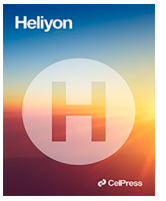
Heliyon 10 (2024) e34731

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Research article

Maternal social support and resilience in caring for preterm newborns at the neonatal intensive care unit (NICU): A qualitative study

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ARTICLE INFO

Keywords:
Preterm babies
Neonatal intensive care unit
Social support
Maternal resilience
Healthcare professionals

ABSTRACT

Introduction: Mothers with preterm babies at the NICU are at a high risk of acquiring psychological distress as a result of unexpected and upsetting experiences. While there is a strong emphasis on the infant's health, the mother's well-being, particularly her mental health, is sometimes disregarded. A qualitative exploratory descriptive design was used to explore maternal social support and resilience in caring for preterm newborns at the NICU in Municipal hospital in Ghana from May to July 2022.

Methods: A qualitative exploratory method was used, and a purposive sampling technique was used to select 15 postnatal women who had their preterm babies on admission to the NICU until data saturation. Data was analysed using thematic content analysis.

Results: The findings of the study showed that social support for their mothers as they care for their preterm infants contributed to their resilience. Three themes emerged from the analysis of the data: informational support, instrumental support and psychosocial support.

Conclusion: There is a need for training in communication skills and counselling for healthcare professionals working in the NICU to be able to communicate effectively with mothers and also adopt a family-centered approach in the care of preterm infants. This will support mothers to strengthen their resilience when caring for their premature babies in the NICU. The role of instrumental support for mothers specifically financial and physical care support in building maternal resilience cannot be overemphasised.

1. Introduction

Around the world, there are 5.2 million deaths among children under 5 years old. Preterm birth is a leading cause of death in children under the age of 5, especially newborns. Almost half of the world's deaths occur in this age group [1,2]. Premature delivery also contributes to long-term adverse health outcomes such as cerebral palsy, learning disabilities and sensory impairment [1,3]. Asia and sub-Saharan Africa account for over 80 % of preterm births, but there is a survival gap between high- and low-income countries [4,5]. The prevalence of preterm birth is higher in developing than in developed countries [6].

Preterm birth has a significant impact on babies and mothers, often resulting in psychological shock and trauma for the entire family [7,8]. Adequate care for preterm infants, including mother-infant bonding, resilience, and competent newborn care, is critical to

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https://doi.org/10.1016/j.heliyon.2024.e34731
Received 13 July 2023; Received in revised form 8 July 2024; Accepted 16 July 2024
Available online 18 July 2024

their survival [9]. Mothers of babies born before 37 weeks often experience stress, depression, and worries about their baby's health and survival [10]. Factors such as caesarean section and limited contact with the infant after birth increase stress for parents [11]. The physical separation, appearance and tube feeding of the preterm infant are additional sources of stress for mothers [12,13]. The mother's desire of bringing home a healthy baby is dashed when her child is admitted to the NICU [14]. There is a high risk for the mother to suffer psychological stress due to the unexpected and stressful experience. While there is a strong focus on the health of the infant, the well-being of the mother, particularly her mental health, is sometimes overlooked [14,15]. These mothers therefore need to be supported to remain resolute in the care of the preterm infants.

Social support is the support available to an individual through social relationships with other individuals, groups, and the larger community [16] which includes emotional, informational, instrumental, and evaluative support through social networks, plays a crucial role in coping with stressful situations [17]. The social support system refers to individuals, resources, and agencies with whom a caregiver is in direct or indirect contact [18]. The sense or experience that one is loved and cared for, revered and cherished by others, and being part of a social network of mutual help and duties is defined as social support [19]. Received social support refers to the real quantitative aid and support people receive from their social networks, whereas perceived social support refers to an individual's perception of the number and quality of services received from their social network [20,21]. A partner, relatives, friends, workplace, and social and community ties can provide social support.

When one person helps another better understand a distressing incident and what resources and coping methods may be needed to deal with it, it is called informational support. A person under stress can use this knowledge or advice to recognize exactly what costs or stresses the traumatic situation may bring and how to deal with it effectively. Instrumental support entails the provision of concrete aid in the form of services, financial aid, and other specialized aid or items. Emotional support entails reassuring a person that they are a valuable member of society who others care about by giving them warmth and care [19]. Admission of infants to the Neonatal Intensive Care Unit (NICU) has a significant impact on the psychological and emotional well-being of mothers, primarily due to uncertainty about the survival of their preterm babies. A significant number express dissatisfaction with separation from their infants and the lack of information about their babies' well-being. Particularly concerned are mothers who may have previously given birth prematurely and lost their child in the NICU are particularly apprehensive, fearing the possibility of facing infant loss once again [22].

Considering the magnitude of psychological challenges and trauma these mothers go through regarding the birth and care of their preterm term babies, there is a need to look at the social supports available to these mothers while caring their babies in the NICU. This study therefore explored the social support of mothers in building their resilience while caring for their preterm babies at the Neonatal Intensive Care Unit of the Presbyterian Hospital, Dormaa-Ahenkro in the Bono Region of Ghana.

2. Methods

2.1. Design

The study utilized a qualitative design [23] to explore maternal social support and resilience in caring for preterm newborns at the neonatal intensive care unit (NICU) in a Municipal hospital in Ghana from May to July 2022. This design was chosen due to the limited knowledge about maternal social support and resilience when caring for preterm babies at the NICU in the study area and the researcher sought an indebt knowledge of the topic.

2.2. Study population and sampling strategy

Purposive sampling [24] was employed to recruit 15 mothers aged 18 years or older who had preterm babies (27–36weeks) on admission at the NICU. This inclusion criterion ensured that the participants were directly involved in the care of their preterm infants in the NICU. Mothers who had preterm babies but babies had died were excluded from the study. The NICU is a type which provided care for all preterm infants born before the completion of the 37th week. Children with as low as 900g weight were managed at the NICU. Data saturation was used to determine sample size, that is the point at which the researcher had no new information during the data collection. Data saturation was reached after interviewing the 15th participant, as subsequent interviews did not reveal any new data or theme [23].

