


# ORIGINAL ARTICLE

## Awareness of Nigerian Mothers on the Risk Factors, Prevention and Management of Seizures in Newborns

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## Abstract

### Objectives

The study aimed to assess the awareness of mothers on the risk factors, prevention, and management of seizures in newborns.

### Materials & Methods

This descriptive cross-sectional study was conducted on 359 mothers using simple random sampling. The data were collected using questionnaires that included general awareness, awareness of the causes, risk factors, prevention, and management. The data collected were analyzed using frequencies and percentages. Null hypotheses were tested using chi-square at 0.05 level of significance.

### Results

Two hundred seventy-four mothers (76.3%) had high awareness of seizures in newborns, thirty-four (9.5%) had average awareness, and fifty-one (14.2%) had low awareness. Two hundred and seventy-three mothers (76%) had high awareness of the risk factors, and eighty-six (24%) had low awareness, meaning that although some respondents had misconceptions, awareness of the risk factors and causes was good. Two hundred twenty-three (62.1%) respondents had high awareness of preventing seizures in newborns, while 136 (37.9%) had low awareness. The awareness of respondents on managing seizures in newborns is positive, as 291 (81.1%) had high awareness of managing seizures in newborns, while sixty-eight (18.9%) had low awareness. There was a significant relationship between age ( $p=0.000$ ), marital status ( $p=0.018$ ), level of education ( $p=0.000$ ), and awareness of risk factors of seizures in the newborn.

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## Conclusion

A high awareness of neonatal seizures was found among mothers because of their high educational level, although some still had some misconceptions. Improving maternal neonatal seizure awareness and appropriate educational interventions to correct misconceptions are needed.

**Keywords:** Awareness; Management, Prevention; Risk Factors; Seizures

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## Introduction

Neonatal seizure is one of the most common neurological diseases affecting newborns (1, 2) and is associated with a high risk of morbidity and mortality (2). Neonates are burdened with the highest risk of seizure (3) due to the developmental state of the neonatal brain that favors the excitatory response over the inhibitory response (4). Roshith and Prasad (2017) defined neonatal seizure as a paroxysmal alteration in neurological function, i.e., motor, behavior, and/or autonomic function (5).

Population-based studies have estimated that neonatal seizures occur 1-5 per 1000 live births (6). There is heterogeneity in the reported incidence of neonatal seizures (2, 7). Kuti et al. (2015) reported that out of 340 babies recruited, 16.7% had clinically identifiable seizures, and 27.3% died, contributing to 42.9% of the total mortality in the neonatal unit during the study period (8).

Seizures are life-threatening (9) with diverse etiology (2). Although the causes of neonatal seizures are diverse and sometimes unknown, the following have been implicated in accounting for most seizures: stroke or hemorrhage, infections, hypoxic-ischemic encephalopathy, cortical malformations, errors of metabolism (acute and

inborn), and genetic etiologies (10).

Seizures in neonates are usually short and subtle, making them difficult to diagnose (12). It can present subtle features such as deviation of the eye to one side, staring, feet pedaling, smacking lips, apnea, and tongue movements, especially in preterm infants. More typical presentations are clonic (rhythmical jerking) or tonic (stiffening) motions of the arms or legs (11). In addition, symptoms of neonatal seizures may mimic regular movements and behaviors seen in healthy babies. However, prolonged and untreated seizures can cause permanent damage to the brain, and the neonate may develop epilepsy, cerebral palsy, mental retardation, and other neurological disorders later in life (10). Therefore, neonatal seizures should receive immediate and specialized care.

According to Chiabi et al., parents are often the first to be implicated in home management because neonatal seizure occurs at home (13). According to Akpan and Ijezie, children spend most of their time with their mothers (14). Therefore, to a large extent, their practices at home could determine the outcome (14). Seizures are often dramatic, leading to erroneous interpretations, fright, anxiety, and inappropriate practices by the parents (14, 15).

Despite some studies showing good parental knowledge of neonatal seizures (15), wrong beliefs and practices among parents still abound (14). For example, in studies exploring parents' knowledge and practice of febrile convulsion, only half of the participants agreed that convulsion could be caused by fever. The remaining half attributed the cause to witchcraft and soreness in the stomach (13, 15). Concerning practice, the common misconceptions seen in mothers include treatment with red oil, insertion of a spoon into the mouth, and instillation of onions juice into the eyes of the convulsing child (14). These studies have suggested a lack of awareness of management practices among mothers.

