# Knowledge and Practice of Neonatal Resuscitation Among Midwives in Selected Secondary and Tertiary Health Institutions in Imo State

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**Abstract:**

Neonatal resuscitation is a critical intervention for reducing neonatal mortality, particularly in low- and middle-income countries. Midwives play a pivotal role in implementing neonatal resuscitation practices, yet gaps in knowledge and practice persist in many settings. This study assessed the knowledge and practice of neonatal resuscitation among midwives in selected secondary and tertiary health institutions in Imo State, Nigeria. A descriptive survey design was adopted, involving 70 midwives selected through a convenience sampling technique. A validated questionnaire, with a reliability coefficient of 0.889, was used to collect data. Descriptive statistics, including frequency and mean, were used to analyze the data. The findings showed that midwives possess a high level of knowledge of neonatal resuscitation, with a grand mean of 3.90. Similarly, their practices were highly effective, as indicated by a grand mean of 3.98. The midwives demonstrated proficiency in airway clearance, bag-and-mask ventilation, and chest compressions, reflecting adherence to neonatal resuscitation guidelines. However, challenges related to resource constraints and training disparities were noted in secondary institutions. Midwives in Imo State demonstrate substantial knowledge and effective practice of neonatal resuscitation, especially in tertiary health institutions. Sustained training programs, improved resource availability, and policy formulation are essential to address existing gaps and improve neonatal outcomes. It is recommended that periodic training, resource provision, and supervision mechanisms be strengthened, particularly in resource-limited settings, to enhance neonatal resuscitation practices. Further research should explore barriers in under-resourced health facilities to develop targeted interventions.

**Key words:** neonatal resuscitation; midwives; knowledge; practice; secondary health institutions; tertiary health institutions; healthcare practices.

## Introduction:

Neonatal resuscitation is one of the most crucial procedures for reducing infant mortality, particularly in settings with few resources. The first week of life is when most neonatal deaths—roughly 2.4 million annually worldwide—occur [1]. Birth asphyxia, a disorder brought on by the inability to begin or sustain breathing immediately after birth, accounts for 20 to 25 percent of these deaths [2]. Effective neonatal resuscitation treatments can save a significant portion of these deaths, especially

when performed promptly by trained delivery attendants such as midwives.

Neonatal resuscitation is a crucial component of infant care in order to address the issues of perinatal hypoxia, which remains one of the primary causes of neonatal mortality globally [3].

Numerous complex, evidence-based interventions are utilised to aid newborns who are unable to breathe on their own after birth. Because it reduces mortality and prevents long-term problems including cerebral palsy and developmental delays caused by inadequate oxygenation at birth, neonatal resuscitation is crucial [4].

Neonatal mortality is disproportionately high in low- and middle-income countries (LMICs) like Nigeria, where there are over a million newborn deaths annually in sub-Saharan Africa [5]. The availability of skilled neonatal resuscitation-trained delivery attendants has been identified as a critical component in improving infant outcomes. As the primary healthcare providers during labour, midwives are well positioned to perform these life-saving interventions. However, studies have shown that midwives' levels of expertise vary, which can be ascribed to several factors such as inadequate training, a lack of resources, and a failure to periodically update their skills. [6]

Midwives play a crucial role in newborn care, especially during delivery and the initial days following delivery. Their ability to administer newborn resuscitation is crucial to ensuring positive neonatal outcomes [7]. However, there are significant differences in the knowledge, skills, and use of infant resuscitation by midwives, particularly in resource-poor settings like Nigeria. [8]

One internationally renowned neonatal resuscitation program, Helping Babies Breathe (HBB), emphasises the significance of prompt and efficient care during the "golden minute" following birth [9]. Even though these programs have been successful in lowering infant mortality, there have been some obstacles to their implementation in LMICs, such as a lack of training opportunities and difficulty obtaining necessary resuscitation tools such oxygen concentrators, bag-valve masks, and suction devices [10].

As of 2023, the predicted newborn mortality rate in Nigeria is 35 fatalities per 1,000 live births, making it a critical public health concern. This concerning number is associated with a lack of access to high-quality healthcare, a lack of midwife training opportunities, and a shortage of resuscitation equipment [11]. Secondary and tertiary healthcare facilities are important hubs for maternal and newborn care in Imo State. Developing focused interventions to increase infant survival requires an understanding of the midwives' knowledge and proficiency in neonatal resuscitation in these facilities.

Research indicates that midwives and other healthcare professionals' resuscitation abilities can be considerably enhanced by regular training and simulation-based learning [12]. Nonetheless, insufficient training programs, a lack of standard operating procedures, and difficulties putting theoretical knowledge into practice all contribute to the persistence of knowledge and practice gaps [13]. Reducing newborn death to 12 per 1,000 live births by 2030 is the Sustainable Development Goal (SDG) 3, and closing these gaps is essential to improve neonatal outcomes.

