

# Nurses' perceptions of quality within the neonatal continuum of care: A qualitative approach using Donabedian's Conceptual Framework

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Research article

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# Abstract

**Background** Over the last two decades, globally, the number of neonatal deaths declined from 5.0 million in 1990 to 2.5 million in 2018. The residual neonatal mortality rate is seen as problematic and indicative of possible poor services or failings in the provision of quality care to neonates. The aim of this study was to analyse nurses' perception related to the quality of the neonatal continuum of care, using Donabedian model as an evaluative framework.

**Methods** A qualitative study design was utilised. Primary data was collected via semi-structured interviews from a purposive sample of nurses (n = 21), observations and document analysis. Thematic analysis was used to analyse data.

**Results** Two categories of criteria relating to structure and process were identified by nurses. Structure criteria included Human resources and resources; and process criteria included technical quality, interpersonal development and nurse-patient relationship.

**Conclusion** To ensure quality care, a variety of infrastructure, an adequate supply of equipment, supplies and an adequate staff capacity that are trained and skilled healthcare professionals are required.

## Background

Newborns, especially those born prematurely and sick at birth, are vulnerable beings with an immature immune system, placing them at considerable risk (1). In addition to neonates being vulnerable beings, evidence from varied sources including UNICEF suggests that poor quality of newborn care during pregnancy, childbirth and in the postnatal period significantly contributes to the annual estimated 2.6 million stillbirths and 2.8 million newborn deaths globally (2). In South Africa, the current levels of neonatal mortality fall within the Sustainable Development Goals (SDG) target of 12 per 1000 live births (3). The neonatal mortality rate within the first week of life is 81%, and therefore, neonatal mortality remains a critical challenge (4). The leading causes of neonatal death are avoidable and include complications of prematurity (47.9%); intrapartum-related events, mainly intrauterine hypoxia (24.3%); and infections (11.6%) (4). Over the last two decades, globally, the number of neonatal deaths declined from 5.0 million in 1990 to 2.5 million in 2018 (3). Even with this apparent decrease, the residual mortality rate is seen as problematic and indicative of possible poor services or failings in the provision of quality care to neonates. However, despite recent achievements to reduce child mortality, questions continue to be posed about the quality of care offered.

Data was collected on facility infrastructure as well as processes of routine and primary emergency obstetric care in order to assess quality and estimate the association of facility quality with neonatal mortality in Malawi (5). Results showed that newborn mortality rate of 28 per 1,000 births at low-quality facilities and of 5 per 1,000 births at the top 25% of facilities. These and other similar studies show that poor quality of delivery facilities is associated with a higher risk of newborn mortality. In support of this, the potential gain of addressing quality of care globally using country-level antenatal, childbirth and

postnatal care interventions was systematically quantified (6). In the study, they created deterministic models to project health outcomes if quality care was addressed in low- and middle-income countries (LIMCs). Their findings showed that if high-quality health systems could ensure that women attended at least four antenatal visits, and delivered within a healthcare facility, there would be a decrease in neonatal deaths by 28% (670 000) and stillbirths by 22% (520 000) compared to a scenario without any change or improvement in the quality of care. Furthermore, identified a combination of structure and process-related factors as contributing to the quality of care, which in turn directly impacts continuum of care outcomes. What is notable too, is that fact that many of the identified challenges are modifiable (7).

Registered nurses, by virtue of their proximal and continuous involvement across the different aspects of the continuum of care, represent an important group of healthcare professionals, whose involvement and perceptions could meaningfully impact the outcomes of neonates. Related empirical work showed that clinically competent nurses, collaborative working relationships, autonomous nursing practise, adequate staffing, control over nursing practise, managerial support and patient-centred culture had a noteworthy influence on the quality nursing care (8).

Informed by these realisations, the current paper reports on a study whose aim was to analyse nurses' perception related to the quality of the neonatal continuum of care, using the Donabedian model as a conceptual framework. The model is frequently used in research on measures of healthcare quality and includes the three dimensions of the structure, process, and outcome (9).

