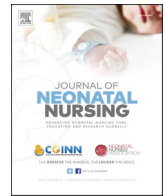




Contents lists available at ScienceDirect

Journal of Neonatal Nursing

journal homepage: www.elsevier.com/locate/jnn

Nursing students experiences in neonatal care: A qualitative study

Carina Barreira^a, Inês Rodrigues^a, Fernanda Loureiro^{b,*}

^a UCI Neonatal e Pediátrica, Hospital Garcia de Orta, Almada, Portugal

^b Escola Superior de Saúde Egas Moniz, Centro de Investigação Interdisciplinar Egas Moniz (CiiEM), Campus Universitário, Quinta da Granja, Monte de Caparica, 2829 - 511, Caparica, Portugal

ARTICLE INFO

Keywords:

Infant
Newborn
Premature
Intensive care units
Neonatal
Students
Nursing

ABSTRACT

Clinical practice is a moment of stress for nursing students with impact in academic outcomes. Neonatal Intensive Care Units (NICU) are a specific and multifaceted context that offer complex experiences to nursing students. A descriptive, cross-sectional, and observational study, with a qualitative approach was outlined that aimed to describe and categorize the experiences of nursing students in NICU. Semi structured interviews were used for data collection and content analysis for data analysis. Among eligible students (those that had performed clinical practice in NICU and agreed to participate) a purposive sample of 6 students was selected. Data analysis allowed the identification of five categories: clinical practice evolution, expectations about clinical practice, challenges faced in clinical practice, feelings for the babies and their parents, and comparing with the adult nursing clinical practice. The findings of this study indicate that nursing students experienced a wide range of feelings and experiences.

1. Introduction

Clinical practice is an important part of the undergraduate nursing course curriculum. When compared to other students, the level of anxiety experienced by nursing students is considered higher than in other students populations (Bartlett et al., 2016) and is also higher in clinical practice than in the classroom (Lei et al., 2015). Stress in nursing students has impact on academic outcomes and could trigger several other problems such as depression, sleep disorders, alcohol, and drug utilization with effects, in the short and long-term, in-patient care (Pulido-Criollo et al., 2018). A link has also been found between nursing students' anxiety in clinical experiences and burnout (Ching et al., 2020) and resilience and well-being (Li and Hasson, 2020).

Specific clinical locations such as Neonatal Intensive Care Units (NICU) intensify students' anxiety due to the complexity of care performed in these settings. Neonatal period occurs in the first 4 weeks of a child's life and it is a period of rapid changes and establishment of patterns such as feeding pattern (American Academy of Pediatrics, American Heart Association, 2021). The improvement in neonatal care particularly in last two decades, has led to an increase in the survival rate of neonatal children specially those of very low birth weight, extremely low birth weight or fetus diagnosed with malformations/congenital disease (Sharma and Murki, 2021). Therefore, in NICU

premature children are extremely vulnerable which represents an additional challenge to nursing students during clinical practice.

When confronted with state of the art units such as NICU nursing students in general, feel apprehensive and anxious about the equipment used and all the surrounding (Choi et al., 2015; Sim et al., 2021). Although, the provision of care to vulnerable newborns in NICU is recognized as a rewarding work it is also, seen as distressing as nurses deal daily with emotional situations that are difficult to manage (Refrande et al., 2019). Klock and Erdmann (2012) underline that stress, the extremely premature suffering, death, feelings of anxiety and insecurity of family members are constants in the daily lives of these nursing professionals. Thus, Sim et al. (2021) emphasize that nursing care provided in NICU is more delicate and more specific in comparison to other areas of nursing care. Probably due to this, nursing students feelings of insecurity, incompetence and inexperience prevails in NICU experiences (Gesteira and Goldenberg, 2012; Sim et al., 2021). These broad set of feelings occurs due to nursing students lack of contact to neonatal children particularly premature children (Büyük, 2020). Fear is also identified in literature and described as: hesitation to get involved in care as students priorities the baby over practical learning; afraid of inflicting pain or picking up babies and letting them fall (Büyük, 2020; Choi et al., 2015; Mohammadi et al., 2020; Sim et al., 2021). Students also express: feelings of pity for babies and their families; making

* Corresponding author. Campus Universitário, Quinta da Granja, Monte de Caparica, 2829 - 511, Caparica, Portugal.