2.3. Data collection

Face to face in-depth interviews [25] using a semi-structured interview guide were used to collect data. The interview guide consisted of two sections: Section A collected demographic data, while Section B contained open-ended questions developed based on study objectives and existing literature. fifteen interviews were conducted in a quiet room within the hospital's maternity unit, chosen for its convenience and favourable environment for the participants. The interviews lasted between 30 and 45 min. Mothers whose premature infants had spent at least three days on admission were interviewed. With the consent of the participants, the interviews were tape-recorded. All interviews were transcribed verbatim for analysis purposes.

2.4. Data analysis

The thematic approach of [26] was used for data analysis. This data was read multiple times to make sense of it, codes were assigned to capture key concepts, and synthesized into subtopics and then into overarching themes, topics. The coding framework was

originally developed by SE and discussed and agreed upon by MAA and EA. Each topic was defined and described, and a final report presented the themes along with supporting citations or quotes from the data.

2.5. Ethical consideration

Ethical approval was obtained from the hospitals' Ethics Review Committee, Institutional approval was also obtained. All ethical principles such as anonymity, confidentiality, voluntary participation, and withdrawal at any time without consequences were explained and implemented to the participants. They were sufficiently informed about the possible advantages and disadvantages of the study. Before the start of the study, the participants had to sign informed consent forms.

2.6. Methodological rigor

The methodological rigor of the study was established by ensuring the credibility, reliability, dependability, and confirmability of the findings [27]. The researchers ensured credibility by conducting the inquiry in a way that increased the likelihood of obtaining meaningful findings. They carefully designed the research process and used appropriate methods to collect and analyse data. Credibility was achieved through a detailed account of participant selection, the research environment, and the research process. Dependability was established through an audit trail and appropriate questioning, while confirmability was upheld by presenting the true findings derived from the collected data.

3. Results

3.1. Demographic characteristics of participants

The demographic characteristics of participants are described in detail in Table 1.

3.2. Organization of themes

Based on the analysis of the data collected from the study, three main themes emerged: informational support, instrumental support and psycho-social support as shown in Table 2.

3.3. Informational support

3.3.1. information and education on baby's condition

Participants in this study received some information on the baby's condition, but some said they were not given the correct information. Others also noted that healthcare professionals should be honest when providing information. However, others said they received no information at all.

Less than half of the participants reported receiving some form of education and information while caring for their babies which was reassuring. Mothers who received information about their babies reported feeling relieved and that the information they received strengthened their resilience in caring for their infants.

This is what P1 a 26 year old teacher had to say;

> He (the doctor) told me that the child's time was not up so I should see where she (baby) is now, she is in the incubator which is like being in my womb so at the right time she will be brought out and whatever I have to do like breastfeeding her, and doing other things for her just like giving birth to a term child can be done. He also added that I should always be there frequently to see her and that really inspired me a lot. (P1).

Table 1
Demographic data of participants.

Codes	Age in years	Marital status	Level of education	Occupation	Gestational age (weeks)	Birth weight (kg)	Religion
P1	26	Married	Tertiary	Teacher	28	1.3	Christian
P2	19	Cohabitation	Basic	Unemployed	29	1.3	Christian
P3	23	Cohabitation	Basic	Seamstress	33	1.8	Christian
P4	27	Married	Secondary	Trader	35	1.9	Christian
P5	30	Married	Basic	Unemployed	36	2.1	Christian
P6	30	Married	Tertiary	Nurse	34	1.4	Christian
P7	25	Cohabitation	Secondary	Unemployed	35	1.8	Christian
P8	19	Cohabitation	Basic	Unemployed	36	2.1	Christian
P9	19	Single	Secondary	Unemployed	31	1.3	Christian
P10	36	Married	None	Farmer	27	0.9	Muslim
P11	37	Married	Basic	Unemployed	36	2.2	Christian
P12	42	married	basic	farmer	29	1.3	Christian
P 13	39	married	none	Food vendor	30	1.3	Christian

Table 2
Themes and sub-themes.

Themes	Sub-themes
Informational support	a. Information and education on baby's condition b. Lack of informational support c. Information and education on breastfeeding
Instrumental Support	a. Financial b. Physical care support
Psychosocial Support	a. Empathy from health care professionals, b. Emotional support from family and friends c. Counselling d. Spiritual support.

I asked the madam if my baby will survive and she said yes, he will, I should not be afraid. When she said yes, I had faith that my baby would survive and was not afraid anymore. (P12, 42years).

Some of the participants also said that healthcare professionals need to be honest with them when providing them with information about their babies' conditions.

Okay, in life I believe in truthfulness. If it's black or white, tell the person it's black. If it's white, tell the person it's white. If it won't work, tell the person it won't work anyway while they treat the baby and say it will work, that she will come out successfully. I believe in it and think that she will come out successfully. I always wake up morning and evening and look up to them (health workers). I always wake up in the morning and evening and look at them (health workers) (P1, 26years).

Whenever the doctor came, he kept asking, have you gone to breastfeed your child? I also told him when I go there they don't allow me to breastfeed the child and I come back and the doctor will be staring at me, so I thought something bad had happened to the child and they are refusing to tell me the truth and even if something (dead) like that has happened, they should be able to tell me so I go home. Not that I will just be here thinking that my child is at the NICU. Anytime the doctor came he kept asking have you breastfed your child, when he is done with me I gradually walked to the NICU and the child will be lying down and even when he cries they don't allow me to breastfeed my baby. (P4, 27 year*).*

3.4. Lack of informational support

The study revealed that a significant number of mothers did not receive adequate informational support from healthcare professionals about their baby's condition, medication and the NICU environment.

3.4.1. No information

The participants narrated that they were not given any explanation about indication of the investigation to be conducted. No information was given about the child's condition. Excerpts from these mothers include;

When the child was brought out during the operation the baby was shown to me to identify the sex and the baby was really crying vigorously only for me to be told that the baby has been taken to the NICU. Even if something had happened, they should have even told me about it so that I would know what is wrong with the child, but nobody told me anything all they said was that I should take her for a photo of the chest to be done. I didn't know anything and even after that, they didn't tell me what is in the chest that is making that baby breathe fast. Me, I know a newborn breathes fast but the way they said the breath of my baby is fast is what I don't understand. (P4).