## **Methods**

### **Research design**

A qualitative design was adopted in this exploratory, descriptive study to fulfil the aim of the study, which was to analyse nurses' perception related to the quality of the neonatal continuum of care.

### **Study Setting And Population**

A tertiary hospital and Community Health Centre with outpatient units for neonates, neonatal units and maternity facilities based in the eThekweni District, KwaZulu-Natal, South Africa were the research settings used to collect data.

A purposive sample (n = 21) of registered nurses who are involved in the care of the neonate was selected. Characteristics included both specialised and non-specialised registered nurses and who were working with neonates. The purposive selection was based on the participant's willingness, knowledge and experience related to neonatal care.

### **Data Collection**

Primary data was collected by the primary researcher through semi-structured interviews, each lasting a maximum of 45 minutes. Data was collected until saturation of data from twenty-one (n = 21) semi-structured interviews were achieved. The data collection instrument had two specific sections that focused on the demographic data of participants and predetermined questions used to conduct the semi-structured interviews respectively as shown in Table 1 below.

Table 1  
Schedule for participants

Schedule
<ul style="list-style-type: none"><li>- Describe your journey to becoming a registered nurse.</li><li>- Describe the unit you are currently working in and your role as a registered nurse.</li><li>- Describe the capacity of the unit</li><li>- What form of capacity development does the hospital/ clinic have to meet requirements?</li><li>- What do you understand by neonatal quality care?</li><li>- Are there any challenges that limit you in meeting the objectives of the unit/ department?</li></ul>

Table 1 shows a summary of the schedule that was used during the semi-structured interviews in order to obtain answers to the research questions. The above schedule included a description of the capacity of the unit in terms of staffing, resources, as well as the journey to becoming a registered nurse. The emerging themes included human resources, resources, technical quality, interpersonal development and nurse-parent relationship which all seem to group up into the structure and process spheres. This provided direction towards using Donabedian's framework for clarifying the emerging themes.

Data collection commenced after permission was obtained from the necessary authorities. A participant information sheet and consent were sought from participants at the beginning of each interview. They were willing and appreciative of the opportunity to share their experiences related to neonatal care and the services provided.

Semi-structured interviews, using open-ended focus questions from the literature, were used to generate descriptions of perceptions of neonatal quality care. The relevance and clarity of the questions were considered continuously during the conduct of the interviews. All interviews were audio-taped with the subject's permission to facilitate analysis. The researcher further sought information from participants on their perceptions of quality care and neonatal care during purposeful conversations.

## Data analysis

Thematic analysis was primarily used to identify, analyse and inform themes within the dataset. Essential documents, such as the institutional policy documents were also reviewed and expanded field

notes from participant observation processes included. Themes and categories transpired from the data collected.

As a way of ensuring trustworthiness, specific steps were taken as shown in Table 2 below.

Table 2  
Trustworthiness criteria

Criterion	Strategy employed
Credibility	Prolonged engagement
	Peer briefing
	Triangulation
	Member checks
Transferability	Providing thick descriptions
	Purposive Sampling
Dependability	Create an audit trail
	Triangulation
Confirmability	Triangulation
	Practise reflexivity

Prolonged interviews enhanced credibility, and dependability, which were established through audit trails and all the researchers reviewed and confirmed the findings (Creswell, 2012). Participants were requested to endorse and validate the findings so that confirmability could be ensured. Thick descriptions of data were developed to enable others to determine transferability to similar settings. Findings were accurately represented and the researcher adhered to high ethical standards throughout the study

## Ethical considerations

Ethical approval was obtained from the Human and Social Sciences Ethics Committee at the University of KwaZulu-Natal (Reference No.: HSS/0279/018D). Participants were provided with information letters written in English and enough time was allocated for them to read and internalise the contents of the letter, following which those who were interested signed the informed consent provided as participation was voluntary.

