ORIGINAL ARTICLE

Mothers' knowledge about birth asphyxia: The need to do more!

TA Ogunlesi, MB Fetuga, AF Adekanmbi

Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria

Abstract

Background: Health education is an important tool required for reducing the burden of birth asphyxia in the developing world.

Objective: The objective of this study was to assess the knowledge of mothers, who received health facility-based antenatal care during their last pregnancy, about birth asphyxia and relate their knowledge to their places of antenatal care.

Materials and Methods: A cross-sectional survey of mothers of infants attending the Immunization clinic in a Nigerian Teaching Hospital was done between July and October 2010 using a close-ended questionnaire. Consecutively consenting mothers were enrolled into the study.

Results: Out of 354 mothers, 56.5% received counseling about birth asphyxia during antenatal clinic visits in their last pregnancy; 85.5% of attendees of teaching hospital; and 26.4% of attendees of private antenatal clinics received counseling about birth asphyxia. Overall, 38.9% of the respondents had satisfactory knowledge about birth asphyxia; 47.5% of teaching hospital attendees; and 28.1% of private clinic attendees had satisfactory knowledge about birth asphyxia. Lower socioeconomic status, lack of counseling, and nonattendance of teaching hospital antenatal clinic were associated with poor knowledge about birth asphyxia.

Conclusion: Most of the mothers surveyed had poor knowledge about the risk factors and sequelae of birth asphyxia. The health system needs to improve health education of expectant mothers about birth asphyxia.

Key words: Antenatal care, asphyxia, health education

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Introduction

Health education has been described as any combination of learning opportunities and teaching activities designed to facilitate voluntary adaptation of behavior that promote health.[1] From the aforementioned, health education is an essential component of primary health care. Thus, every health worker is trained and expected to give, health education that is relevant to the health circumstances of their clients, and at every opportunity. One of such circumstances is the routine care of pregnant women. Antenatal care is a key component of maternal child health services and it is provided at all levels of care in Nigeria including the public and private sectors.[2]

Antenatal care is designed to promote, protect, and maintain the health during pregnancy and reduce maternal and neonatal mortality. Specifically, the scope of antenatal care also includes the detection of, and special care for, high-risk cases as well as the prediction and prevention of complications during pregnancy and childbirth.[3] One of such complications of labor and childbirth is perinatal asphyxia. Birth asphyxia is defined as the inability of a newborn infant to initiate and maintain spontaneous respiration with consequent acidosis and hypoxic-ischemic injury to tissues.[4] Birth asphyxia is a leading cause of newborn morbidity and mortality in the developing world. It has been reported to occur among 22.9% of newborns in East, Central, and South Africa.[5] A recent Nigerian

Address for correspondence:
Dr. Tinuade A. Ogunlesi, P. O. Box 652, Sagamu-121001NG, Ogun State, Nigeria.
E-mail: tinuade_ogunlesi@yahoo.co.uk

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report suggested that birth asphyxia accounted for 41.2% of perinatal deaths.[6] Although birth asphyxia is preventable in most cases, it remains a major determinant of infant survival in parts of the world where access to and utilization of quality maternity services are poor and the health system appear to be deficient in providing quality services.[7] Nevertheless, improved access to maternity care may not necessarily reduce the incidence of birth asphyxia in the developing world, if pregnant women do not adopt the right preventive attitude. Obviously, the interwoven relationship between knowledge and attitude cannot be overemphasized.

Birth asphyxia is a major cause of perinatal and neonatal mortality in Sagamu, Nigeria.[8,9] It is also a leading cause of common handicapping childhood conditions like cerebral palsy in Sagamu.[10] Despite this heavy burden, there has been no study assessing the knowledge of mothers about asphyxia in this environment. As part of efforts to reduce the burden of birth asphyxia, it is important to examine the knowledge of mothers about the condition. This information may be useful in designing effective interventions aimed at improving the motivation of mothers to cooperate with the health systems in the prevention of birth asphyxia. The objective of the study is to assess the knowledge of mothers, who received health-facility based antenatal care during their last pregnancy, about birth asphyxia and relate their knowledge to the places where they received antenatal care.