Madam, me I don't know the problem with the babies, they are the doctors and they have admitted them so whatever instruction they give is what I follow and nobody has told me your babies are having this condition or that. (P11).

3.4.2. Lack of information about the types of medication given to babies

All participants reported that they received no information about the medications given to the babies. They were simply asked to get the medicine for their babies. Some excerpts of their responses include;

As for the medication, I'm always called to go and buy when the need arises but I really do not know the kind of medication whether it is para, B'co, I don't know so as I'm taking it to them, I just shake it and it produces a "chechecheche" sound and I go and give it to them and come back, I am not told anything. (P4, 27 years).

We were just asked to buy it and nothing was said about it (medicine). (P15, 22years).

3.4.3. Lack of information about the NICU environment

The majority of participants reported that they were not provided any information or education about the incubators and the general atmosphere in the NICU. Some verbatim quotes include;

> No information was given about the machines (incubators), when I entered, they asked my name so when I mentioned my name, then I was taken to where the machine is and they told me this is my baby so I pleaded with them (nurses) to open and take him for me and they opened and took him for me. (P13).

> I was not told anything, when I got there they asked my name and I also mentioned my name and I told them that my baby was there. Then I was shown where my child was. (P5).

3.5. Information and education on breastfeeding

All participants received information and support about breastfeeding their babies in the NICU. Health professionals played a critical role in providing guidance on expressing breast milk and providing strategies to promote milk production. Additionally, the presence of a television in the unit showed videos of breastfeeding and pumping provided additional informational support for the mothers.

Some quotations include;

> One came to interact with me. She thought me how to express breastmilk and how to dewind the child after breastfeeding so that the breastmilk can undergo digestion and be absorbed before they lay in bed. (P5, 30 years).

> In front of the unit, there is a TV there, when you sit there, it shows videos of how to hold babies and others; how to breastfeed, all these are shown on the TV, it also helps (P13, 39years).

3.6. Instrumental support

This sub-theme involves physical aid in the form of services provision, financial aid, or other specific aid or items received by participants. These supports were given by the facility, health professionals, spouses, family members, friends in-laws.

3.6.1. Financial support

This includes all support in the form of financial support while mothers cared for their premature babies in the NICU. Support includes contributions from spouses, family members, friends and in-laws. The majority of participants emphasized that their primary support came from their spouses, which contributed significantly to their resilience in caring for their infants. They praised their spouses for their commendable support and indicated how the support they received strengthened their resilience. Some quotes include;

> My husband has really done well when it comes to financial support, anytime they tell me of anything about money, he makes the payment, so I pray he gets more money to continue to pay for any new expenses. In fact, what has really helped to build my strength is the fact that anytime they request anything that has to do with money the thing is immediately paid for. (P15, 22years).

> My husband, for him his main support is finances, everytime I am asked to buy something or make payments for the child, I tell him and he gives the money, which really strengthens me and sometimes makes me happy (P3, 23years).

Participants received financial support not only from their spouses, but also from their extended families and friends, although not everyone received this type of support. They were positive about the help they received, which played a crucial role in strengthening their resilience.

Some verbatim quotes from the mothers includes

> My brother whom I lived with (mentions the name of a town) also helps me a little and that helps me, it helps me a lot. (P7, 25 years).

> Even today one of my uncles came here and gave me some money (20 cedis). For each of them who comes here, I get not less than 5 cedis. Mmm, they (friends) also come to me and some give 20 cedis to buy me food and that helped me (P10, 36years).

> Sometimes when some of my friends come, they give money, even my mother's family have even realised the man (husband) is struggling so they are also doing the little they can to support me with some money and they all expects that the babies will be fine so that they can be discharged home home. Even one of my sisters sent us some money today so they just hope the babies get well (P11, 37years)

Few participants also reported receiving financial support from their in-laws; all were positive about the support they received. Mothers reported receiving financial support from their in-laws, which also helped them with their resilience. These are what they reported.

> Even the last time my husband's elder brother and his wife came here and even gave me some money, it actually helps to ease your problems (P10, 36years).

*When he (father-in-law) calls, he asks if any medication has been prescribed or if there are any issues relating to money, So, if I there are issues relating to money, I inform him, so he sends it to me. It is good because when medications are prescribed, use the same money and some for feeding as well. (P2,*19 years*).*

3.6.2. Physical care support

Following the analysis, the support identified was classified into two categories; physical care support from health professionals, as well as from spouses, family, and friends.

Majority of participants reported that the care provided by healthcare professionals for their babies constituted a significant form of support. Some expressed gratitude for the diligent efforts of healthcare professionals, and attributing the survival of their babies to the quality care received. Nurses worked tirelessly both day and night, and some participants highlighted instances where nurses even supplied toiletries for their babies in their absence. These acts were acknowledged as sources of strength for the parents which really helped with their resilience.

They (nurses) have really supported me, they are patient with us, had it not been for them I believe my baby would not have survived. They have really helped me so I always pray for them day and night, they have really done well, the nurses are always with the babies in there, day and night caring for them, when they soil themselves, they help to change the diaper, feed them with the expressed breastmilk when crying they come to call you from outside even when you are sleeping they call you to come and check on the child or express breastmilk and put down. Even at night, they don't sleep, when you go there at 12am they will still be awake all because of our babies, they don't sleep. Meanwhile we the mothers will be sleeping and they will call on us when need be so they are doing well on that, madam the supports really help me in building my strength. (P12, 42years).

They (nurses) are helping because as soon as its morning they will be work on the children all day, the doctor will come first and see them and do what he is supposed to do and also write for the nurses and when the nurses also take the book they know what to do. Throughout the day they really work on all the children even if they need something like a diaper and you are not around they use their diapers so you (mother) replace them when you (mother) come. (P10, 36years).

A few participants shared instances of receiving physical support from their spouses, who assisted with various tasks related to caring for their babies. Others mentioned that they received physical help from relatives such as mothers and friends, which strengthened them in caring for their preterm infants.

Since we are here together, every time I am called to get something for the child, he (partner) is the one who does the errands. (P3).

For example, yesterday he (husband) went to buy some prescribed medicines for the child. (P12, 42years).

Participants who received support reported their mothers' valuable contributions and emphasized that their mothers took on various responsibilities for them.