## Results

The data collection process was used to answer the aim of the research study which was to analyse nurses' perception related to the quality of the neonatal continuum of care, using the Donabedian model as a conceptual framework. Before the presentation of results, a demographic overview of participants is given, as shown in Table 3.

Table 3  
Distribution of the interview participants demographic data

Participant No.	Age range	Healthcare Facility	Specialization in Nursing	Number of years working in the unit
1	20–29	H	N	1
2	30–39	H	N	2
3	50–59	CHC	CCN	16
4	30–39	H	N	4
5	40–49	CHC	PHC	11
6	40–49	H	PHC	7
7	50–59	CHC	M&N	18
8	30–39	H	CCN	7
9	40–49	CHC	M&N	14
10	40–49	H	CCN	11
11	40–49	CHC	N	14
12	50–59	H	M&N	16
13	30–39	H	CCN	7
14	30–39	H	M&N	5
15	40–49	H	CCN	6
16	50–59	CHC	PHC	17
17	30–39	H	M&N	11
18	40–49	CHC	PHC	13
19	40–49	H	CCN	14
20	50–59	H	M&N	16
21	50–59	CHC	PHC	14

As indicated in Table 3, five participants were males, and the majority were females. The majority of participants (n = 8) were aged between 40 and 49 years of age while the majority (n = 7) worked between 11 and 15 years with neonates.

Donabedian's quality of care framework was applied to categorise themes and subthemes which were generated from nurses' interviews which were to analyse nurses' perception related to the quality of the neonatal continuum of care as shown in Table 4.

Table 4  
Summary of participant responses by category, theme and subtheme

Category	Theme
Structure	<ul style="list-style-type: none"> <li>- Human resources</li> <li>- Prolong waiting time</li> <li>- Resources</li> </ul>
Process	<ul style="list-style-type: none"> <li>- Technical quality</li> <li>- Interpersonal development</li> <li>- Nurse-parent relationship</li> </ul>
<p><b>Nurses' perceptions of quality within the neonatal continuum of care: A qualitative approach using Donabedian's Conceptual Framework</b></p>	

## Structure Factors

Structure refers to the conditions under which care is provided and included factors that affect the context in which care is delivered and includes infrastructure, equipment and human resources (Donabedian, 2005). The three themes that were identified in the structure category included human resources and infrastructure.

### *Human Resources*

Human resources referred to the adequate availability of staff and waiting time. The researcher observed that in both research settings, there was a shortage of nursing staff. Nurses continuously mentioned the shortage of staff in their respective departments, and that the staff to patient ratios are essential for quality care, but that this is not possible due to the considerable patient demand.

*"We do not have time to always give the care needed as all the patients need to be seen and if we are short of staff, especially night-duty, we have just to make sure the job is done so we do not have time to give quality care that is needed" (Participant 8).*

Participants in this study felt that they were not providing quality care due to the large number of patients they have to attend to. The nurses affirmed that they do not have enough time to render the care they desire to due to the shortage of staff and this affects the quality of care they render.

### *Prolonged waiting time*

Prolong waiting time was directly proportional to the availability of beds in the hospital, shortage of staff in the clinics and time it takes for the ambulance to fetch the patient.

*“We have to make space in the unit to accommodate the patient even if it means the place is overcrowded, which places them at risk of maybe getting a hospital-acquired infection. These things all affect quality but we cannot do anything because we must do what is expected of us. I feel as if justice is not being done to the patients in terms of quality care as we are not only short of staff and equipment but we have to rush through seeing the patients in order to get the job done” (Participant 5 and 9).*

While most participants were aware about the long waiting period that patients have to endure due to the limited availability of beds, shortage of staff or even waiting for an ambulance to fetch the patient, they were worried that the prolonged waiting time can increase a patient’s morbidity and mortality. Patients who are critically ill, are referred to the referral hospital within the district.

### *Resources*

The resources referred to infrastructure, equipment and supplies. Patients had to be admitted as treatment could not be refused despite the lack of and availability of beds.