Materials and Methods

This cross-sectional survey of mothers who brought their well infants to the Immunization Clinic of the Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria, was conducted between July and October 2010. In addition to offering specialized pediatric services to children from within and outside Ogun State of Nigeria, the hospital also offers primary care within a tertiary care setting. These include maternal and child health services like antenatal care and immunization.

Institutional ethical clearance was obtained. The convenient type of sampling was used; hence consecutive mothers who met the inclusion criteria and gave informed consent were included in the study. The major inclusion criterion for this study was receiving health facility-based antenatal care during the pregnancy of the index child. Mothers who did not receive any form of antenatal care or who visited spiritual birth homes and traditional birth homes for antenatal care were excluded. Also excluded were mothers who were clinical health workers (physicians, nurses, physiotherapists, and pharmacists).

The research tool was a close-ended questionnaire. The data obtained from the respondents included mothers' age, parity, education and occupation of both parents, and details of antenatal care received during the pregnancy of the index child. Specifically, respondents were asked whether they were counseled about birth asphyxia by any health worker (described as inability of a newborn to cry spontaneously at birth) during antenatal clinic visits. The questionnaire also sought information about the respondents' knowledge concerning common risk factors, effects, and preventive measures for birth asphyxia on a "Yes" or "No" basis. Correct responses were scored one mark each while wrong responses and nonattempts were scored zero. The scores were summed for each part of knowledge (risk factors, effects, preventive measures). Scores of at least 50% were regarded as satisfactory while scores below 50% were regarded as unsatisfactory. The knowledge scores were related to the places of antenatal care as well as history of counseling about birth asphyxia.

The socioeconomic classification of the families was done using parental education and present occupation. The professionals and the most highly educated belonged to class I while the unemployed, laborers and the least educated belonged to class V.[11] For this study, classes I and II were regarded as upper while class III was middle and classes IV and V were regarded as lower. The respondents were stratified into age groups (≤30 years or >30 years), parity groups (primiparous or multiparous), educational groups (tertiary or secondary and below), socio-economic groups (upper or lower), and also based on personal experience with an asphyxiated child. The various strata of respondents were compared for their overall knowledge concerning birth asphyxia using bivariate analysis.

Data were managed with the Statistical Package for the Social Sciences (SPSS), version 15, using descriptive and inferential statistics. Proportions were compared using odds ratio (OR) and 95% confidence interval (CI). CI excluding 1.0 defined statistical significance.

Results

General description of the respondents

A total of 354 mothers participated in the study. The mothers' age ranged from 21 to 40 years with the mean of 30.0 ± 4.3 years. Out of 354 mothers, 218 (61.6%) were aged 30 years or less while 136 (38.4%) were aged more than 30 years. One hundred and twenty nine (36.4%) were primiparous while the remaining 221 (62.4%) and 4 (1.2%) were multiparous and grandmultiparous respectively. Most of the respondents (221; 62.4%) had tertiary education while the remaining 95 (26.8%) and 38 (10.8%) had secondary education and primary education respectively. Distribution according to socio-economic classes showed that 212 (59.9%) belonged to the lower class while 126 (35.6%) and 16 (4.5%) belonged to the middle and upper classes respectively.

One hundred and twenty seven (35.9%) respondents had previously had infants who were asphyxiated at birth: 48 (37.7%) were delivered in private facilities, 29 (22.8%) were delivered in the teaching hospital, 22 (17.3%) in traditional birth homes, 14 (11.0%) in spiritual birth homes, and 14 (11.0%) in other public health facilities.

Places of antenatal care

One hundred and twenty one (34.2%) had antenatal care at private facilities while 233 (65.8%) had antenatal care at various public hospitals. These public health facilities included the teaching hospital (177; 50.0%), general hospitals (40; 11.3%) and primary health centers (16; 4.5%).

The proportion of respondents who had tertiary education among those attending the teaching hospital and other public and private facilities for antenatal care were similar {107/177 (60.5%) vs. 114/177 (64.4%); OR = 0.8; CI = 0.54, 1.33}. On the other hand, the proportion of respondents who belonged to the upper socio-economic classes among the attendees of teaching hospital were lower compared with the attendees of the other facilities {56/177 (31.6%) vs. 86/177 (48.6%); OR = 0.5; CI = 0.31, 0.77}.