E-mail address: floureiro@egasmoniz.edu.pt (F. Loureiro).

<https://doi.org/10.1016/j.jnn.2022.11.007>

Received 29 December 2021; Received in revised form 25 August 2022; Accepted 15 November 2022

1355-1841/© 2022 The Authors. Published by Elsevier Ltd on behalf of Neonatal Nurses Association. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

comparison between nursing care to adult patients and nursing care in NICU; awareness of nurses role in NICU; desire to become as competent as unit nurses; and the need to improve clinical practice since as students look back a more adequate preparation for clinical teaching was needed (Choi et al., 2015). Neonatology specialty, due to its specificity, is an area in which the lack of practical skills, that is, experience and skill, is particularly relevant for nursing students (Sim et al., 2021). However although these clinical settings are complex and challenging they also offers a broad range of experiences and learning opportunities related to child physical care and family support (Petty, 2017).

This was a qualitative study that addressed nursing students experiences during clinical practice in NICU. Standards for reporting qualitative research (O'Brien et al., 2014) were followed in this manuscript.

2. Methods

According to Burkett (1990) this was a descriptive, cross-sectional, and observational study, with a qualitative approach. It had the following objective: to describe and categorize the experiences of nursing students in NICU.

The study was applied to students from a private nursing school from Lisbon area, in Portugal, with 217 students. A purposive sample was selected among eligible students that included those that had performed clinical practice in NICU (3rd and 4th year students) and agreed to participate. Students that had contact with neonatal care in other context such as pediatric emergency unit or maternity units and those that didn't want to participate were excluded.

Prior to data collection the study was approved by the school board as well as by ethics committee (process n. 977/2020). All participants were informed of study purpose as well as type and duration of participation. Confidentiality, anonymity and possibility to withdraw at any moment was assured before participants sign consent form.

For data collection semi structured interview was selected since it allows to "understand participants' experiences through their own words and perspectives" (Mitchell, 2015, p. 44). For data analysis content analysis (Bardin, 2013) was followed. Interview script included data for sociodemographic characterization (sex, age, curricular year, and information related to clinical practice) and questions to collect information about experiences in NICU. Issues were based on study objective and existing literature as recommended (Mitchell, 2015) and included questions such as: "how was your experience in NICU?" or "what were the most significant experiences during your time as a nursing student in NICU?". Because this study was applied during quarantine period in Portugal, interviews were conducted and recorded online through a digital platform.

12 students were eligible and to prevent coercion they were all contacted by a member outside the research team, and all agreed to participate. However due to time limitations (all eligible students were undergoing curricular activities) only 6 were interviewed.

Interviews were previously scheduled and occurred in a 2-week frame during April 2020. Average time for each interview was 20 min. For data processing a data software was used. Immediately after interviews data was transcribed and each transcription was identified with the letter I (Interview) followed by a number (1–6). After data transcription digital record was destroyed to assure ethical principles.

For data analysis Bardin's (2013) content analysis technique that encompasses three phases (pre-analysis of interviews, exploration of the material for analysis, and processing of results, and interpretation) was used.

Initially data was organized to be read, then researchers gathered an overall view of the answers by reading the transcriptions several times. Answers were read freely to comprehend and organize its content.

In second phase, material exploration, data was categorized and code labels were assigned (Bardin, 2013). It was a dynamic process that implied identifying significant patterns and allocating meaning. To achieve this, words, sentences, or parts of sentences were allocated into

categories. These categories were labels for different themes or topics from data. Categories were considered from previous research (Choi et al., 2015; Petty, 2017; Sim et al., 2021) and, also, the objective of this research.