*“We cannot refuse care these days by saying we do not have beds. We must make a plan even if it means there is no space available or even a shortage of staff. This ward only takes twenty-four patients, but the other day, we had thirty-six babies, and we were still short of staff” (Participant 2).*

*“Here you just have to make a plan. You cannot say you were short of equipment so you couldn’t do the task it requires. You are responsible.....We lack equipment. This is a serious problem.....The monitors we need are the monitors that we do not have. Equipment is never enough and looks like management isn’t always doing enough” (Participant 4).*

While participants were faced with challenges of limited bed space and the lack of supplies and equipment, they strived to complete the given tasks. However, they were aware that this deficiency had an impact on the quality of care they were able to render to the patient.

## **Process Factors**

Process looks at the way systems and processes work to deliver the desired outcome. The three major themes that emerged in this category were technical processes, interpersonal development and nurse-patient relationship.

*Technical quality* referred to the adherence of following guidelines and procedures according to the nursing process. This will include the assessment, diagnosis, planning, implementation and evaluation of care.

*“there is always a shortage of staff and we cannot always delegate tasks as needed. This results in patients waiting for long periods and also a low nurse to patient ratio” (Participant 6).*

*"We are so busy trying to get the task done so we can complete the next task that we do not always have time to provide the psychological care the mom requires" (Participant 8).*

The researcher observed that alarms are often ignored and vital signs on monitors are not set according to required limits. It would appear that the nurses have become desensitised to the sound of the alarm. The researcher also noticed that some healthcare professionals do not adhere to the universal principles of infection control and this was evident by nosocomial infections some patients acquired while in hospital.

*Interpersonal development.* Within the Community Health Centre nurses indicated that they were given support for attending professional development courses and pursuing higher education,

*"Despite the shortage of staff at times, we are given an opportunity to attend workshops and seminars so we can be up to date with what is currently happening and changes introduced" (Participant 7).*

However, in the hospital, staff were not always given an opportunity to commit to doing a specialised course as this will result in a shortage of staff for a year or two.

*"I really want to do the critical childcare course, but I cannot because it means I have to be out of work for a year and not get paid, there is a need for nurses who are specialised in neonatal and child care. Here we mainly have critical care nurse and those specialised in Midwifery and Neonatology".*

*Nurse-parent relationship.* This was seen as an essential concept in ensuring quality. The nurses also stated that they feel there is a lack of continuity especially between the hospital and the community health centre,

*"Continuity of care is important but here we see the patient once and there are not always follow-ups between the hospital and the community health centre. You do not even know if the patient is alive or their health has improved. I wish there can be continuity and this will also result in quality care" (Participant 11).*

Participants in this study felt that they are doing an injustice to the patient and the family at times by not being able to deliver the quality care and even spending time to assess the psychological well-being of the parent, as this has an impact on the care of the child after discharge or a follow-up appointment. They also felt dissatisfied with to having an opportunity to specialise which was mainly related to the shortage of staff and for management to ensure a "*full staff composition*".

## **Discussion**

The aim of this research study was to analyse nurses' perception related to the quality of the neonatal continuum of care, using the Donabedian model as a conceptual framework. This model provides a framework for examining healthcare services and evaluating the quality of health care (9).

Nurses are the frontline of service delivery in the healthcare sector, and hence the shortage of staff is mainly felt at the nursing level. In South Africa, the nurse to patient ratio is 39.3 per 10 000, and this is coupled with the unequal distribution of nurses between the public and private sector (11). Nursing is a critical factor in determining the quality of care across all healthcare facilities and the nature of patient outcomes, however, but the results show that a shortage of staff, the unavailability of bed space, equipment and supplies as well as prolonged waiting periods all have an impact on a nurses ability to render quality healthcare. Research evidence shows that hospitals with a higher ratio of nurses to patients have lower mortality rates (12). Similarly, lower nurse staffing, increased workload, and unstable nursing unit environments were linked to adverse patient outcomes, including medication errors (13). A majority of deaths occurred at Community Health Centres (CHCs) or district hospitals where the most inadequate quality of care is being rendered (14). This can be due to an increased patient demand coupled with a shortage in nursing staff resulting in the unequal distribution of resources caused by rapid urbanization (15). Neonatal resuscitation training has been reported to reduce deaths due to intrapartum asphyxia by 30% (16).