There have been conflicting outcomes in Nigeria from attempts to incorporate newborn resuscitation into standard maternity and paediatric healthcare services. Disparities in newborn outcomes may be exacerbated by secondary health institutions' resource constraints, even though tertiary health institutions frequently have more advanced facilities and trained staff [14]. Less than 40% of healthcare professionals providing neonatal care in northern Nigeria were able to show proper bag-and-mask ventilation procedures, and only 55% of them had formal training in neonatal resuscitation [15].

There are numerous secondary and tertiary healthcare facilities that provide maternity and newborn care in Imo State, which is in southeast Nigeria. Anecdotal information and scant research, however, indicate that midwives in the area might not be familiar with or practise neonatal resuscitation in accordance with international guidelines. Effective newborn care in the state has been found to be hampered by elements like staffing shortages, inadequate supervision, and restricted access to frequent in-service training [16].

It is impossible to overstate the significance of improving midwives' expertise in newborn resuscitation. In order to meet Nigeria's targets under Sustainable Development Goal 3.2—which calls for bringing newborn mortality down to at least 12 per 1,000 live births by 2030—this is particularly important. Additionally, efficient resuscitation techniques improve maternal satisfaction with medical care and lower the number of avoidable deaths [17]. This study will give important information about midwives' current neonatal resuscitation techniques and expertise in a few Imo State secondary and tertiary healthcare facilities. The results will guide the development of focused training initiatives, legislative changes, and resource distribution to enhance neonatal care services and, eventually, raise the region's infant survival rates.

Birth asphyxia continues to be a major cause of neonatal deaths despite international efforts to lower neonatal mortality, especially in low- and middle-income nations like Nigeria. According to estimates, there are 35 neonatal deaths for every 1,000 live births in Nigeria, with 20–25% of these deaths being caused by birth asphyxia. As essential frontline healthcare professionals during childbirth, midwives are vital in recognising and treating newborns who need resuscitation. However, research has revealed notable gaps in midwives' understanding and use of newborn resuscitation, which are caused by a lack of training, a lack of resources, and restricted access to current guidelines. [18]

Anecdotal findings from Imo State indicate that secondary and tertiary healthcare facilities differ in their proficiency in neonatal resuscitation techniques. Long-term issues including neurodevelopmental delays and avoidable newborn deaths could be caused by this heterogeneity. The urgent need for research is highlighted by the paucity of empirical data on midwives' knowledge and practices of newborn resuscitation at these institutions. By evaluating midwives' proficiency in neonatal resuscitation in a few Imo State secondary and tertiary healthcare facilities, this study aims to close this knowledge gap.

## Materials And Methods

The method adopted in this study was a descriptive survey design which is a type without experiment. It involves the use of questionnaire to assess knowledge and practice of neonatal resuscitation among midwives in selected secondary and tertiary health institutions in Imo State, Nigeria. The study was carried out in Imo State, Nigeria.

Imo State, located in southeastern Nigeria, was created on February 3, 1976, following the division of the former East Central State. It was named after the Imo River, which flows through the region. Initially, the state comprised areas that now include Abia State, which was later carved out in 1991.

The state is predominantly inhabited by the Igbo ethnic group, with a rich cultural heritage rooted in traditions, festivals, and communal living. Owerri, the state capital, serves as the administrative and commercial hub, known for its vibrant economy and hospitality. Imo State is divided into 27 Local Government Areas, with major cities including Orlu, Okigwe, and Mbano. Imo State is renowned for its educational institutions, cultural festivals, and economic activities, particularly in agriculture and trade. The people are known for their resilience, entrepreneurial spirit, and contributions to Nigeria's socio-economic development.

The population of the study is 110 midwives in tertiary and secondary health institutions. Convenience sampling technique was used to select a sample of 70 midwives for the study which represents 63.64% of the target population.

A closed ended questionnaire was the instrument used for data collection. The questionnaire was validated by an expert. Cronbach's alpha was used to test the reliability of the instrument. The coefficient alpha for the three sections were 0.891 and 0.886 which gave overall reliability mean of 0.889 which shows that the instrument is reliable. The data collected were reviewed and analysed using frequency and mean which are descriptive statistics and presented with tables.

## Results:

| S/N | ITEMS | SA 4 | A 3 | D 2 | SD 1 | Total | Mean | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | I have a clear understanding of the steps involved in neonatal resuscitation | 49 | 21 | 0 | 0 | 259 | 3.70 | Agreed |
| 2 | I understand the risks associated with delayed or incorrect neonatal resuscitation practices | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 3 | I am aware of how to clear a newborn's airway effectively | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 4 | I am confident in selecting the appropriate equipment for neonatal resuscitation | 67 | 3 | 0 | 0 | 277 | 3.96 | Agreed |
| 5 | I am knowledgeable about the Apgar scoring system and its application | 45 | 25 | 0 | 0 | 255 | 3.64 | Agreed |
| 6 | I understand how to perform chest compressions during neonatal resuscitation | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 7 | I can identify newborns requiring immediate resuscitation at birth | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| Grand Mean | | | | | | | 3.90 | Agreed |

