educated on basic protective and preventative actions.

Our study indicates a significant association between knowledge of risk factors and the participant's occupation. The skilled labor class respondent was the most knowledgeable. This could be due to the fact that the skilled labor class was more educated and enlightened, particularly regarding the use of unprescribed medication and so on, which translates into their greater knowledge of risk factors. The skilled labor class appears to be more likely to participate in educational outreach, integrate information, and thus be more informed. This is consistent with findings from a hospital study of pregnant women in Ibadan (Lawal *et al*., 2015) [10].

According to our findings, there is a significant relationship between the participants' level of education and their knowledge of the birth defect and its risk factors, with those with a tertiary education being the most knowledgeable. This is consistent with the Lawal *et al*., 2015 [10] study, which showed that those with more education than 12 years have a better degree of knowledge about birth abnormalities. However, Bello *et al*., 2013 [5] study among pregnant women, found no significant relationship between education level and knowledge of birth defects in Accra, Ghana. The fact that our study had a higher percentage of tertiary education (31.1%) than the Bello's study (16%) could account for the discrepancy between the two studies. These results emphasize the value of education for a better knowledge of congenital abnormalities and widespread prevention measures.

We discovered from our study that there was a significant association between a participant's age and their attitude toward infants with birth abnormalities. The 35–39 age group of respondents appeared to have the best attitude, whereas the oldest age group appeared to have the worst attitude. The older age group may have been more ingrained in the conventional way of thinking, where deformed children are viewed as a curse or an abomination, as a result of which. However, the younger women appear to be more enlightening and accepting as a result.

Strength and Limitation of the Study

This is a cross-sectional study with inherent respondent bias and recall errors. In the conduct of this survey, a modified screening tools previous used in another study was used which minimizes ambiguity and erroneous response. The study is limited to only women of reproductive age group only, further studies incorporating general women population should be considered in the future.

Conclusion

The overall knowledge and attitude of birth defects among respondents was generally low, while respondents showed above average prevention practices. Therefore, it becomes pertinent to educate women about birth defects including risk factors for birth defects and common preventive strategies. The education should target unskilled, semiskilled and less educated women who generally demonstrated reduced knowledge of birth defects. Additionally, it is crucial to raise public knowledge of preconception care and damaging cultural norms and make sure all women use prevention practices that will reduce the incidence of birth defects.

References

1. Akinboro A, Azeez MA, Bakare AA. Frequency of twinning in southwest Nigeria. Indian J Hum Genet [Internet]. 2008; 14(2):41-47. Available from: Doi: http://dx.doi.org/10.4103/0971-6866.44104
2. Aniekan I, Peter, Moses B. Ekong, Theresa B, Ekanem, *et al*. Attitude and knowledge of pregnant women attending antenatal clinic at St. Luke's hospital, Anua in Uyo, Nigeria towards congenital anomalies. Ibom Med J, 2013, 34-40.
3. Arth AC, Tinker SC, Simeone RM, Ailes EC, Cragan JD, Grosse SD. Inpatient hospitalization costs associated with birth defects among persons of all ages -United States, 2013. MMWR Morb Mortal Wkly Rep [Internet]. 2017; 66(2):41-46. Available from: Doi: http://dx.doi.org/10.15585/mmwr.mm6602a1
4. Bakare TIB, Sowande OA, Adejuyigbe OO, Chinda JY, Usang UE. Epidemiology of external birth defects in neonates in Southwestern Nigeria. Afr J Paediatr Surg [Internet]. 2009; 6(1):28-30. Available from: Doi: http://dx.doi.org/10.4103/0189-6725.48572
5. Bello AI, Acquah AA, Quartey JN, Hughton A. Knowledge of pregnant women about birth defects. BMC Pregnancy Childbirth [Internet]. 2013; 13(1):p45. Available from: Doi: http://dx.doi.org/10.1186/1471-2393-13-45

6. Bradford L, Therrell CD, Padilla JG, Loeber I, Kneisser A, Saadallah GJC, *et al*. Current status of newborn screening worldwide: 2015. Seminars in Perinatology. 2015; 39(3).
7. Chukwubuike KE, Ozor I, Enyi N. Prevalence and pattern of birth defects in the two tertiary hospitals in Enugu, South East Nigeria: A hospital-based observational study. Afr J Paediatr Surg [Internet]. 2020; 17(3&4):85-89. Available from: Doi: http://dx.doi.org/10.4103/ajps.AJPS_59_20
8. de la Fournière B, Dhombres F, Maurice P, de Foucaud S, Lallemant P, Zérah M, *et al*. Prevention of neural tube defects by folic acid supplementation: A national population-based study. Nutrients [Internet]. 2020; 12(10). Available from: Doi: http://dx.doi.org/10.3390/nu12103170
9. De Silva J, Amarasena S, Jayaratne K, Perera B. Correlates of knowledge on birth defects and associated factors among antenatal mothers in Galle, Sri Lanka: A cross-sectional analytical study. BMC Pregnancy Childbirth [Internet]. 2019; 19(1):p35. Available from: Doi: http://dx.doi.org/10.1186/s12884-018-2163-9
10. Lawal TA, Yusuf OB, Fatiregun AA. Knowledge of birth defects among nursing mothers in a developing country. Afr Health Sci [Internet]. 2015; 15(1):180-187. Available from: Doi: http://dx.doi.org/10.4314/ahs.v15i1.24
11. Masoumeh P, Vahid K, Samira K, Hamid A, Khosheh K. Knowledge of pregnant women about congenital anomalies: A cross-sectional study in north of Iran. Ind J Health Sci [Internet]. 2015; 8(1):p41. Available from: Doi: http://dx.doi.org/10.4103/2349-5006.158230
12. Programme I. Ibarapa Programme Dejure Census of Ibarapa Central Local Government Area. Iba-dan, Nigeria: University of Ibadan Press. Ibadan, Nigeria: Ibadan University Press, 2013.
13. United Nations International Children's Emergency Fund [Internet] Situation of women and children in Nigeria. Available from: https://www.unicef.org/nigeria/situation-women-and-children-nigeria Accessed 22 Nov 2022 Nov 22
14. Wake GE, Fitie GW, Endris S, Abeway S, Temesgen G. Pregnant mother's knowledge level and its determinant factors towards preventable risk factors of congenital anomalies among mothers attended health institutions for antenatal care, Ethiopia. Clin Epidemiol Glob Health [Internet]. 2022; 14(100973):p100973. Available from: Doi: http://dx.doi.org/10.1016/j.cegh.2022.100973
15. World Health Organization. Birth defects [Internet]. Geneva: World Health Organization, 2022. Available from: https://www.who.int/news-room/fact-sheets/detail/birth-defects. Accessed 22 Nov 2022