Healthcare facilities within the public sector are marred by long waiting periods, old and poorly maintained infrastructure, poor hygiene and infection control measures which results in the delivery of poor-quality healthcare (17). The occurrence of nosocomial infections is concerning as this can be easily avoided through better hygiene, infection control practices and appropriate use of antimicrobials. Contaminated water, poor physical design of NICUs, overcrowding of neonates and staff shortages resulting in a low nurse–patient ratio, as well as poorly implemented antibiotic policy and infection prevention and control programmes was identified as risk factors that resulted in an increased incidence of nosocomial infections (18).

Prolonged waiting time and overcrowded wards resulted in poor quality care. This resulted in a reduction in quality care and increased medical errors as well as an increase in the mortality rate (19). In Chile, a retrospective study that assessed the relationship between medical centre-specific waiting time and waiting list mortality (20). The results showed that there was a significant association between waiting time variability and death. A that long waiting time correlates with too short a time spent with the healthcare provider which results in a limited time spent on a thorough examination and explanation about patient's condition (21). This causes a provision of poor quality of service as it puts patients at risk of experiencing adverse health outcomes (22).

The researchers noticed that healthcare professional were desensitised to noise, especially in the ICU and NICUs. Noise might cause apnoea, hypoxaemia, alternation in oxygen saturation, and increased oxygen consumption secondary to elevated heart and respiratory rates and may, therefore, decrease the number of calories available for growth. Noise thus contributes to at least 10% of preterm neonates diagnosed with a hearing impairment (23, 24).

Donabedian (9) noted that what is judged as the quality is often not the precise care itself but the person rendering the care. Interpersonal development and nurse-parent relationship played was a contributory

factor to the quality of care. The mother is the caregiver or the advocate for the patient. Molina-Mula and Gallo-Estrada (2020) conducted a phenomenological qualitative study that analyses the nurse-patient relationship and explores their implications for clinical practice, the impact on the quality of care, and the decision-making capacity of patients. Results showed that an excellent nurse-patient relationship reduces days of hospital stay and improves the quality and satisfaction of both. One can assume that the relationship the mother has with the nurse at a healthcare centre will result in more compliance with clinic appointments.

## **Conclusion**

The current study draws attention to the fact that there is a need to improve quality care within healthcare facilities as this might reduce deaths that are avoidable. To ensure quality care, a variety of infrastructure, an adequate supply of equipment, supplies and an adequate staff capacity that are trained and skilled healthcare professionals are required. Healthcare professionals who are responsible for evaluating quality may develop, adapt or utilise existing tools which will represent quality in all spheres of neonatal healthcare. As a progression from the current study, future research should do an exploration of how perceptions influence nurses' commitment to adopting behaviours associated with improvement practice quality.

## **Abbreviations**

SDG: Sustainable Development Goals

F = female

M = male

CHC = Community Health Centre

H = Hospital

N=None

M&N = Midwifery and Neonatology

PHC= Primary Health Care

CC= Critical Care Nursing

## **Declarations**

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## Authors' contribution

LS: Study conception and design, Data collection, Data analysis and interpretation, Drafting of the article and Critical revision of the article

## Funding

Not applicable

## Availability of data and materials

The data analyzed during the current study are not publicly available due to an agreement with the participants on the confidentiality of the data but are available from the corresponding author on reasonable request.

## Ethics approval and consent to participate

Ethical approval was obtained from the Human and Social Sciences Ethics Committee at the University of KwaZulu-Natal (Reference No.: HSS/0279/018D). The informed consent obtained from all participants were written.

## Consent for publication

(Not applicable)

## Competing interests

The authors declare that there is no conflict of interest.

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27. **Additional File 1..**

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [InterviewSchedule.pdf](#)