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One day workshops as a platform for continuous professional development of nursing staff in a neonatal intensive care unit

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Abstract

The neonatal field is constantly changing with the development of new evidence-based practice and technology. The purpose of this paper is to report on a research project that aimed to create a platform for continuous professional development to improve evidence-based neonatal practice, using action research. Using Problem Resolving Action Research (PRAR) a process consisting of plan, act, observe and reflect was applied by a steering committee. A nominal group discussion technique determined training priorities of nursing staff in a neonatal intensive care unit (NICU) and questionnaires obtained demographic data of participants and information pertaining to workshops and professional development over a period of two years. The findings indicate one-day workshops serve as a valuable platform to contribute to professional development to improve quality care in neonatal practice.

Keywords: one-day workshops, continuous professional development, nursing staff, neonatal intensive care unit, adult education

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Nursing staff in neonatal intensive care units (NICU) caring for ill and premature infants from birth to discharge need specific clinical knowledge and skill sets. Given the explosion of evidence-based research, technology and advances in neonatal practice, it is crucial for nurses to be constantly updated on new knowledge so that they remain competent to care for this vulnerable population. One such way to stay updated is through continuous professional development, but a platform is needed to facilitate this.

One-day workshops was identified as a potential platform for continuous professional development of nursing staff working in NICUs. Such workshops may have the potential to reduce neonatal mortality and morbidity as they can contribute to the nursing staff's knowledge and skills and to improved practice in neonatal care.

Background

Neonatal infants in NICUs belong to a high-risk vulnerable population (Strandås & Fredriksen 2015). The physiology of a premature infant differs from that of a term infant, child or adult, as their developing immature organs respond differently to extra-uterine life, which puts them at risk of mortality and morbidity (Blencowe et al., 2013; Behrman & Butler, 2007). The highest mortality rate for children occurs during this neonatal period (WHO, 2016).

They are cared for in a NICU, which is a specialized unit caring for a unique group of patients, premature and ill neonates to prevent mortality and morbidity (van Reempts, et al., 2007). Prematurity accounts for 35% of neonatal mortality (UNICEF, 2016) and is the most common reason for admission to NICUs. Full-term infants are usually admitted due to infections, asphyxia, congenital abnormalities, meconium aspiration or other morbidity (Pattinson, 2014).

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Treatment entails the use of specialized equipment, drugs and modalities of care, and should be based on the most recent evidence available for optimal outcomes. It is noted that nursing care is not only provided to the neonate, but also to the family in a multifaceted environment. Caring for this vulnerable population requires competent nurses with specialized knowledge and skills to ensure safe practice and care (Lloyd & de Witt, 2013; Pattinson, 2014; Samra, McGrath & Rollins 2011; Petty 2014). Nursing staff in NICU's are not only the advocates and voices of the smallest and most fragile infants, they also need to facilitate bonding and attachment and support parents who are on an emotional roller-coaster and experiencing high levels of stress (Obeidat, Bond & Callister, 2009).

Aspects related to the required knowledge and other competencies of nurses in NICUs might be addressed in basic or specialist training, but the neonatal field is dynamic and changing at a rapid pace. New evidence in terms of pathophysiology, diagnostics, medical treatment, pharmacology, use of technology, nutrition and family-centered care expand on a daily basis (Mesman n.d.). Nurses in NICUs therefore need continuous professional development to remain knowledgeable, competent and up to date with evidence-based practice to provide quality nursing care for this vulnerable population.

However, continuous professional development is a complex concept. According to Kirsch (2015) it can refer to either a formal and structured approach or to informal and self-directed learning. Both approaches are paths followed by professionals to retain skills and competence related to practice and acquire new knowledge and practical experience.

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Purpose of the project

The purpose of this project was to create a platform for continuous professional development of nursing staff in NICUs through one-day workshops. The setting was central training venues in Gauteng, South Africa, as it was accessible to nursing staff working in NICUs in rural and urban areas. Nursing staff from both public and private healthcare sectors and educators from several training institutions were included as prospective participants for continuous professional development workshops through convenience sampling.

Literature Review

According to Friesen, Brady, Milligan and Christensen (2017), the practicing nurse has the responsibility to render evidence-based nursing to the patient. Melnyk, Gallagher-Ford, Long and Fineout-Overholt (2014, p. 5) describe evidence-based practice as “a life-long problem-solving approach to the delivery of health care that integrates the best evidence from well-designed studies (i.e., external evidence) and integrates it with a patient's preferences and values and a clinician's expertise, which includes internal evidence gathered from patient data”.