As for my family, the only person I get support from is my mother, as for her, if she wasn't here with me, I wouldn't have been alive because she does everything for me. Even when I can't walk, she is the one who holds my hand to help me walk as we talk, now she has gone home to cook. (P15, 22years).

Apart from God, my mother is the one who is here with me, she is not completely fit but little by little I know that God will take us through. (P6, 30 years).

3.7. Psychosocial support

Participants reported receiving words of empathy, encouragement, reassurance and spiritual support from various sources, including healthcare professionals, spouses, family and friends. This psycho-social support played a crucial role in building mothers' resilience while caring for their baby in the NICU.

3.7.1. Empathy from healthcare professionals

About half of the participants reported that nurses showed empathy towards them. Meanwhile, only a few of them said they experienced no empathy from medical professionals. Some participants who received this support reported that they (nurses and midwives) smiled when they spoke to them and also did not yell at them, these are what some mothers reported

If someone doesn't empathise you can tell by the way the person treats you. Someone might even scream at you but the nurses I met here are not like that, all the people I met here have never done anything like that to anyone (P14, 19 years).

Madam, they (health professionals) do empathise with us because the way they talk to you (mother), smile at you. So if you are the type who does not like socializing with people, you will be compelled to socialize with them because the nurses and the doctors here are really nice people (P15).

Another mother had this to say:

> At the NICU! Oh, like I earlier on, they really encourage us and that makes us strong and supports us to keep doing what we are doing because they shared an experience or two. Like I said, sometimes they say that they also had preterm babies and their situation was worse than mine, but over time the baby was able to survive. (P6, 30 years).

3.7.2. Emotional support from family and friends

All participants recounted receiving emotional support from their family and friends in varied ways; Through visits, words of encouragement that their baby will survive, and phone calls to inquire about their health, all of which helped give them strength.

Some participants recounted how family members encouraged them that their babies would survive. These were some of their responses;

> My mum and my family members although they have not seen my baby, just coming here morning, and evening whenever they are around, through visits, and encouragement although they have not seen my baby when they call or whenever they come here, they will tell me that everything will be fine and that some people are born prematurely but they will grow very big and survive. (P1, 26years).

> They (family members) call to encourage me, and my mother told me the child will be fine by the grace of God as the child has been put in the machine I should not worry and that he'll be fine. (P3, 23years).

> My sisters-in-law were here and talked to me and encouraged me not to think about it and that everything will be okay. (P12, 42years).

Another mother indicated;

> Sometimes I can even tell that my baby was not term so I don't think she will survive. Then someone will tell me not to say that and that she will be fine. If she has been able to survive up to this point then , she will be fine. When it happens like that, it strengthens me. It gives me some strength and I am happy about that because when no one tells you anything or tries to comfort you it is really sad, but when they tell you, 'Oh Maame (mother) be strong, don't be sad, nothing will happen to your child', it gives you some comfort and even strengthens you. The people here are doing well. (P10,36years).

3.7.3. Counselling

All participants indicated that they did not receive any form of counselling from any of the staff. Below are excerpts of what they narrated. Some responses were;

> No, no, there hasn't been anything like that, no one has been assigned to talk to me about anything so I'm always inside and sometimes I'll come out and sit on the pavement. When I'm tired I watch some TV. (P4, 27 years)

> There has not been any counselling. (P13, 39years).

3.7.4. Spiritual support

Few mothers reported receiving spiritual support from their church as well as their pastors and indicated that the prayer strengthened them. These are what two of them narrated.

> They (church) come and pray for me. Every time they come it really gives me some strength. (P1, 26years).

> My pastor also called me to pray for me for God strengthen the babies. (P11, 37years).

4. Discussion

This study explored the social support and resilience of mothers in the care of their babies at the neonatal intensive care unit. Three main themes emerged following the analysis of the data with their corresponding subthemes; which included; informational support with subthemes as information on child's condition, lack of informational support and information and education on breastfeeding, instrumental support; which constitutes; financial and physical care support and psycho-social support with subthemes as empathy from health care professionals, emotional support from family and friends, spiritual support and counselling.

Participants in this study received education and information about the medication, condition of the baby, as well as breastfeeding while caring for their preterm newborns in the NICU. This is evident in the literature [28–30]. For instance, in a study in Iran by Alinejad-naeini et al. [29] discovered that participants received accurate information from nurses on their newborns' conditions and medication. Nurses offered mothers the information they needed which led to a reduction in anxiety among these mothers. This is consistent with a report a mother gave in this current study as she indicated the doctor explained the condition of the baby to her and the reason the baby was in the incubator and she was inspired.

However, some other mothers in the study, indicated nurses did not give them an explanation for the investigative procedures performed on their babies. This supports the findings of a study in a tertiary hospital in Ghana, in which mothers were not given explanations about procedures that caused anxiety, particularly if they thought the procedures were being performed because their baby's condition was deteriorating [31]. However, Alinejad-naeini et al. [29] found in their study that nurses provided explanations

for each procedure. The differences in results could be due to differences in study settings, as most participants in the current study had lower formal educational background and nurses may have felt that the procedures were too technical for mothers to understand, and therefore failed to provide explanation.

Again, most participants in this study were given no information about the condition of the baby and treatment process, which led to anxiety. This is similar to the results of Heidari et al. [32], who identified the lack of information about the baby's condition as one of the main causes of parental psychological distress in the NICU. Im and Oh [33] on the other hand, reported in their study in South Korea that nurses provided information about the baby's condition, characteristics, as well as the baby's daily activities in the NICU and the baby's treatment process.

In addition, some participants were not given information about their baby's preterm birth and the need for separation. This coincides with the results of a study by Nakphong et al. [34], in Kenya, which found that some mothers were not informed about the reason for separation from their babies. This similarity of results could indicate that lack of time and work overload in the unit resulting in burnout, hence staff not being able to work efficiently.

The environment in the NICU is brand new and usually stressful for mothers and they require some form of education when caring for their preterm infants [35]. However, most participants in the current study did not receive any information about the NICU environment or the equipment used in caring for babies. The only instruction they were given upon entry was to identify themselves. This contradicts the results of the study by Im and Ohs [33] on mothers in the NICU in South Korea, in which they were given information about the baby unit and explanations about some equipment such as the oxygen supply tube and the incubator and its function. These variations in results could be attributed to differences in study settings and individual differences of the nurses. Therefore, when caring for preterm babies, health care workers especially nurses must prioritize effective communication with mothers to reduce anxiety and build maternal resilience.

