An evaluation of neonatal nurse professional development in Vietnam

Authorship

Dr Sonya MacVicar.   PhD, MSc, BA(Hons), RM, RGN
Associate Professor Neonatal Health
Edinburgh Napier University

Corresponding Author

Dr Sonya MacVicar
School of Health and Social Care
Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Tel 0141 355 2441
s.macvicar@napier.ac.uk

An evaluation of neonatal nurse professional development in Vietnam

ABSTRACT

This is an evaluation of neonatal nurse continued professional development delivered in Vietnam. Course outcomes of participant academic and clinical performance, nurse feedback and service improvement were mapped to Kirkpatrick's evaluation model. The data showed the nurses were proficient in technical skills but possessed limited autonomous clinical decision-making ability. The training enhanced their understanding of the evidence base underpinning neonatal care but their learning experience was restricted by limited academic resources available in Vietnamese. The evaluation concluded that to support the nurses construct their own practice knowledge, the training provision should be founded on their specific clinical and contextual needs rather than replicate existing programmes. Recommendations for their continued professional development is to build capacity amongst the local nursing workforce to ensure sustainability of learning and enhance clinical outcomes.

An evaluation of neonatal nurse professional development in Vietnam

INTRODUCTION

Reducing neonatal mortality and ending preventable deaths of newborns is a key priority in addressing global health inequalities (United Nations, 2020).   Almost 99% of neonatal deaths are in low- and middle-income countries (LMIC), with the lack of adequately skilled health care professionals a significant contributory factor to the high neonatal mortality in resource poor settings (Renfrew et al., 2014).

As a LMIC Vietnam have actively pursued upskilling of their existing workforce in a bid to improve the quality of their maternity and neonatal health provisions (Kunaviktikul et al., 2019). This has been constrained, however by the lack of suitably qualified Vietnamese neonatal nurse educators (Nguyen et al., 2018). One route to address this shortfall is international collaborations with external partners to provide the specialist training required.

While there has been an ambitious programme of neonatal education and training collaborations these have been both diverse and disparate with variable short and long-term outcomes. A common approach is short duration training focussing on a specific skill set such as essential early newborn care but these tend to be unregulated with limited follow-up (Morseth et al., 2020).   Community participatory and knowledge translation have shown promising results, yet these are context driven leading to significant variability and effectiveness between local healthcare systems (Eriksson et al., 2016). Gallagher et al. (2017) reported an 18 month structured neonatal nurse programme that demonstrated initial impact on nursing and parental experience but has not been evaluated for long-term effectiveness or sustainability.

While different educational models have demonstrated real time improvements in initial skills and understanding, consideration is needed regarding long term impact towards continuing good practice, fostering local ownership and sustainability in design and provision.   Prior to the Covid 19 global pandemic a pilot cohort of a neonatal nurse

continued professional development (CPD) collaboration commenced between a UK higher education institution (HEI) and Vietnam National Children's Hospital. This was put on hold when international travel between Vietnam and the UK was halted.   This evaluation considers the effectiveness and acceptability of this learning model and the sustainability of these international collaborations in light of the changed and changing landscape.

METHODS

Aim/Objectives

The aim is to evaluate neonatal nurse continued professional development delivered as part of a wider service improvement initiative in Hanoi, Vietnam.

This is reported using the CRe-DEPTH framework for describing and evaluating healthcare professional training (Van Hecke et al., 2020).   Outcome measures are mapped to Kirkpatrick's evaluation model (2006) to appraise whether the training meets both the participant development needs and the organisation requirements.

Ethics

Ethical principles were adhered to with all nurses informed of the purpose of the evaluation, in both English and Vietnamese. It was voluntary to complete the anonymised end of course evaluation. The risk of personal identification with a small homogeneous sample is minimised by collating demographics and outcomes as a cohort rather than as individuals.

Intervention

Professional development provision was informed by a knowledge and skill needs assessment commissioned by the funder. This was supported by observation of practice by the HEI and assessment of the resources available in Hanoi.

Structure and Content

The CPD was delivered over 16-weeks as blended learning provision divided equally into classroom teaching and skills based competence training in the clinical area. The content was based upon the British Association of Perinatal Medicine (BAPM) Qualified in Specialty framework (BAPM 2012). UK neonatal nurse practitioners and/or educationalists delivered the content in English with simultaneous translation in Vietnamese by a medically trained translator. The content included biosciences and aetiology of the disease process with contemporary evidence base and best practice recommendations underpinning the neonatal management strategies taught.