Therefore, this study aims to assess mothers' awareness of neonatal seizure risk, prevention, and management. Understanding neonatal seizure awareness among mothers will help identify the population's knowledge gap, culminating in the appropriate intervention, thereby preventing infant morbidity and mortality.

## **Materials & Methods**

This descriptive cross-sectional study was conducted in 2019 to investigate the awareness of neonatal seizure, its risk factors and causes, prevention, and management among mothers in Ogbomoso North Local Government Area, Oyo State, Nigeria. Data were collected from 359 respondents through simple random sampling.

### **Ethical issues**

Ethical approval was obtained from the ethical committee of Ogbomoso Local Government, Oyo State, Nigeria. Participants gave oral consent, and confidentiality was duly maintained.

## **Instrument**

A structured questionnaire containing thirty-four questions in English was the instrument for data collection. The questionnaire consisted of five sections, including participant's demography (five items), neonatal seizure awareness (five items), risk factors awareness (ten items), prevention awareness (seven items), and management awareness (seven items). All questions were closed-ended. A pilot study was conducted involving random sampling of 10% of the population in another area with similar characteristics to the study area. The questionnaire had a Cronbach's alpha coefficient of 0.825, which ensured instrument's reliability.

### **Data Analysis**

Descriptive statistics were conducted for all study measures using Statistical Package for Social Sciences (SPSS) version 21. The collected data were subjected to descriptive statistics to generate their frequency and percentage and were analyzed using chi-square at a 0.05 level of significance.

## **Results**

### **The socio-demographic characteristics of respondents**

Table 1 shows the socio-demographic data of the participants. The result showed that the majority (52.6%) of the participants were between thirty to thirty-nine years, while 95.3% were in marital union. Most participants have completed tertiary education; 223 (62.1%) or 306 (85.2%) are Christians. Also, 221 participants were civil servants (61.6%).

### **Mother's awareness of childbearing age on seizures in newborns.**

Table 2 gives information about the participants' awareness of neonatal seizures. All participants reported that they had heard about seizures in

newborns, while a little over three-quarters of the participants (n=274, 76.3%) said they could not recognize seizures in newborns. Almost all participants (n=325, 90.5%) accepted that seizure is a medical condition characterized by uncontrolled electrical activities in the brain. Additionally, 325 participants (90.5%) recognized that rhythmic jerking movement signifies seizure in the newborn. However, more than half (n=189, 52.6%) of the respondents heard about seizures from friends, while eighty-five (23.7%) heard about them from television and lectures/talks.

**Awareness of women of childbearing age on risk factors of seizures in newborns.**

Table 3 shows the participants' awareness of risk factors for neonatal seizures. According to the findings, respondents identified the risk factors of neonatal seizure to be the following: 1) A reduction in oxygen supply and blood flow to vital organs, especially the brain of the newborn (n=325, 90.5%), 2) Infection in the newborn (100%), 3) Fetal withdrawal syndrome caused by maternal drug use during pregnancy (n=307, 85.5%), 4) Metabolic disorders (n=308, 85.8%), 5) Hemorrhage (n=308, 85.8%), 6) Maternal health problems during pregnancy (e.g., diabetes, hypertension) (n=291, 81.1%), 7) Fetal distress during labor (n=239, 66.6%), and 8) Genetic disorder (n=307, 84.9%). However, the majority (n=22, 62.1%) disagreed that an evil spirit could cause seizures, while only a few (n=85, 13.7) disagreed that drinking cold water during pregnancy could cause seizures in the newborn.

**Mother's awareness of childbearing age on preventing seizures in newborns.**

Table 4 shows that the majority (n=308, 85.8%) agreed that attending antenatal classes in health facilities can help prevent seizures in newborns.

Furthermore, most of the participants named avoiding neonatal infections (n=291, 81.1%), avoiding alcohol during pregnancy (n=274, 76.3%), and some named delivery through cesarean section when vaginal delivery is difficult (n=172, 47.9%) as ways through which neonatal seizure can be prevented. However, more than half (n=189, 52.6%) suggested that a concoction during pregnancy can prevent seizures when the baby is born. In comparison, only a few (n=137, 38.1%) disagreed that neonatal seizures could not be prevented. A significant relationship was also found between the awareness of newborns' seizure risk factors and its prevention (p=.000).