Implementation of evidence-based practice contributes to improved quality of care, patient outcomes and decreased healthcare costs. Evidence-based practice can be complicated at the patients' bedside as it is influenced by multiple factors (Friesen et al., 2017), such as organizational and leadership support (Melnyk, 2017), availability of resources, knowledge and skills (Melnyk et al., 2014), as well as individual and cultural influences (Dogherly, Harrison, Graham, Van Dyk & Keeping-Burke, 2013).

The implementation of evidence-based practice relies on competent nurses with specialized knowledge and skills. Competence can be retained and enhanced by continuous

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professional development to improve quality of care at the patient's bedside. The need for a platform to facilitate continuous professional development of nurses was identified to improve the quality of evidence-based neonatal care in practice. The platform could be created through a quality improvement initiative.

Fan, Laupacis, Pronovost, Guyatt and Needham (2010) state that quality improvement initiatives aim to change the behavior of clinicians and these changes lead to more consistent, appropriate and efficient practice of clinical interventions. In turn, these changes result in improved healthcare delivery to patients, leading to improved patient outcomes.

A quality improvement initiative needs to be supported by the engagement of clinical leadership (Allen et al., 2007). Quality improvement initiatives should be evidence-based, driven by leaders and implemented by all staff in a particular clinical area. A quality improvement initiative for neonatal nurses' professional development should include evidence-based neonatal content (Lloyd & de Witt, 2014; Petty, 2014).

It has to be noted that professional development depends or relies on intrinsic motivation (Gaber & Moustafa, 2015) and an initiative therefore should accommodate expressed needs and expectations of nurses across all career stages (Price & Reichert, 2017). Pool, Poell, Befings and ten Cate (2015) indicate that reasons for professional nurses of all age groups are related to relevance to their daily work or new tasks allocated to them. A reason for younger nurses is to gain experience and build a career, while middle-aged nurses want to have a work-life balance and keep work interesting and varied, and older nurses are looking for consistency at work.

Opportunities should be created for professional development. Platforms available include, but are not limited to social media (O'Connor, Jolliffe, Stanmore, Renwick, Schmitt & Booth,

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2017), or instant messaging (Pimmer, Brühlmann, Odetola, Dipeolu, Gröhbiel, & Ajuwon, 2018), conferences (Pool, et al. 2015). Bindon (2017) also identified on-line modules, courses and websites, workshops, journal clubs, mentorship and professional networking as possible platforms for continuing professional development.

In this study one day workshops were explored as such a platform, and the methodology and findings are integrated in the following section according to the phases of the quality improvement cycle.

Methodology and findings

This project was a spin-off from a doctoral study that focused on strategies to sustain a quality improvement initiative in neonatal resuscitation at a district hospital (van Heerden, 2015) where the need for continuous professional development was identified. This project was carried out in collaboration with the Neonatal Nurses Association of Southern Africa (NNASA). NNASA is a national association for nurses with a specific interest in neonatal care, and its purpose is to improve neonatal care for all babies in South Africa through education, support and motivation (NNASA, 2018).

The design of choice was the Problem Resolving Action Research (PRAR) model described by Piggot-Irvine (2009).

Action research is a strategy which facilitates change through action, thereby creating opportunities to develop and improve quality of care (Piggot-Irvine 2009; Koshy, Koshy & Waterman, 2011). It is moreover a process indicating continued improvement through cycles of planning, acting, observing and reflecting in a particular context. Action research contributes to

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knowledge and skill acquisition, ownership and collaboration leading to empowerment and change in practice (Piggot-Irvine, 2009). The objectives are reflected in Figure 1.

1. Plan:
 - Establish a steering group to drive the process of professional development in neonatal practice.
 - Generate ideas to create a platform for professional development in neonatal practice.
2. Act:
 - Create training opportunities for evidence based neonatal care and quality improvement in neonatal practice through workshops.
3. Observe:
 - Obtain written feedback from participants regarding professional development through the workshops.
4. Reflect:
 - Reflect on the implementation of workshops as a platform for professional development and quality improvement in neonatal practice.