In phase three, treatment, inference and interpretation of results, the data was quantified. To ensure trustworthiness and credibility of data analysis all authors discussed and reviewed categories and sub-categories until consensus was reached.

3. Results

Sample consists of 6 students, all female with ages between 20 and 34 years old. 4 students were from 4th year and had their NICU experience in the previous year and 2 students were from the 3rd curricular year and had finished the clinical practice one month before interviews occurred. Each clinical practice lasted 175 h in a 5-to-7-week window.

Throughout data analysis process five categories were identified as shown in Table 1.

4. Discussion

In this study, content analysis (Bardin, 2013) of interviews allowed the identification of a broad set of NICU experiences reported by nursing students. These experiences were clustered into five categories as represented in Table 1. Clinical practice evolution and expectations about clinical practice were the most representative categories identified in this report.

In clinical practice evolution ($f = 43$) students narrated mostly their clinical practice skills acquisition ($f = 20$) throughout time. All students ($n = 6$) reported positive gains in clinical practice at theoretical, practical, and relational levels. Increased autonomy, sensitivity, and safety in care provided were mentioned by participants as relevant experiences. Also, the impact of these experiences was stated as one student specified: "at this clinical practice I really grew up and we had to grow because this was a specific area ... that is in constant development and there are always new things, and it helped me a lot to develop certain skills, even if it is not an area that I will return to in the future" (16). This was an expected result since clinical practice is identified as an optimal context for skills development (Chavaglia et al., 2018). This leads to satisfaction with care provided ($f = 10$) which was also mentioned by nursing students as shown in the following interview segment "you feel your heart full because it is a little baby, and you are there to provide care that in the end will make the baby be more comfortable" (13).

Support received by nurses was also identified ($f = 7$) by students. The relationship between nurse clinical supervisor and nursing students

Table 1
Categorization of experiences reported by nursing students ($n = 6$).

Category	Subcategory
Clinical practice evolution ($f = 43$)	Clinical practice skills acquisition ($f = 20$)
	Satisfaction with care provided ($f = 10$)
	Staff nurses' support ($f = 7$)
	Sense of responsibility ($f = 6$)
Expectations about clinical practice ($f = 42$)	Fear of harming babies ($f = 27$)
	Insecurity about their clinical performance ($f = 8$)
	NICU environmental characteristics ($f = 7$)
	Family presence ($f = 10$)
Challenges faced in clinical practice ($f = 16$)	Staff nurses' indifference ($f = 4$)
	Academic preparation ($f = 2$)
	–
Feelings for the babies and their parents ($f = 6$)	–
Comparing with the adult nursing clinical practice ($f = 6$)	–

f – frequency.

has been reported in literature as important and decisive for a good clinical practice experience (Rojo et al., 2020; Williamson et al., 2020). Last subcategory identified relates to the sense of responsibility ($f = 6$) that students acquire during clinical practice. Dealing with limit situations and providing care to premature infants leads them to understand the importance of nursing care and develop a sense of responsibility (Sim et al., 2021).

In the category expectations about clinical practice ($f = 42$) three subcategories were identified. First subcategory relates to fear of harming babies ($f = 27$) which is widely mentioned in literature as a common expectation in this clinical setting (Choi et al., 2015; Petty, 2017; Sim et al., 2021) and directly related to children vulnerability in NICU. Second subcategory, insecurity about their clinical performance ($f = 8$), is also commonly identified by nursing students not only in NICU but also in other clinical practice settings (Rojo et al., 2020; Soler et al., 2021). Additionally, the NICU environmental characteristics ($f = 7$) which is expected to be cold and highly technological directly contribute nursing students' feelings of insecurity (Choi et al., 2015). Also, the fact that students have never had contact with newborns and, therefore, are inexperienced in this field of nursing increases their insecurity (Büyüç, 2020).