Feeding problems are among the greatest challenges faced by preterm infants [36] and it is imperative that mothers caring for preterm infants receive education to support their feeding practices. All participants in the current study received information about breastfeeding the newborn that helped them build resilience. This is consistent with the findings of Mörelius et al. [37] in Australia, who emphasize the importance of educating mothers of preterm infants about breastfeeding practices after birth. These studies underscore the critical role of breastfeeding education in the care of preterm infants. In addition, participants in the current study reported being knowledgeable about foods and behaviors that promote milk production. Additionally, in this recent study, mothers used technology as a learning tool by having participants watch videos about expressing milk, caring for the baby, recognizing signs of a sick infant, and the need to contact the facility promptly if signs of illness are spotted. They found this educational method helpful in building their resilience. This is similar to the report in a study by Yu et al. [28] in China, in which parents used a social media platform to receive helpful information about caring for their preterm infants and as well as signs and symptoms of illness to monitor their babies (WeChat), created by the NICU nurses. The source of information transfer was through different electronic means both studies utilized modern technology for educational purposes. Technology-based interventions can be used during education to help mothers build resilience when caring for their preterm infant in the NICU.

Instrumental support available to participants can be rated as vital support to help maternal resilience. Instrumental support is rated the highest of all support needs of mothers in the NICU [38]. Instrumental support included financial support and physical care The support as provided by the health professionals, spouses, family and friends, and support groups, this is congruent with many studies [33,35,39,40]. For instance, a systematic review by Maleki et al. [39], reported on practical nursing support for mothers caring for their preterm babies at the NICU and Akum [41], a study in Bawku in the Northern part of Ghana revealed that mothers received assistance from family and friends, their husbands and religious organisations.

Husbands have the core responsibility of providing for the financial needs of the family as a study reported that even before a man prepares to get married great care is taken by the elders to ensure that the man can take care of the family [42]. Almost all participants in the current study received financial support from their husbands or spouses which they indicated helped them in the care of the infant as a participant narrated that her husband provided money for anything whenever it was requested. This could imply that it is the husband's sole responsibility to bare the financial burden of the family [43] and in low socioeconomic settings, mothers are likely to be unemployed or may not be engaged in any meaningful income-generating activity and may have to solely depend on their husbands for financial support. The family plays a significant function in settings in Africa [44] and most Ghanaian communities. Some participants received financial support from their families and this is confirmed by the findings of Lomotey et al. [31], who discovered that some mothers of premature infants received financial support from their parents.

African culture places so much value on the extended family system as in certain cultures, in-laws play an important role in the life of sick children. In a Nigerian-based study, it was reported that family members like the husband's brother, may be tasked with caring for the sick child if there are problems assisting the wife while the father is not available [43]. This is similar to the findings of the current study as participants reported receiving some financial support from their in-laws as a participant indicated that her father-in-law took charge of the financial responsibility as the husband was indisposed at the time of care of the baby at the NICU.

Provision of physical care by the health care team happens to be the main reason for the admission of the preterm child to ensure its survival. The majority of participants reported the care by the health care professionals was good and was the reason for the survival of their babies. This is consistent with many studies [30,45–47]. A systematic review by Wang et al. [48], also reported how mothers were appreciative when nurses provided physical care for their infants. Again, Hanson et al. [30] in their studies reported that parents were content with the nursing staff's care and the baby's accessibility to the knowledgeable staff at all times. They continued to report that nurses in the NICU cared for babies including changing diapers. This agrees with this study as participants indicated nurses worked all day as well as night on the babies and changed their diapers for them. This similarity is suggestive of the fact that the personal hygiene needs of the newborn are integral part of the nursing care of the neonate. Few of the Participants in the current study recounted their

husbands helped them physically as they were at the NICU. This agrees with the findings of many studies by Noergaard et al. [49] and Loewenstein et al. [50] who reported that the support of the husbands could not be overemphasised during the care of their preterm infants in the NICU.

The importance of the support of family and friends to the mother at the NICU during the care of the preterm newborn cannot be overemphasised. Some participants in the current study also received physical care support from members of their families as participants reported that their mothers contributed significantly to their life as she did everything related to physical care during the care of their babies at the NICU and this is congruence with many studies Premji et al. [51] and Steyn et al. [52]. In the studies by Premji et al. [51] in Canada, mothers reported of immersed support of the family and friends during the care of the preterm newborn.

Psychosocial support is crucial for mothers in the NICU when caring for their babies [48,50,53,54]. The results of the present study showed most mothers received some words and expressions of sympathy, encouragement, comfort, kindness, empathy and smiling attitude from healthcare professionals, spouses, family members, friends, in-laws, and peers, which helped them build resilience as they cared for their preterm babies. This agrees with the results of a systematic review by Wang et al. [48]. who found that mothers in the NICU received emotional support from healthcare professionals, husbands, families, and religious leaders. However, the results of the current study are at odds with the results of another study in South Korea, in which a mother bitterly complained about the rude attitude of healthcare professionals towards her, which in turn added to the already existing stressors of NICU care [45]. In a similar study, health care professionals were seen as disrespectful and disregarding parents' feelings [55].

Some participants in the current study also said that nurses would call them if their babies cried and if anything was needed for the baby. This is in contrast with the findings of a study conducted in Ghana, in which mothers, nurses and midwives in the NICU always had to argue when the babies cried because the visiting time in the NICU was limited to 2 h [31]. This could be related to differences in the study settings as the previous study was a tertiary hospital which may have had more babies and therefore had a higher workload in the ward resulting in the nurses not calling them when the babies cried. In addition, the tertiary facility may have stricter policies for healthcare professionals than the municipal hospital where this study was conducted. However, it could have been more bearable for mothers if nurses were more empathetic and petitioned management on the restricted visiting policy on behalf of mothers to prevent the worsening of maternal emotional stress as nurses demonstrating empathy brings lots of relief and comfort to mothers [56]. Therefore, the importance of emotional support, empathy, respect and effective communication in the NICU needs to be emphasized. By prioritizing these aspects, healthcare providers can improve the overall maternal experience and contribute to better well-being for both mothers and their children.