**Mother's awareness of childbearing age on managing seizures in newborns.**

Table 5 illustrates the following: the majority (n=325, 90.5%) agreed that removing objects around neonates during a seizure can protect them from sustaining an injury; 205 (56.1%) disagreed that putting a spoon in the mouth of the newborn prevents death; 274 (76.3%) disagreed that seizures could be managed by giving the newborn cow's urine concoction to drink; 239 (66.6%) disagreed that burning the newborn's extremities in a fire can stop the seizure; 188 (52.3%) disagreed that herbalists are good at managing seizure in newborns; 274 (86.3%) agreed that taking the newborns to the hospital is better than treating them at home when an infant comes down with seizures. The majority (n=257, 71.6%) agreed that seizures in a newborn could lead to death if not properly managed.

**Hypothesis Testing**

Table 6 shows a significant relationship between the awareness of risk factors of seizures in newborns and age (p=.000), marital status (p=.018), and educational status (p=0.000). However, religion

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was not significantly related to their awareness of the risk factors of seizures ( $p=0.064$ ).

**Table 1.** Socio-demographic characteristics of respondents (n=359)

Variables	Frequency (N=359)	Percent (%)
<b>Age</b>		
20-29	17	4.7
30-39	189	52.6
40 & above	153	42.6
<b>Marital status</b>		
Single	17	4.7
Married	342	95.3
<b>Level of education</b>		
Primary	34	9.5
Secondary	102	28.4
Graduate/Post graduate	223	62.1
<b>Religion</b>		
Christianity	306	85.2
Islam	53	14.8
<b>Occupation</b>		
Civil servant	221	61.6
Self- employed	35	9.7
Unemployed	103	28.7

**Table 2.** Awareness of women of child-bearing age on seizure disorders in newborns (n=359).

Variable	Categories	Frequency (N=359)	Percent
Awareness of neonatal seizure	Yes	359	100.0
Can recognize seizure in newborns	Yes	85	23.7
	No	274	76.3
Seizure is a medical condition characterized by uncontrolled electrical activities in the brain	Yes	325	90.5
	No	34	9.5
Rhythmic jerking movements is a sign of seizure in newborn	Yes	325	90.5
	No	34	9.5
Where did you hear about neonatal seizure	Friend	189	52.6
	Television	85	23.7
	Lecture/ Talk	85	23.7

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**Table 3.** Awareness about risk factors of neonatal seizures (n=359).

Variables	Strongly Agree	Agree	Strongly disagree	Disagree
Neonatal seizure is caused by reduction in oxygen supply and blood flow to vital organs especially the brain of the newborn.	68(18.9%)	257(71.6%)	34(9.5%)	0(0%)
Infection in newborn can lead to seizure	137A(38.2%)	222(61.8%)	0(0%)	0(0%)
Fetal withdrawal syndrome which is caused by maternal substance use during pregnancy can lead to seizure.	120(33.4%)	187(52.1%)	17(4.7%)	35(9.7%)
Metabolic disorders can cause seizure in newborns	85(23.7%)	223(62.1%)	34(9.5%)	17(4.7%)
Haemorrhage (bleeding) can lead to seizure in newborns	205(57.1%)	103(28.7%)	34(9.5%)	17(4.7%)
Maternal health problems during pregnancy (e.g diabetes, hypertension) can lead to seizure in newborn	137(38.2%)	154(42.9%)	34(9.5%)	34(9.5%)
Fetal distress during labour can cause seizure in the newborn	51(14.2%)	188(52.4%)	103(28.7%)	17(4.7%)
It can be caused by evil spirit	102(28.4%)	34(9.5%)	205(57.1%)	18(5%)
Drinking of cold-water during pregnancy can cause seizure in the newborn	85(23.7%)	189(52.6)	34(9.5%)	51(14.2%)
Neonatal seizure can be as a result of genetic disorder	85(23.1%)	222(61.8%)	35(9.7%)	17(4.7%)

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**Table 4.** Awareness about prevention of neonatal seizures (n=359).