Figure 1: Objectives

Plan

The initial objective was to form a steering committee to drive the process. Three volunteers from the neonatal nursing fraternity identified one-day workshops as an option to create a platform for continuous professional development for nurses in neonatal practice. The steering committee members were leaders of a special interest group in neonatal nursing, were females, two held a Doctoral degree and one a Master's degree in neonatal nursing. Stakeholders from clinical settings (private and public health sector), as well as from academic institutions with a special interest in neonatal practice were invited by the steering committee to participate in the project. Convenience sampling was used to reach those who were available at the time. A nominal

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group discussion was held with six stakeholders from neonatal practice to determine an action plan for creating a platform for continuous professional development and evidence-based quality improvement in neonatal practice in NICUs. The nominal group discussion followed the process described by Delbecq, van de Ven and Gustafson (1975). First, participants were given time to think about and reflect on the problem area and then to generate key ideas. Second, the ideas were recorded on a flip chart using a round-robin technique, to facilitate full participation. Thirdly, a discussion followed to clarify ideas and promote logical reasoning. Lastly, the importance of each proposal was determined and voted on. Based on votes, ideas were ranked and prioritized. Consensus was reached resulting in a set of prioritized recommendations, the format of the workshops and possible themes or topics to be presented, which are discussed as part of the acting phase. Refer to Table 1 for demographic data of the participants involved in the planning phase.

Table 1: Demographic data during planning phase

Activity	Sex	Highest qualification	Setting where employed
Steering committee (N=3)	Female n=3	Doctoral degree n=2 Master's degree n=1	Academic n=2 Private n=1
Nominal Group (N=6)	Female n=6	Doctoral degree n=5 Master's degree n=1	Academic n=4 Private n=2

The results of the planning phase guided the acting phase.

Act

This phase focused on the implementation of one-day workshops. Seven one-day workshops were held between April 2016 and March 2018, and was scheduled every three months on Saturday mornings. They were advertised through social media (NNASA Gauteng Branch Facebook page), invitations sent by emails to NICUs in Gauteng, and by word-of-mouth. The workshops were held at minimal cost to increase accessibility to all nursing staff working in

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NICUs, both public and private, and other interested persons. They were held at different venues to accommodate delegates from a number of geographical areas, some of whom travelled as far as 250 kilometers to attend. In total, 250 delegates attended the workshops, with an average of 30 to 45 per workshop.

The initial content of these workshops was based on themes and topics related to evidence based neonatal care as prioritized at the nominal group discussion in the previous phase. However, after the initial launch of the one-day workshops, topics and themes were refined based on feedback from attendees. The themes and topics covered are indicated in Table 2. More details on each presentation are available on request from the corresponding author.

Table 2: Themes and topics of the workshops

Date	Theme	Topics
April 2016	Neonatal resuscitation	<ul style="list-style-type: none"> • Basic care and identification of early warning signs • Neonatal resuscitation - Helping Babies Breathe (HBB) • Advanced neonatal resuscitation • Nasal high flow oxygen
June 2016	Neurological development	<ul style="list-style-type: none"> • Neonatal amplitude-integrated electroencephalography (aEEG) • Principles of developmental supportive care • Family-integrated care • Early childhood intervention and principles of child development
September 2016	Ventilation	<ul style="list-style-type: none"> • Nasal high flow • Continuous positive airway pressure (CPAP) • Endotracheal intubation • Intermittent positive pressure ventilation (IPPV) • Oscillation • Care of the ventilated patient
November 2016	Pharmacology and hemodynamic stability	<ul style="list-style-type: none"> • Basics of neonatal pharmacology • Acid-base balance • Fluid and electrolyte balance
February 2017	Ethics and medico-legal implications	<ul style="list-style-type: none"> • Principles of ethics • Recordkeeping • Legislation and litigation in NICU • Quantum calculation
May 2017	Nutrition and the gastro-intestinal tract	<ul style="list-style-type: none"> • Nutritional management of the preterm infant • Feeding readiness in the preterm infant • Stress, developmental supportive care and the gastro

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		intestinal tract.
August 2017	Neurological system	<ul style="list-style-type: none"> • Hypoxic Ischemic Encephalopathy (HIE) and brain cooling • Brain monitoring • Bereavement
November 2017	Cardiovascular system	<ul style="list-style-type: none"> • Blood pressure homeostasis • Care of the cardiac patient • Congenital cardiac abnormalities
March 2018	Quality neonatal care	<ul style="list-style-type: none"> • Respiratory distress syndrome • Neonatal ventilation update • Quality neonatal care • Family centered care

Subject specialists from a number of disciplines, including neonatal nursing, speech therapy, human nutrition, occupational therapy, physiotherapy, pharmacology, and early childhood intervention gave evidence-based presentations. Active participation of delegates in terms of discussions and reasoning, sharing of current practice in the respective NICUs regarding the theme of the day, and agreement of what should be the best practice were facilitated. New ideas were generated on how to overcome barriers such as limited resources and staff shortages.

The afternoon sessions of each workshop were allocated to training of quality improvement champions to enhance neonatal nursing practice through quality improvement initiatives. The sessions focused on the quality improvement process and the application of Kouzes and Posner's (2017) leadership model. Delegates had the opportunity to discuss suggested initiatives and how to achieve desired goals. Members of the steering committee made themselves available for follow-up consultations as needed. Refer to Table 3 for demographic data of the delegates who attended the workshops.