Counselling services for caregivers especially mothers in the NICU are an integral part of supporting mothers as they help reduce the stress experienced [57]. However, mothers in the current study reported not receiving any counselling sessions from the nurses during the care of their infants at the NICU. In contrast, the findings of Akua and Afutu [58], a study conducted in the western region of Ghana, suggest that some mothers received some form of counselling from the healthcare workers at the NICU. This disparity could be attributed to differences in hospital policies as well as individual differences in health care professionals as care for preterm infants in the NICU in Ghana upon admission tends to focus on the child, with little attention paid to the physical and mental health of the mother or no attention is paid at all. Professional counselling services would therefore be of enormous benefit to maternal mental health in the NICU and can likely be considered a policy in Ghanaian institutions, as Martins et al. [59] confirm in their study the benefit that mothers derive from professional psychologists in alleviating their emotional turmoil.

Few participants in the current study indicated receiving spiritual support that helped them with their resilience in the NICU. This is supported by related studies [39,60]. For instance, a systematic review and a meta-analysis indicated that spiritual care was very significant in the reduction of stress of mothers caring for their babies in the NICU [39]. This is evident in the findings of the current study where mothers narrated that the prayer offered by their pastors helped to build their strength.

4.1. Limitations of the study

Some Limitations are that the study was restricted to mothers with preterm babies on admission and therefore the resilience of mothers caring for preterm babies after discharged home could not be assessed. Another limitation is that most of the interviews were conducted in the Akan language and directly translated verbatim into English. However, certain words in the Akan language do not have direct translations into English.

4.2. Implications for nursing and Midwifery practice

Nurses and midwives in the NICU play a crucial role in studying mother-infant relationships, assessing mothers' use of health-promotion skills, and identifying coping mechanisms. They can develop interventions tailored to mothers' strengths to enhance resilience during the NICU experience. Nurse and midwife-delivered interventions are well-received and provide support at crucial moments. Nurses and midwives can help mothers' learn more about their infants through guided assessments and educational opportunities. Additionally, they can identify mothers at risk of preterm delivery and offer appropriate support. Predictors of distress reactions include a lack of social support, insufficient information about the baby's condition, and challenges related to the NICU environment or separation from the baby. Screening and referral for those in distress is essential.

5. Conclusion

This study underscores the need for healthcare professionals in the NICU to adopt a family-centered approach. This will improve

effective communication, emotional support, counselling services and education for mothers and help mothers build resilience while caring for their preterm infants in the NICU. There is also a need to train healthcare professionals, particularly nurses, in effective communication.

Ethics statement

Ethical clearance was sought from the Christian Health Association of Ghana Ethics (GHAG-IRB0302022). Written informed consent was obtained from all participants.

Funding information

The study was not funded.

Data availability statement

The data supporting the results of this study are available from the authors upon request. For data protection reasons.
Interview Guide.
SOCIAL SUPPORT

1. Please share with me about any support you have received since the admission of your baby to the NICU
- Probe:

What support have you received?
How did family members help you during the care of the baby?

- Probe:

Are they supporting you? If yes share with me how they are supporting you?

I. Spouse
II. in-laws
III. close family
- Probe:

How are the health professionals supporting you as you are caring for your child?

I. Education on condition of baby by nurses
II. Empathy from the staff: do you realise the staff showing understanding of your situation? Share with me
III. Communication: Please share with me how you get to know your baby's progress in condition, treatment
IV. Any words of comfort from the staff
V. Please share with me how it feels when do not know the state of your child's condition
VI. Please share with me how the atmosphere at the NICU influences your care for the infant
- Probe:

The gadgets available.

VII. Share with me about any education and reassurances received from the nurses
VIII. Any counselling sections?
IX. Conversation with other preterm mothers
X. Met with mothers with older children who were born preterm
2. Please share with me about any support you received from elsewhere apart from family the health staff

How has these supports helped in building up your strength?

- Probe:

How did all these contribute to building your strength while at the NICU?

I. Church
II. Support group
III. Friends

IV. Other preterm mothers at the NICU

CRediT authorship contribution statement

Sabina Eduku: Conceptualization. **Emma Annan:** Supervision, Methodology, Conceptualization, Dr. **Mary Ani Amponsah:** Supervision, Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The authors thank the participants in the study.