Variables	Strongly Agree (%)	Agree (%)	Strongly disagree (%)	Disagree (%)
Attending antenatal classes in health facilities can help prevent seizure in newborn	223(62.1%)	85(23.7%)	51(14.2%)	0(0%)
Avoidance of neonatal infections can help prevent seizure in the newborn	86(24%)	205(57.1%)	51(14.2%)	17(4.7%)
Avoidance of alcohol during pregnancy can prevent seizure in newborn	172(47.9%)	102(28.4%)	68(18.9%)	17(4.7%)
Delivery through caesarean section when there is difficulty in vaginal delivery can prevent the newborn from developing seizure	103(28.7%)	69(19.2%)	170(47.4%)	17(4.7%)
Delivery should be taken by a qualified personnel in a health facility	155(43.2%)	187(52.1%)	17(4.7%)	0(0%)
Taking some concoction during pregnancy can prevent seizure when the baby is born	154(42.9%)	35(9.7%)	102(28.4%)	68(18.9%)
Neonatal seizure cannot be prevented at all	17(4.7%)	120(33.4%)	103(28.7%)	119(33.1%)

**Table 5.** Awareness of women of child-bearing age on management of seizure disorders in newborn (n=359).

Variables	Strongly Agree	Agree	Strongly Disagree	Disagree
Removing objects around the neonate during seizure can protect him/her from sustaining injury	171(47.6%)	154(42.9%)	17(4.7%)	17(4.7%)
Putting spoon in the mouth of newborn prevents death	86(24%)	68(18.9%)	34(9.5%)	171(47.6%)
It can be managed by giving the newborn cow's urine concoction to drink	34(9.5%)	51(14.2%)	172(47.9%)	102(28.4%)
Burning the newborn's extremities in fire can stop the seizure	103(28.7%)	17(4.7%)	102(28.4%)	137(38.2%)
Herbalist are good at managing seizure in newborns	86(24%)	85(23.7%)	68(18.9%)	120(33.4%)
Taking the newborn to the hospital is better than treating him/her at home	189(52.6%)	85(23.7%)	68(18.9%)	17(4.7%)
It can lead to death if not properly managed	172(47.9%)	85(23.7%)	0(0%)	102(28.4%)



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**Table 6.** Relationship between selected Sociodemographic Characteristics of the Respondents and the Awareness of Risk Factors of Seizure Disorders in Newborn (n=359).

Variables		Awareness of risk factors of seizure in new born		x <sup>2</sup>	df	P
		High awareness	Low awareness			
Age	20-29	17(100%)	0(0%)	62.222	2	<b>0.000*</b>
	30-39	171(90.5%)	18(9.5%)			
	40 & above	85(55.6%)	68(44.4%)			
Marital status	Single	17(100%)	0(0%)	5.622	1	<b>0.018*</b>
	Married	256(74.9%)	86(25.1%)			
Level of education	Primary	34(100%)	0(0%)	15.685	2	<b>0.000*</b>
	Secondary	68(66.7%)	34(33.3%)			
	Graduate/Post graduate	171(76.7%)	52(23.3%)			
Religion	Christianity	238(77.8%)	68(22.2%)	3.418	1	0.064
	Islam	35(66%)	18(34%)			

x<sup>2</sup>=Pearson chi square value, df=degree of freedom, P =Probability value, \*-significant. at p<.05

### Discussion

The awareness of seizures in the newborn was high (n=274, 76%); thirty-four mothers (9%) had average awareness, while fifty-one (14%) had low awareness, suggesting that the majority of the respondents were aware of neonatal seizures. Their source of information included friends, television, or lectures/talks. The mothers could define seizures and recognize them in newborns, which might result from their high education status, exposing them to information about seizures in newborns. These findings are consistent with the findings of Macit et al., in which the majority (88%) of them have heard or read about epilepsy (16). Furthermore, in a study by Daoud et al., a large number of the respondents (88%) have read or knew about epilepsy, which is in line with the present study's findings. In the same study, the majority had an education of more than 12 years

(82%, n=13,181), 14% (n=2238) had an education of 7-12 years, and 4% (n=625) had an education of fewer than six years (17). In addition, 274 (76.3%) could not recognize a seizure even though they had heard of it; this might be because their information sources are from television, radio, and friends, and they have not witnessed it. This finding is similar to a study in Yaounde, in which almost all the respondents had heard about the seizure, but over 54% of them could not recognize it (13).