Challenges faced in clinical practice ($f = 16$) include family presence ($f = 10$), staff nurses' indifference ($f = 4$) and academic preparation ($f = 2$). Regarding family presence students report the sense of insecurity and having someone observing the care provided as stated in the following sentence: *"having someone watching you, especially the parents always make you feel a little more insecure"* (I1). Family presence is considered a children fundamental right and a pillar of pediatric nursing care worldwide (Boztepe and Yıldız, 2017; Davidson et al., 2017). However, even for nurses it can be a source of stress particularly when performing invasive procedures (Merighi et al., 2011). Still, as Martínez-Momblán et al. (2020) highlight students improve their ability to establish a therapeutic relationship throughout clinical practice as they develop skills and knowledge. Firstly, students are focused on their own fears and insecurities related to the practice. When this is overcome, through practice and practical skills development, the student begins to broaden the focus of attention to relational skills with families. Concerning academic preparation ($f = 2$) students report feeling unprepared to deal with clinical practice demands. As Santos and Assis (2017) emphasize clinical practice requires more knowledge than what is required in classroom since students must relate theoretical knowledge to practice.

Last categories identified include feelings for the babies and their parents ($f = 6$) and comparing with the adult nursing clinical practice ($f = 6$). Students report feelings of injustice for babies and family situation as stated in the following sentences: *"it seems unfair, doesn't it? It's unfair to the family and to the baby"* (I1) and *"and then you think ... why is this little girl suffering this and that marked me completely"* (I6). According to Petrongolo and Toothaker (2021) feelings directly related to death and suffering include sadness, impotence and injustice among others. In this sense, the experiences of nursing students evidenced the injustice related with the suffering of families and newborns through such delicate situations in early in life.

Comparing care provided in NICU to care provided to adult patients is also reported in literature as a common experience for nursing students (Choi et al., 2015; Sim et al., 2021). Interestingly, none of the students that were interviewed identified strategies to face insecurity or fears. Also, other aspects that are identified in literature such as communication difficulties (Sim et al., 2021), being shocked by the babies appearance (Choi et al., 2015) or exposure to a poor clinical environment (Sim et al., 2021) were not mentioned by students in our study.

We must consider the sample size and the period in which the study was undertaken as limitations. Due to current world pandemic interviews were performed online and while students were in academic activities. These factors lead to a small sample of students and data collection had to be performed online. Since there was no physical contact between

researchers and participants nonverbal aspects were not observed with impact on interview duration.

5. Conclusions

The findings of this study indicate that nursing students experienced a wide range of feelings and experiences. Clinical practice evolution (that includes skills acquisition, satisfaction with care provided, staff nurse support and sense of responsibility) and expectations about clinical practice (that comprehend fear of harming babies, insecurity about their clinical performance and NICU environmental characteristics) were identified as the most mentioned categories. Other categories (challenges faced in clinical practice, feelings for the babies and their parents and comparing with the adult nursing clinical practice) were also identified. Although all nursing students reported both positive and negative feelings and experiences, they did not report strategies they used to overcome these challenges and deal with these experiences.

This research expanded the knowledge about the experiences of nursing students in the context of clinical practice in NICU, given the scarcity of studies in this area.

Funding

No funding.

Declaration of competing interest

The authors declare that there is no conflict of interest.