References

[1] L.M. Muhe, E.M. Mcclure, A.K. Nigussie, A. Mekasha, B. Worku, A. Worku, et al., Articles Major causes of death in preterm infants in selected hospitals in Ethiopia (SIP): a prospective , cross-sectional , observational study, Lancet Glob Heal 7 (8) (2019) e1130–e1138.
[2] Estimation UIG for CM, UNICEF, WHO, WBO, Levels & Trends in Child Mortality Estimation Child Mortality, 2020.
[3] World Health Organization (WHO), No TitlePreterm birth [cited 2024 May 16]. Available from: https://www.who.int/news-room/fact-sheets/detail/preterm-birth, 2023.
[4] S. Chawanpaiboon, J.P. Vogel, A. Moller, P. Lumbiganon, M. Petzold, D. Hogan, et al., Articles Global , Regional , and National Estimates of Levels of Preterm Birth in 2014 : a Systematic Review and Modelling Analysis, 2019, pp. 37–46.
[5] C.P. Howson, M.V. Kinney, L. McDougall, J.E. Lawn, Born toon soon: preterm birth matters, Reprod. Health 10 (SUPPL. 1) (2013) 1–9.
[6] H.H. Chang, J. Larson, H. Blencowe, C.Y. Spong, C.P. Howson, S. Cairns-smith, et al., Preventing preterm births : analysis of trends and potential reductions with interventions in 39 countries with very high human development index, Lancet [Internet] 381 (9862) (2010) 223–234, https://doi.org/10.1016/S0140-6736(12)61856-X.
[7] L.J. Woodward, S. Bora, C.A.C. Clark, V.E. Pritchard, C. Spencer, N.C. Austin, Very Preterm Birth : Maternal Experiences of the Neonatal Intensive Care Environment. 2014, September 2013, pp. 555–561.
[8] T.N.K. Raju, B.M. Mercer, D.J. Burch, G.F. Joseph, Periviable birth : executive summary of a joint workshop by the eunice kennedy shriver, National Institute of Child Health and Human Development , Society for Maternal-Fetal Medicine , American Academy of Pediatrics , and American College of Obstetricians and Gynecologists 123 (5) (2014) 333–342.
[9] D.A. Sih, M. Bimerew, R.R.M. Modeste, Coping Strategies of Mothers with Preterm Babies Admitted in a Public Hospital in Cape Town Research Objective, 2019, pp. 1–8.
[10] M. Ettenberger, C.R. Cárdenas, M. Parker, H. Odell, M. Ettenberger, C.R. Cárdenas, et al., Family-centred music therapy with preterm infants and their parents in the Neonatal Intensive Care Unit (NICU) in Colombia – a mixed-methods study, Nord J Music Ther [Internet] 00 (00) (2016) 1–28, https://doi.org/10.1080/08098131.2016.1205650.
[11] J. Henderson, C. Carson, M. Redshaw, Impact of Preterm Birth on Maternal Well-Being and Women ' S Perceptions of Their Baby : a Population-Based Survey, 2016.
[12] F.D. Al Maghaireh, K.L. Abdullah, C.M. Chan, C.Y. Piaw, Systematic Review of Qualitative Studies Exploring Parental Experiences in the Neonatal Intensive Care Unit, 2016, pp. 1–12.
[13] J. Malakouti, M. Jabraeeli, S. Valizadeh, J. Babapour, Mothers ' experience of having a preterm infant in the neonatal intensive care unit , a phenomenological, Study 5 (4) (2013) 172–181.
[14] C. Fowler, J. Green, D. Elliott, J. Petty, L. Whiting, The Forgotten Mothers of Extremely Preterm Babies : A Qualitative Study, 2019, pp. 2124–2134 (February.
[15] C.T. Beck, L. Harrison, Posttraumatic Stress in Mothers Related to Giving Birth Prematurely : A Mixed Research Synthesis, 2017.
[16] D. Charney, S. Southwick, Social Support and Resilience to Stress, 2007, pp. 35–40.
[17] R.B. Lobato, G.A. Anco, A. Jimenez, B.V. Sannoh, Understanding the Role of Social Support Systems in Health, 2019.
[18] John Hopkins Medicine, Social support systems. https://www.hopkinsmedicine.org/about/community-health/johns-hopkins-bayview/services/called-to-care/social-support-systems, 2021.
[19] S.E. Taylor, Social support, A Review 4 (2011) 192–217.
[20] H.L. Ong, J.A. Vaingankar, E. Abdin, R. Sambasivam, R. Fauziana, M. Tan, et al., Resilience and Burden in Caregivers of Older Adults : Moderating and Mediating Effects of Perceived Social Support, 2018, pp. 1–9.
[21] G.M. Kim, J.Y. Lim, E.J. Kim, S.S. Kim, A model of adaptation for families of elderly patients with dementia : focusing on family resilience 7863 (July) (2017).
[22] K.A. Id, E.T. Id, A. Uloaku, N. Id, PLOS GLOBAL PUBLIC HEALTH Women ' s lived experiences of preterm birth and neonatal care for premature infants at a tertiary hospital in Ghana, A qualitative study (2022) 1–15, https://doi.org/10.1371/journal.pgph.0001303.
[23] F.D. Polit, T.C. Beck. Essentials of nursing research; appraising evidence for nursing practice, 7th ed., Lippincot Williams & Wikkins, 2009, pp. 223-235, 242-244.
[24] J.W. Creswell, Choosing Among Five Approaches, 2007.
[25] W. John Creswell, Research Design; Qualitative, Quantitative and Mixed Methods Approaches, fourth ed., 2014.
[26] V. Braun, V. Clarke, Using thematic analysis in psychology, Qual. Res. Psychol. 3 (2) (2006) 77–101.
[27] S.Y. Lincoln, G.E. Guba, Establishing trustworthiness, Purp Meets Exec (1985) 69–81.
[28] X. Yu, J. Zhang, L. Yuan, Chinese parents' lived experiences of having preterm infants in NICU: a qualitative study, J Pediatr Nurs [Internet] 50 (2020) e48–e54, https://doi.org/10.1016/j.pedn.2019.11.002.
[29] M. Alinejad-naeini, H. Peyrovi, M. Shoghi, Self-reinforcement : coping strategies of Iranian mothers with preterm neonate during maternal role attainment in NICU ; A qualitative study, Midwifery 101 (May) (2021) 103052.
[30] V.F. Hanson, S. Pitre, S Von Kanel, A.A.M. Israa, Lived experiences of mothers of with premature babies in a neonatal intensive care unit of a selected hospital , in United Arab Emirates : a qualitative content analysis, Int J Nurs , Midwifery Heal Relat Cases 6 (1) (2020) 47–59.
[31] A.Y. Lomotey, V. Bam, A. Kusi, A. Diji, E. Asante, H. Boatemaa, et al., Experiences of Mothers with Preterm Babies at a Mother and Baby Unit of a Tertiary Hospital : A Descriptive Phenomenological Study, 2020, pp. 150–159 (February 2019).
[32] H. Heidari, M. Hasanpour, M. Fooladi, Stress management among parents of neonates hospitalized in NICU : a qualitative study, Tabriz Univ Med Sci. 6 (1) (2017) 29–38.
[33] M. Im, J. Oh, Nursing support perceived by mothers of preterm infants in a neonatal intensive care 27 (2) (2021) 146–159.