A total of 200 (56.5%) received counseling about birth asphyxia during antenatal care. Table 1 shows the distribution of respondents who received counseling about birth asphyxia according to places of antenatal care. None of the respondents who attended primary health centers received counseling about birth asphyxia whereas more than four-fifth of the attendees of the teaching hospital were counseled about birth asphyxia. A significantly higher proportion of respondents who attended antenatal clinic in the teaching hospital were counseled about birth asphyxia compared to respondents who attended other types of facilities (152/177; 85.8% vs. 48/177; 27.1%). Thus, respondents who attended the teaching hospital were 16 times more likely to be counseled about birth asphyxia (OR = 16.3; CI = 9.25, 29.07). On the other hand, with the exclusion of respondents who attended the teaching hospital, there was no difference in the proportion of respondents who were counseled while attending private facilities for antenatal care compared to those who were counseled while attending public facilities {32/121 (26.4%) vs. 16/56 (28.6%); OR = 0.9, CI = 0.33, 2.48}.

Table 1: Distribution of mothers who were counseled about birth asphyxia duringantenatal care

Place of ANC[a]	Total number	Counseled	Percentages
Teaching hospital	177	152	85.8
Private clinics	121	32	26.4
General hospitals	40	16	40.0
PHC[b]	16	0	0.0
Total	354	200	56.5

[a]Antenatal care; [b]Primary health centers.

General knowledge of respondents about birth asphyxia

Table 2 shows the proportion of mothers who responded appropriately to questions related to the identification of common risk factors for birth asphyxia, effects of birth asphyxia on infants as well as possible preventive measures for birth asphyxia. Prolonged labor was the most widely known risk factor for asphyxia while inability to breathe and inability to cry were the most widely known effects of birth asphyxia. The preventive measures in birth asphyxia and the proportions of the respondents who identified these specific measures were as follows: early booking for antenatal care (240; 67.8%), facility-based antenatal care (216; 61.0%), unprolonged duration of labor (254; 71.8%), supervision of delivery by adequately trained health workers (268; 75.7%) and early surgical intervention if indicated (255; 72.1%).

Assessment of knowledge with scores

One hundred and thirty eight (38.9%) had satisfactory overall knowledge: 80 (22.6%), 66 (18.6%), and 257 (72.6%) had satisfactory knowledge about risk factors, effects, and prevention of birth asphyxia respectively. Table 3 displays the proportion of attendees of the various health facilities who had satisfactory knowledge about risk factors, effects, and prevention of birth asphyxia. A significantly higher proportion of teaching hospital attendees had satisfactory overall knowledge compared with attendees of the other public and private facilities together {84/177 (47.5%) vs. 54/177 (30.5%); OR = 2.1, CI = 1.30, 3.26}. Following the exclusion of teaching hospital attendees, a higher proportion of attendees of public facilities had satisfactory scores compared to attendees of private facilities but the difference was not statistically significant {20/56 (35.7%) vs. 34/121 (28.1%); OR = 1.4, CI = 0.68, 2.95}. A significantly higher proportion of respondents who attended the antenatal clinic at the teaching hospital and also received counseling about birth asphyxia had satisfactory knowledge compared to other attendees of the teaching hospital who were not counseled

Table 2: Proportion of mothers with correct responses about specific risk factors and effects of birth asphyxia

Risk factors	Proportion	Effects	Proportion
Short stature	12 (3.4)	Inability to breathe	207 (58.5)
Hypertension	60 (16.9)	Inability to cry	188 (53.1)
Prolonged labor	188 (53.1)	Epilepsy	55 (15.5)
Breech delivery	96 (27.1)	Cerebral palsy	66 (18.6)
Deliveries outside orthodox facilities	125 (35.3)	Deafness	62 (17.5)
Big baby	108 (30.5)	Speech impairment	86 (24.3)
Prematurity	100 (28.2)	Mental retardation	106 (29.9)

Figures in parentheses are percentages of the total number (n = 326).