References

- American Academy of Pediatrics, American Heart Association, 2021. *Textbook of Neonatal Resuscitation, eighth ed.* American Academy of Pediatrics.
- Bardin, L., 2013. *Content Analysis, vol. 70.* Edições, Lisboa.
- Bartlett, M.L., Taylor, H., Nelson, J.D., 2016. Comparison of mental health characteristics and stress between Baccalaureate nursing students and non-nursing students. *J. Nurs. Educ.* 55, 87–90. <https://doi.org/10.3928/01484834-20160114-05>.
- Boztepe, H., Yıldız, G., 2017. Nurses perceptions of barriers to implementing family-centered care in a pediatric setting: a qualitative study. *J. Spec. Pediatr. Nurs. (JSPN)* 22, e12175. <https://doi.org/10.1111/jspn.12175>.
- Burkett, G.L., 1990. *Classifying basic research designs.* *Fam. Med.* 22, 143–148.
- Büyüç, T., 2020. Problems of midwifery and nursing students in a neonatal care unit. *Prog. Health. Sci.* 10, 6–12. <https://doi.org/10.5604/01.3001.0014.1908>.
- Chavaglia, S.R.R., Barbosa, M.H., Santos, A.D.S., Duarte, R.D., Contim, D., Ohl, R.I.B., 2018. Didactics strategies identified by nursing students. *Cogitare Enferm.* 23, 53876. <https://doi.org/10.5380/ce.v23i3.53876>.
- Ching, S.S.Y., Cheung, K., Hegney, D., Rees, C.S., 2020. Stressors and coping of nursing students in clinical placement: a qualitative study contextualizing their resilience and burnout. *Nurse Educ. Pract.* 42, 102690. <https://doi.org/10.1016/j.nepr.2019.102690>.
- Choi, E.A., Lee, K.E., Lee, Y.E., 2015. Nursing students' practice experience in neonatal intensive care units. *Child Heal. Nurs. Res.* 21, 261–271. <https://doi.org/10.4094/chnr.2015.21.3.261>.
- Davidson, J.E., Aslakson, R.A., Long, A.C., Puntillo, K.A., Kross, E.K., Hart, J., Cox, C.E., Wunsch, H., Wickline, M.A., Nunnally, M.E., Netzer, G., Kentish-Barnes, N., Sprung, C.L., Hartog, C.S., Coombs, M., Gerritsen, R.T., Hopkins, R.O., Franck, L.S., Skrobik, Y., Kon, A.A., Scruth, E.A., Harvey, M.A., Lewis-Newby, M., White, D.B., Swoboda, S.M., Cooke, C.R., Levy, M.M., Azoulay, E., Curtis, J.R., 2017. Guidelines for family-centered care in the neonatal, pediatric, and adult ICU. *Crit. Care Med.* 45, 103–128. <https://doi.org/10.1097/CCM.00000000000002169>.
- Gesteira, E.R., Goldenberg, P., 2012. Clinical practice in Neonatology during Undergraduate Nursing course: coping and challenges in a context of changes. *Rev. Bras. Enferm.* 65, 65–71. <https://doi.org/10.1590/S0034-71672012000100009>.
- Klock, P., Erdmann, A.L., 2012. Caring for newborns in a NICU: dealing with the fragility of living/surviving in the light of complexity. *Rev. Esc. Enferm. USP* 46, 43. <https://doi.org/10.1590/S0080-62342012000100006>.
- Lei, J., Jin, H., Shen, S., Li, Z., Gu, G., 2015. Influence of clinical practice on nursing students' mental and immune-endocrine functions. *Int. J. Nurs. Pract.* 21, 392–400. <https://doi.org/10.1111/ijn.12272>.
- Li, Z.-S., Hasson, F., 2020. Resilience, stress, and psychological well-being in nursing students: a systematic review. *Nurse Educ. Today* 90, 104440. <https://doi.org/10.1016/j.nedt.2020.104440>.
- Martínez-Momblán, M.A., Colina-Torralva, J., Cueva-Ariza, L.D. la, Guix-Comellas, E.M., Romero-García, M., Delgado-Hito, P., 2020. Analysis of the evolution of competences in the clinical practice of the nursing degree. *Rev. Lat. Am. Enfermagem* 28. <https://doi.org/10.1590/1518-8345.2927.3231>.