[34] M.K. Nakphong, E. Sacks, J. Opot, M. Sudhinaraset, Association between newborn separation, maternal consent and health outcomes: findings from a longitudinal survey in Kenya, BMJ Open 11 (9) (2021).
[35] E.A. Adama, E. Adua, S. Bayes, E. Mörelius, Support needs of parents in neonatal intensive care unit: an integrative review, J. Clin. Nurs. 31 (5–6) (2022) 532–547.
[36] R. Kamity, P.K. Kapavarapu, A. Chandel, Feeding problems and long-term outcomes in preterm infants—a systematic approach to evaluation and management, Children 8 (2021).
[37] E. Mörelius, C.S. Helmer, M. Hellgren, S. Alehagen, Supporting premature infants' oral feeding in the NICU—a qualitative study of nurses' perspectives, Children 9 (1) (2022) 1–11.
[38] P. Mohagheghi, A. Khosravi, A Multifaceted Approach to Supporting Mothers of Premature Infants, 2021, pp. 1–14.
[39] M. Maleki, A. Mardani, C. Harding, M.H. Basirinezhad, M. Vaismoradi, Nurses' Strategies to Provide Emotional and Practical Support to the Mothers of Preterm Infants in the Neonatal Intensive Care Unit: A Systematic Review and Meta-Analysis, vol. 18, Women's Heal, 2022.
[40] K. Mariano, JP Ben Silang, R. Cui-Ramos, G.R. Galang-Gatbonton, Q. Roxas-Ridulme, R.R. Gatbonton, et al., Maternal stress and perceived nurse support among mothers of premature infants in the neonatal intensive care unit of a tertiary hospital in Qatar, J. Neonatal Nurs. 28 (2) (2022) 98–102, https://doi.org/10.1016/j.jnn.2021.08.002 [Internet].
[41] F.A. Akum, Assessment of mothers' challenges, support and coping strategies towards caring for preterm babies post-discharge from presbyterian hospital in Bawku municipality, Ghana, ARC J Pediatr. 4 (1) (2018).
[42] O.D. Okiya, The Centrality of Marriage in African Religio-Culture with Reference to the Maasai of Kajiado County, Kenya, 2016.
[43] L. Dougherty, K. Gilroy, A. Olayemi, O. Ogesanmola, F. Ogaga, C. Nweze, et al., Understanding factors influencing care seeking for sick children in Ebonyi and Kogi States, Nigeria, BMC Publ. Health 20 (1) (2020) 1–11.
[44] R. Mafumbate, The undiluted african community: values, the family, orphanage and wellness in traditional Africa, Inf Knowl Manag [Internet] 9 (April) (2019) 22–28. www.iiste.org.
[45] A.R. Kim, Addressing the needs of mothers with infants in the neonatal intensive care unit: a qualitative secondary analysis, Asian Nurs Res (Korean Soc Nurs Sci) [Internet] 14 (5) (2020) 327–337, https://doi.org/10.1016/j.anr.2020.09.004.
[46] R. Negarandeh, H. Hassankhani, M. Jabraeili, M. Abbaszadeh, A. Best, Health care staff support for mothers in NICU : a focused ethnography study, BMC Pregnancy Childbirth 3 (2021) 1–12.
[47] J. Abuidhail, M. Al-Motlaq, L. Mrayan, T. Salameh, The lived experience of Jordanian parents in a neonatal intensive care unit: a phenomenological study, J. Nurs. Res. 25 (2) (2017) 156–162.
[48] L. Wang, J. Ma, H. Meng, J. Zhou, Mothers' experiences of neonatal intensive care, A systematic review and implications for clinical practice 9 (24) (2021) 7062–7073.
[49] B. Noergaard, J. Ammentorp, J. Fenger-Gron, P.E. Kofoed, H. Johannessen, Fathers' needs and masculinity dilemmas in a neonatal intensive care unit in Denmark, Adv. Neonatal Care 17 (4) (2017) E13–E22.
[50] K. Loewenstein, J. Barroso, S. Phillips, The Experiences of Parents in the Neonatal Intensive Care Unit 33 (4) (2019) 340–349.
[51] S.S. Premji, G. Currie, S. Reilly, A. Dosani, L.M. Oliver, A.K. Lodha, et al., A qualitative study: mothers of late preterm infants relate their experiences of community based care, PLoS One 12 (3) (2017) 1–13.
[52] E. Steyn, M. Poggenpoel, C. Myburgh, Lived experiences of parents of premature babies in the intensive care unit in a private hospital in Johannesburg, South Africa, Curationis 40 (1) (2017) 1–8.
[53] S.R.S. Gutiérrez, E.P. García, A.S. Prellezo, R.L. Paulí, L.B. Castillo del, B.R. Sánchez, Emotional Support for Parents with Premature Children Admitted to a Neonatal Intensive Care Unit : a Qualitative Phenomenological Study Emotional Support for Parents with Premature Children Admitted to a Neonatal Intensive Care Unit : a Qualitative Phenom, 2020 (January).
[54] E. Kozel, H. Nurse, S. Barnoy, M. Itzhaki, Emotion management of women at risk for premature birth : the association with optimism and social support, Appl. Nurs. Res. 64 (January) (2022) 151568.
[55] E.W. Mengesha, D. Amare, L.S. Asfaw, M. Tesfa, M. B. Debela, F. Ambaw Getahun, Parental experiences in neonatal intensive care unit in Ethiopia: a phenomenological study, Ann. Med. 54 (2022) 121–131.
[56] A. Tan, F. Pelone, S. Arnold, J. Anderson, G. Kennedy, J. Goodman, Support and information needs of parents and carers of preterm babies requiring respiratory support on the neonatal unit: a qualitative systematic review, J Neonatal Nurs [Internet] 26 (2) (2020) 93–100, https://doi.org/10.1016/j.jnn.2019.11.003.
[57] M. Dwivedi, A. Singh, K. Naranje, Impact of neonatal counselling on parental stress in a neonatal intensive care unit: a quasi-experimental study, Indian J. Neonatal Med. Res. (2021) 1–5.
[58] A.E. Akua, J. Afutu, Women's experience of the neonatal intensive care unit (NICU) in the greater Accra region of Ghana. A qualitative study, Open J. Soc. Sci. 10 (9) (2022) 549–561.
[59] M.C. Martins, L.M.M. Boeckmann, M.C. Melo, A.S. de Moura, C.M. deMoraisRde, S.R. Mazoni, et al., Nursing mothers' perceptions when experiencing prematurity in the neonatal intensive care unit, Cogitare Enferm. 27 (2022).
[60] K. Buys, B. Gerber, Maternal Experiences of Caring for Preterm Infants in a Vulnerable South African Population, 2020, pp. 1–10.