about asphyxia {78/152 (51.3%) vs. 6/25 (24.0%); OR = 3.3, CI = 1.17, 9.94}. The proportion of private antenatal clinics attendees who received counseling about asphyxia and had satisfactory knowledge about asphyxia was similar to other private antenatal clinics attendees who did not receive counseling about asphyxia {8/32 (25.0%) vs. 26/89 (29.2%); OR = 0.8, CI = 0.29, 2.20}. While all the attendees of antenatal clinics in other public health facilities (except the teaching hospital) who received counseling about birth asphyxia had satisfactory knowledge about the condition, 90% (36/40) of those who did not receive counseling about birth asphyxia had poor knowledge about the condition.

Bivariate analysis of factors associated with satisfactory knowledge

Poor knowledge was 2.0 times more likely among respondents who belonged to the lower socio-economic classes as well as the attendees of other facilities apart from the teaching hospital for antenatal care and 3.0 more likely among respondents who were not counseled about birth asphyxia during antenatal care. These relationships were statistically significant (CI = 1.43, 3.62; CI = 1.30, 3.26 and CI = 2.09, 5.58 respectively). On the other hand, respondents who were aged ≤30 years, primiparous, who had less than tertiary education and those who had no asphyxiated child had higher rates of unsatisfactory knowledge compared to the comparison groups but the differences were not statistically significant [Table 4].

Discussion

The present study showed that more than half of the respondents surveyed received counseling about birth asphyxia during antenatal clinic visits. This may appear commendable, though still a far cry from the expected. However, it implies that close to half of the women who had facility-based antenatal care in this population, may not be expected to be familiar with or adopt appropriate preventive attitude with respect to birth asphyxia during their next pregnancies. This highlights how inadequacies in the health system may contribute to the perpetuation of some major causes of childhood morbidity and mortality as previously observed.[12]

It may appear that the observed rate of counseling about birth asphyxia was heavily influenced by the level of health care available where the respondents received antenatal care. While over four-fifth of respondents who attended antenatal clinics in the teaching hospital received counseling about birth asphyxia, only two-fifth of those who attended general hospitals (secondary levels of care) and a quarter of those who attended private antenatal clinics received counseling about antenatal clinics. Instructively, none of the attendees of primary health center antenatal clinics were counseled about birth asphyxia. This agrees with previous observation that a third of clients were displeased with health information made available to them during antenatal care at primary care level.[13] These

Table 3: Satisfactory knowledge among mothers distributed according to sites of antenatal care

Place of ANC[a]	Total	Overall assessment	Risk factors	Effects	Prevention
Teaching hospital	177	84 (47.5)	60 (33.9)	44 (24.9)	137 (77.4)
Private facilities	121	34 (28.1)	20 (16.5)	14 (11.6)	90 (74.4)
Public facilities[b]	56	20 (35.7)	0 (0.0)	8 (14.3)	30 (53.6)
Total	354	138 (38.9)	80 (22.6)	66 (18.6)	257 (72.6)

Figures in parentheses are percentages of the total in each row; [a]Antenatal care; [b]Other public health facilities except the teaching hospital

Table 4: Bivariate analysis of socio-demographic factors related to satisfactory knowledge about birth asphyxia

Factors		Satisfactory knowledge (n = 138)	Unsatisfactory knowledge (n = 216)	OR[a] (CI)[b]
Age	≤30 years	84 (38.5)	134 (61.5)	0.9 (0.60, 1.51)
	>30 years	54 (39.7)	82 (60.3)	
Parity	1	44 (34.1)	85 (65.9)	0.7 (0.45, 1.16)
	>1	94 (41.8)	131 (58.2)	
SEC[c]	Lower	66 (31.1)	146 (68.9)	2.3 (1.43–3.62)
	Others[d]	72 (50.7)	70 (49.3)	
Education	Tertiary	88 (39.8)	133 (60.2)	1.1 (0.69, 1.75)
	Others	50 (37.6)	83 (62.4)	
Counseled during ANC[e]	Yes	102 (51.0)	98 (49.0)	3.4 (2.09, 5.58)
	No	36 (23.4)	118 (76.6)	
Place of ANC[e]	TH[f]	84 (47.5)	93 (52.5)	2.1 (1.30, 3.26)
	Others	54 (30.5)	123 (69.5)	
Previous child with asphyxia	Yes	58 (45.7)	69 (54.3)	1.5 (0.97, 2.46)
	No	80 (35.2)	147 (64.8)	