- Merighi, M.A.B., Jesus, M.C.P. de, Santin, K.R., Oliveira, D.M. de, 2011. Caring for newborns in the presence of their parents: the experience of nurses in the neonatal intensive care unit. *Rev. Lat. Am. Enfermagem* 19, 1398–1404. <https://doi.org/10.1590/S0104-11692011000600017>.
- Mitchell, G., 2015. Use of interviews in nursing research. *Nurs. Stand.* 29, 44–48. <https://doi.org/10.7748/ns.29.43.44.e8905>.
- Mohammadi, F., Oshvandi, K., Med, H.K., 2020. Male nursing students' perception of dignity in neonatal intensive care units. *Nurs. Ethics* 27, 381–389. <https://doi.org/10.1177/0969733019848040>.
- O'Brien, B.C., Harris, I.B., Beckman, T.J., Reed, D.A., Cook, D.A., 2014. Standards for reporting qualitative research. *Acad. Med.* 89, 1245–1251. <https://doi.org/10.1097/ACM.0000000000000388>.
- Petrongolo, M., Toothaker, R., 2021. Nursing students perceptions of death and dying: a descriptive quantitative study. *Nurse Educ. Today* 104, 104993. <https://doi.org/10.1016/j.nedt.2021.104993>.
- Petty, J., 2017. Creating stories for learning about the neonatal care experience through the eyes of student nurses: an interpretive, narrative study. *Nurse Educ. Today* 48, 25–32. <https://doi.org/10.1016/j.nedt.2016.09.007>.
- Pulido-Criollo, F., Cueto-Escobedo, J., Guillén-Ruiz, G., 2018. Stress in nursing University students and mental health. In: *Health and Academic Achievement*. InTech. <https://doi.org/10.5772/intechopen.72993>.
- Refrande, S.M., Silva, R.M.C.R.A., Pereira, E.R., Rocha, R.C.N.P., Melo, S.H. da S., Refrande, N.A., Santos, R.R. Dos, 2019. Nurses' experiences in the care of high-risk newborns: a phenomenological study. *Rev. Bras. Enferm.* 72, 111–117. <https://doi.org/10.1590/0034-7167-2018-0221>.
- Rojo, J., Ramjan, L.M., Hunt, L., Salamonsen, Y., 2020. Nursing students' clinical performance issues and the facilitator's perspective: a scoping review. *Nurse Educ. Pract.* 48, 102890. <https://doi.org/10.1016/j.nepr.2020.102890>.
- Santos, K.D., Assis, M.A., 2017. Factors contributing to the security and insecurity of the nursing student in training. *Enferm. Bras.* 16, 4–10. <https://doi.org/10.33233/eb.v16i1.898>.
- Sharma, D., Murki, S., 2021. Making neonatal intensive care: cost effective. *J. Matern. Fetal Neonatal Med.* 34, 2375–2383. <https://doi.org/10.1080/14767058.2019.1660767>.
- Sim, I.O., Bae, O.Y., Kim, T.H., 2021. South Korean nursing students' experiences of clinical practice in the newborn nursery and neonatal intensive care unit: a phenomenological study. *Child Heal. Nurs. Res.* 27, 3–12. <https://doi.org/10.4094/chnr.2021.27.1.3>.
- Soler, O.M., Aguayo-González, M., Gutiérrez, S.S.R., Pera, M.J., Leyva-Moral, J.M., 2021. Nursing students' expectations of their first clinical placement: a qualitative study. *Nurse Educ. Today* 98, 104736. <https://doi.org/10.1016/j.nedt.2020.104736>.
- Williamson, G.R., Kane, A., Plowright, H., Bunce, J., Clarke, D., Jamison, C., 2020. 'Thinking like a nurse'. Changing the culture of nursing students' clinical learning: implementing collaborative learning in practice. *Nurse Educ. Pract.* 43, 102742. <https://doi.org/10.1016/j.nepr.2020.102742>.