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Table 3: Demographic data of delegates during acting phase

Activity	Sex	Age	Workplace of delegates
Workshop participation (7 workshops) N=250; Average n=30-45 per workshop	Female n=246 Male n=4	Ranges between 24-64 years	Private NICUs (n=between 20 -30 per workshop) Public NICUs (n=between 10 -15 per workshop)

The delegates involved in the acting phase were the same participants involved in the observing phase of this project.

Observe

At each workshop, delegates were informed that the workshops were part of a research project that had been approved by the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria. They were provided with information about the study, and those who were willing to participate, were requested to complete a questionnaire. All the delegates (N=250) participated voluntarily (See Table 3 for demographic data).

The delegates came from the private and public health sector, and included registered nurses, neonatal nurse specialists, advanced midwives, nurse managers, clinical facilitators, nurse educators as well as enrolled nurses and nursing students. Their core responsibilities related to physical neonatal care, management of neonatal settings or education in neonatal care, and all had a special interest in neonatal care.

The open-ended questionnaire was distributed after each workshop to explore their reasons for attending the workshops, the contribution of the workshops to their professional development and future training needs. The qualitative data generated from questionnaires were analyzed

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through open coding as described by Tesch (as cited in Cresswell 2009). The findings were as follows:

- *Reasons for attending the workshop*

Delegates indicated various reasons for attending the workshops. The main reasons were improving their knowledge, personal and professional development, improvement of quality care, and the desire to update knowledge. Examples of data reflected by participants include:

“. . . improving my knowledge regards to improvement and interpretation of neonatal needs” (Participant # 9, Workshop # 4, Female, Registered nurse)

“... I want to grow and see latest evidence...” (Participant # 29, Workshop # 3, Female, Registered nurse)

“... keeping myself informed with the latest and best care in the NICU” (Participant # 12, Workshop # 5, Female, Neonatal nurse specialist)

“... empowering myself” (Participant # 51, Workshop # 7, Female, Advanced midwife)

“... self-development” (Participant # 16, Workshop # 4, Female, Registered nurse)

“... you are never too old to learn new information and information is changing due to research” (Participant # 3, Workshop # 6, Female, Registered nurse)

“... personal and professional development” (Participant # 17, Workshop # 2, Female, Registered nurse)

“... newly qualified, gaining knowledge, continues updated knowledge.” (Participant # 19, Workshop # 1, Female, Registered nurse)

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“ . . . it helps me to be competent in nursing ” (Participant # 35, Workshop # 3, Female, Registered nurse)

From the above, it is evident that the delegates perceived the one-day workshops served as an appropriate platform for continuous professional development of nurses in neonatal practice.

- *Aspects of the workshops contributing to their professional development*

According to the findings, all the topics discussed at the workshops made valuable contributions to their professional development to improve clinical practice. Participants also indicated that networking, the question-and-answer sessions and sharing of information contributed to their professional development.

Only three delegates commented on aspects they felt did not contribute to their professional development: two delegates said information on procedures that were not used in their respective NICUs were the use of the aEEG's, while the third person reported that they were not allowed to perform endotracheal intubation in their unit and it was therefore not applicable to their context.

- *Future training needs*

Delegates were also asked to indicate their future training needs. The workshops were presented according to the themes indicated in Table 2. Topics identified here included aspects related to neonatal resuscitation, hypoxic ischemic encephalopathy, brain cooling and aEEG monitoring, respiratory support, kangaroo mother care, developmental supportive care, family-integrated care, and general neonatal nursing care. As not all delegates attended all the workshops,

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some topics that had already been presented, were suggested as topics needed for future presentations. The feedback then was used in the reflecting phase.

Reflect

The steering committee reflected on the process and results of the questionnaires after each workshop and training session. Based on these findings, the steering committee refined the action plan to ensure that all topics identified were included and to repeat the subjects identified as burning issues. The steering committee also reflected on the value of one day workshops as a platform to improve neonatal practice, the format of the one-day workshops and available evidence supporting the topics. After each workshop the presentations as well as relevant documentation, e.g. best practice guidelines on a particular topic addressed at the workshop, had been emailed to all delegates who attended that workshop. The steering committee's contact details were also available should a delegate need to share information, reflect or consult.