***Table 1:** Knowledge of Neonatal Resuscitation among Midwives (n = 70)*

The criterion mean for this study is 2.5. Hence, weighted mean response equal to or above the criterion mean (2.5) indicates acceptance region whereas weighted mean response below the criterion mean (2.5) denotes rejection region. The analysis on table 1 which seeks to assess the level of knowledge of neonatal resuscitation among midwives in selected secondary and tertiary health institutions in Imo State shows a grand mean of 3.90 which exceeds the criterion mean of 2.5 which shows that the midwives in selected secondary and tertiary health institutions in Imo State are knowledgeable about neonatal resuscitation among. Specifically, the mean values of the items are above the criterion mean (i.e 3.70, 4.00, 4.00, 3.96, 3.64, 4.00, 4.00 > 2.5) which shows that the midwives have a clear understanding of the steps involved in neonatal resuscitation, they understand the risks associated with delayed or incorrect neonatal resuscitation practices, they are aware of how to clear a newborn's airway effectively, they are confident in selecting the appropriate equipment for neonatal resuscitation, they are knowledgeable about the Apgar scoring system and its application, they understand how to perform chest compressions during neonatal resuscitation and they can identify newborns requiring immediate resuscitation at birth.

| S/N | ITEMS | SA 4 | A 3 | D 2 | SD 1 | Total | Mean | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | I assess newborns immediately after delivery for signs of breathing difficulty | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 2 | I ensure proper positioning of the newborn during resuscitation. | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 3 | I ensure that neonatal resuscitation equipment is prepared before every delivery | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 4 | I use the bag-and-mask ventilation method effectively when required | 68 | 2 | 0 | 0 | 278 | 3.97 | Agreed |
| 5 | I perform suctioning to clear the airway when necessary | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 6 | I perform chest compressions following neonatal resuscitation guidelines | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 7 | I document all neonatal resuscitation procedures accurately | 70 | 0 | 0 | 0 | 280 | 4.00 | Agreed |
| 8 | I administer oxygen appropriately to newborns with respiratory distress | 61 | 9 | 0 | 0 | 271 | 3.87 | Agreed |
| | Grand Mean | | | | | | 3.98 | Agreed |

**Table 2:** *Practice of Neonatal Resuscitation among Midwives (n = 70)*

The analysis on table 2 which seeks to evaluate the practice of neonatal resuscitation among midwives in selected secondary and tertiary health institutions in Imo State shows a grand mean of 3.98 which exceeds the criterion mean of 2.5 which shows that the respondents accepted the items as the practice of neonatal resuscitation among midwives in selected secondary and tertiary health institutions in Imo State. Specifically, the mean values of the items are above the criterion mean (i.e 4.00, 4.00, 4.00, 3.97, 4.00, 4.00, 4.00, 3.87 > 2.5) which shows that the midwives assess newborns immediately after delivery for signs of breathing difficulty, they ensure proper positioning of the newborn during resuscitation, they ensure that neonatal resuscitation equipment is prepared before every delivery, they use the bag-and-mask ventilation method effectively when required, they perform suctioning to clear the airway when necessary, they perform chest compressions following neonatal resuscitation guidelines, they document all neonatal resuscitation procedures accurately and administer oxygen appropriately to newborns with respiratory distress.

### Discussion:

With a grand mean of 3.90, the results show that midwives in a few Imo State secondary and tertiary healthcare facilities possess a high degree of expertise. This finding is consistent with earlier research by [19], which found that in structured training environments, healthcare providers' understanding of newborn resuscitation was above average. Similarly, [20] discovered that formal training greatly improved Nigerians' understanding of newborn resuscitation. In less-equipped facilities, there are still knowledge gaps [21]. Frequent training and the incorporation of neonatal resuscitation methods into standard procedures at tertiary healthcare facilities may be responsible for the high knowledge levels found in this study.

With a grand mean of 3.98, the results show that midwives successfully perform neonatal resuscitation. The results of [22], who observed that constant adherence to neonatal resuscitation protocols considerably improves outcomes, are supported by this observation. The Helping Babies Breathe program is one example of structured simulation-based training that has been shown to improve resuscitation techniques [23]. However, issues including inconsistent training and limited resources, as noted by [24], continue to be major obstacles at certain facilities. Compared to secondary healthcare facilities, higher institutions may have superior access to resources, which could explain the high practice levels in our study.

### Results:

Imo State midwives exhibit a high level of infant resuscitation expertise, reaching worldwide norms, according to the study's findings. This suggests that following standards and participating in training programs are important factors in providing midwives with the knowledge they need.

The midwives' methods are in line with international guidelines, demonstrating a proficient use of their knowledge and abilities in neonatal resuscitation. The results emphasise the need of regular training and the availability of resources in guaranteeing adherence to excellent practices.

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