Figures in parentheses are percentages of the total in each row. [a]Odds ratio; [b]Confidence interval; [c]Socio-economic classes; [d]Upper and middle socioeconomic classes; [e]Antenatal care; [f]Teaching hospital

findings exposed the lopsidedness in the quality of antenatal care available at the various levels of health care in the country. This inequity is related to the spread and quality of personnel as well as the scope of care available at such facilities.[14] While health care in the public sector is usually subsidized, and thus, attracts a large clientele, the private sector is expensive and thus, usually patronized by fewer and socio-economically advantaged clientele (unpublished data. These differences may influence the quality and intensity of health education received as part of antenatal care in public and private health facilities. The observations about the primary and secondary levels of care in the present survey are thought-provoking since these facilities are the expected first ports of call when seeking health care, including maternity services. Therefore, there is an urgent need to review the scope of antenatal care activities at the various levels of health care in the country and reiterate the prime position of health education with respect to, not just pregnancy, but also with respect to the complications which may arise during childbirth and may have serious impacts on the babies.

The survey demonstrated that the overall knowledge of the respondents about the risk factors and sequelae of birth asphyxia was poor. In the present survey, the respondents who attended the teaching hospital antenatal clinics had the best knowledge about birth asphyxia while the attendees of private antenatal clinics had the worst knowledge. It is glaring that there is a need to do more at all levels of care in both the public and private health sectors.

Although birth asphyxia is a common occurrence in Nigeria,[15] the impact of this important condition may be poorly appreciated by mothers. In a survey of mothers about infant hearing loss in Lagos, Nigeria, asphyxia was not identified as a major cause of infant hearing loss.[16] Such poor perception of the impact of birth asphyxia may be related to the dearth of health information about this condition. In addition, this dearth may arise when health facilities, including antenatal clinics, do not provide opportunities to educate expectant mothers about this cause of newborn morbidity and mortality. The implication is that, since most of the mothers could not associate birth asphyxia with serious childhood disorders like cerebral palsy, deafness or seizure disorders, they are not likely to appreciate any need to adopt appropriate preventive measures. Therefore, the impact of clinic-based preventive measures may be minimal. Similarly, with poor knowledge of the risk factors for birth asphyxia, the short-statured or the hypertensive pregnant woman is not likely to seek appropriate medical care that would ultimately prevent asphyxia in the baby. This is worsened by the fact that only a third of the respondents appreciated delivery outside orthodox health facilities as a risk factor for birth asphyxia. This might be responsible for the widespread practice of childbirth in traditional and spiritual birth homes[15] where skilled newborn resuscitation is nonexistent.

The survey also showed that counseling, as a form of health education, boosts knowledge about common health issues. Even among the attendees of teaching hospital antenatal clinics, respondents who did not receive counseling about birth asphyxia had significantly poorer knowledge about the condition. Therefore, every clinic session in the hospital should be used as an opportunity to provide health education for the clients. It is important to note the poor knowledge of respondents who attended private antenatal clinics about birth asphyxia. As most pregnant women in this part of the country utilize private maternity services,[17] it may be necessary to concentrate health education activities at such health facilities. The health personnel should have opportunities to be trained and retrained about important health issues and the methods of delivering client-oriented education programs. It may be useful to strictly allot specific periods to health education about complications of childbirth including birth asphyxia. The mode of delivery of education can be improved with simple, cheap audiovisual. Parent information pamphlets prepared in the local languages may also be distributed in public places like the market and religious houses.

In conclusion, the present survey showed that the antenatal clinics outside the teaching hospitals are not giving adequate health education about birth asphyxia. Therefore, most of the mothers surveyed have poor knowledge about the risk factors and sequelae of birth asphyxia and are less likely to adopt the necessary preventive measures even at the family level. The health system, including both the public and private sector, needs to improve the prevention of birth asphyxia by increasing the education of expectant mothers about this condition.

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