Discussion

Due to the fragile population that nurses in the NICU care for, it is crucial for them to stay up to date with new developments and base their nursing practice on the latest evidence available including new trends of care, technology, pharmacology and guidelines (Lloyd & de Witt, 2013; Pattinson, 2014; Petty 2014). Even if nurses are exposed to neonatal care training as part of a course or program, they have to engage in continuous professional development to remain abreast of the changes and trends (Melnyk, 2017).

In order to contribute to the quality of neonatal care, workshops related to sustainable evidence-based neonatal care, as well as training opportunities for quality improvement champions, were initiated as a platform for continuous professional development of nursing staff

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working in NICUs in the Gauteng region. The steering committee did not have access or power to influence the resources or organizational culture of the different institutions with NICUs, but it could create such a platform that could make a difference to the knowledge, skills and leadership of NICU nursing staff. Individuals with an interest in neonatal care, who saw the potential to gain knowledge and skills, voluntarily attended the workshops.

Bearing in mind that the neonatal interest group represents a relatively small population, the number of delegates who attended the workshops, given the limited publicity, and absence of incentives for attendance, and for some delegates large distances, it was clear there was a real need for such workshops.

At the first workshop there were 15 delegates, 36 at the second, and subsequently as many as 52 delegates per workshop. Most delegates were between 40 and 64 years of age, with more than 10 years' experience in neonatal care. They indicated that they needed to refresh their knowledge and remain up to date with new trends and technology, and new evidence-based information. This correlates with the study by Pool et al. (2015). The delegates of this study appreciated the one-day workshops as a platform to enhance their knowledge and skills and the contribution to their professional development.

Grol and Grimshaw (2003) note that transformation in practice can be achieved through well planned interventions. They have identified educational strategies which, when used in small groups where active participation is possible, can have a positive outcome in terms of transferring evidence to practice. In addition, they suggest education should be both continuous and underpinned by active participation and collaboration, as this facilitates discussion of evidence, consensus and feedback amongst peers. These aspects could be addressed during the one-day

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workshops in this study, and the comments from the delegates indicated that it was valuable to them.

Aspects related to the one day workshops that were considered of importance, was for the topics and content to be evidence-based and contemporary (Lloyd & de Witt, 2014; Petty, 2014), to address the delegates' needs and expectations (Price & Reichert, 2017), to be considered by the delegates to be the worthwhile and give them something more than what you can read on Internet (Pool, Poell, Befings & ten Cate, 2015), to be accessible, comfortable and safe, well-planned, well-structured, interactive, contribute to learning and for the facilitators and speakers to be knowledgeable and competent presenters (Charles, 2014). The steering committee attempted to address these aspects and the feedback in these regards was positive.

The use of the Piggot-Irvine (2009) Problem Resolving Action Research Model was a valuable design to plan, act, observe and reflect on improving clinical practice. It gave structure and guided the Steering Committee on the process to follow.

In this vast growing field of neonatal practice, it is paramount for the vulnerable populations in the NICU to receive the best possible care based on the newest research and interventions appropriate in a particular context. Feedback in this study was very positive and the use of one-day workshops as a platform for professional development appeared to be probable and valuable. This might lead to the professional development of the individuals as well as improved practice.

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Limitations

A limitation was that mainly qualitative data was collected and quantitative supporting data was lacking. The study was contextual and can therefore not be generalized, but it might be transferable to a similar context.

Implications and recommendations

It is important that a platform for professional development is evidence-based with relevant and recent content matter, based on the intrinsic motivation, needs and expectations of the individuals. It is recommended that one day workshops are available and accessible to those interested to use it as a platform for professional development.

Policy makers should take notice of the use of one day workshops as a platform for professional development to enhance quality care and should accommodate interested staff to attend and promote relevant one day workshops at the workplace.

It is further recommended that the PRAR model is applied in future studies related to quality improvement initiatives to enhance professional development and quality patient care in similar and other contexts. It is also recommended to combine qualitative and quantitative methods of data collection and analysis to strengthen findings.

Due to the perceived value of the one-day workshops for professional development and the potential contribution to improving quality of neonatal care, these one-day workshops were continued on the same basis, beyond this study.

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Conclusion

A NICU is a specialized unit where healthcare professionals, including nurses, care for vulnerable, high-risk neonates and their families. Nursing staff in NICUs are responsible for their own professional development if they are to remain knowledgeable and informed when caring for neonates. In a field that changes constantly, it is imperative for nurses to stay up to date with the most recent evidence, trends, and technologies in neonatal care. However, new evidence needs to be translated into practice in order for it to contribute to positive outcomes for neonates.

One-day workshops serve as a platform for nurses working in different NICU settings to discuss new evidence, the challenges they experience and share ideas on how to transfer evidence to practice, as well as an opportunity for professional development.

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