Awareness of respondents on the risk factors and causes is positive; 273 (76%) had high awareness of risk factors of seizures, while eighty-six (24%) had low awareness, which is in contrast with the findings by Frank- Briggs et al. in which the majority (n=263, 93.93%) had low awareness of the causes of the disorder (18) and only 35.8% were aware of the causes of epilepsy in a study carried out in rural Cameroon (19). The difference



observed can be due to the high level of education of respondents in this study. A significant relationship was observed between the educational status of respondents and their awareness of risk factors for seizures in newborns ( $p=0.000$ ). However, some of the participants ( $n=136$ , 37.9%) expressed that evil spirits could cause neonatal seizures, and a similar finding was recorded in other studies (20, 21). The majority ( $n=274$ , 76.3%) expressed that drinking cold water during pregnancy can cause seizures in the newborn, suggesting that some myths were found among the respondents, highlighting the need for more education to improve their knowledge about the neonatal seizure. Other studies have emphasized this issue (22, 23).

Concerning the awareness of the women on preventing seizures in newborns, the present study reveals that the majority ( $n=223$ , 62.1%) of the respondents had high awareness of preventing seizures in newborns. In comparison, 136 (37.9%) had low awareness, as many of them affirmed that attending antenatal classes in health facilities, avoidance of neonatal infections, avoidance of alcohol during pregnancy and delivery by qualified health personnel are preventive measures that agree with the preventive measures stated by WHO (1). However, 187 (52.1%) and 170 (47.3%) were unaware that delivery through cesarean section when vaginal delivery is complex and avoiding concoctions in pregnancy are preventive measures. Many ( $n=222$ , 61.8%) thought that neonatal seizures could not be prevented at all; this might be attributed to the content of information they got about neonatal seizures, as their sources are mainly television, radio, and friends.

The awareness of respondents on managing seizures in newborns is positive, as 291 (81.1%) of the respondents had high awareness of the

management of seizures in newborns. However, sixty-eight (18.9%) had low awareness. They expressed their management awareness by affirming to remove objects around the neonate during the seizure ( $n=325$ , 90.5%) and taking the baby to the hospital ( $n=274$ , 76.3%), which is in contrast with the findings of Chiabi et al. (13), in which only 20.9% agreed to take their child to the hospital in case of seizure. However, few had misconceptions about managing seizures, such as putting a spoon in the mouth of the newborn ( $n=154$ , 42.9%), giving the newborn cow's urine concoction to drink ( $n=85$ , 23.7%), burning the newborn's extremities in fire ( $n=130$ , 33.4%) and herbalists being good at managing seizure ( $n=171$ , 47.7%), which suggest a mild deficit in their awareness about managing neonatal seizures. This finding differs from the findings of Chiabi et al. (13), in which the majority of the parents (74%) agreed to commence treatment themselves by making the child inhale a strong odor (alcohol, smoke, pepper, whiskey, or onions) (13.4%), or putting object or finger in the child's mouth (8.7%). These misconceptions are wrong and harmful to health. Therefore, it is essential to address them through appropriate educational interventions (22, 24, 25).

### **In Conclusion**

The findings revealed a high awareness of neonatal seizures among mothers, and the sources of awareness are mostly friends, television, and radio. The result might be due to the high educational level of the respondents, which might be different among mothers of low educational levels. Therefore, there is a need for improved maternal neonatal seizure awareness through quality education during antenatal, postnatal, and

child welfare visits, especially among illiterates. Similarly, although most respondents had high awareness, some still had misconceptions. Thus, health promotion walks, television shows, and radio talks on neonatal seizures can be organized by nurses to correct misconceptions about neonatal seizures.

Further studies should be carried out on preventive practices of seizures in newborns among women of childbearing age. Similarly, factors associated with the prevalence of seizures in newborns in Nigeria could also be explored using a large sample size.

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### Author's Contribution

Oluwatosin Comfort Olarinde designed the study. Attah Cynthia Adaku, Oluwadamilare Akingbade, and Bayo Lawal Ajibade interpreted and drafted the manuscript. All of the authors read and approved the final manuscript.

### Conflict of Interest

The authors have no conflicts of interest to declare relevant to this article's content.

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