A problem-based learning (PBL) approach was adopted to develop clinical reasoning skills through social constructivism and active learning within a group setting (Woisinki et al., 2018). PBL is a process focused rather than content focused pedagogical strategy centred on small groups tackling practice-based problems of increasing complexity (Nguyen et al., 2016).   PBL engages both self-directed study and collaborative teamwork. Learners are presented with a clinical dilemma meaningful and authentic to their practice. Guided by the educator the learner sources the information required to complement their existing knowledge of the presenting situation. Using team working the collective knowledge of the group analyses potential solutions before rationalising choices. Previous studies suggest that whilst short term knowledge acquisition is often similar between PBL and traditional lecture based delivery, greater long-term retention and conceptual change is more likely with PBL (Loyens et al., 2015; Yew and Goh, 2016).

Participants and Setting

Participants were nurses employed in the neonatal unit of the largest paediatric hospital in Hanoi. The unit has a 300-bed capacity, providing a full range of neonatal services on site with approximately 4500 admissions annually.

Volunteers were sought from nurses employed on the neonatal unit with 8 places available. A small, experienced cohort with a level of seniority was considered optimal to

gain rich feedback, build working relationships and identify practice supervisors of the future.

Data collection and analysis

The data collected were to evaluate how effective the content and delivery were for the Vietnamese context. Kirkpatrick's (2006) evaluation model has four levels of evaluation enabling a comprehensive understanding of potential short and long term effectiveness. Each level maps to an assessment strategy (Table 1).

TABLE 1

Kirkpatrick level	Mapping	Data collection method
Level 1: Course evaluation	*Measures participant reaction to the course.* Enables identification of course strengthens and weaknesses, missing content, if engaging presentation styles and delivery and highlights improvements needed.	Nurse end of course evaluation with 3 open text questions in week 16. (1) pre-course expectations. (2) the learning experience. (3) recommendations for future courses. Any other comments open text box.
Level 2: Trainee competence	*Measures knowledge and skills acquisition*. Enables identification of what has and has not been learned. This demonstrates how nurses have developed their clinical skills and theoretical underpinning knowledge.	Multiple choice question exam. Topics included anatomy and physiology, pathophysiology and aetiology of the disease process and neonatal management. Week 1:Formative MCQ of 10 questions. Week 8: Formative MCQ of 10 questions. Week 16: Summative MCQ of 30 question. Clinical competency workbook: Continual assessment of core clinical skills over 16 weeks. Assessment by direct observations in practice or clinical simulation of practice. Verified by practice educators.

Level 3: Trainee behaviour	*Measures integration of knowledge, skills and clinical decision making*. Enables identification of how well the nurses can apply the training content and if it has been understood clinically and conceptually.	Observed Structured Clinical Examination Examination, rationalised clinical decision making and management of a compromised neonate. Global rating scale used and 1 resit opportunity if unsuccessful at first attempt.
Level 4: Organisational change	*Measures impact on the organisation.* Enables identification of clinical outcomes, benefits (nurse/patient/carer) or organisational gains which are linked to the training.	Development of a small group evidence-based quality improvement initiative. Acceptance and embedding of the initiative into routine practice as a service improvement.

RESULTS

The participants all successfully achieved the required competencies and completed the CPD within the 16-week time period.

Demographic characteristics

The cohort consisted of eight clinically experienced neonatal nurses with length of neonatal experience ranging from 6 years to 28 years, mean 13 years.

Kirkpatrick's Level 1: Course evaluation

The end of course feedback was completed by seven of the eight nurses. The comments were thematically analysed using an inductive approach (Braun and Clarke 2006). This

resulted in three overarching themes described as (1) meeting expectations (2) learning experience and (3) future aspirations.

(1) Meeting expectations

This theme arose from comments on why the participant volunteering for the course, their expectations of the course and the perceived benefits gained from the training.

The predominant reason for volunteering was the lack of specialist neonatal education available for nurses and the course was considered a major opportunity to further their professional development. This included gaining a greater understanding of neonatal care and the need to understand, "*what is happening to the baby*."

This understanding including knowing what they should or should not do to the baby and the '*why*' for routine procedures. This was linked to the realisation that clinical skill proficiency was insufficient to improve their current practice unless they had the underpinning knowledge of pathophysiology.

All participants felt the course met or exceeded their expectations and they would recommend this training to colleagues. Individual benefits ranged from gaining insight into developmental care, infection control, pain management and supporting breastfeeding. The opportunity to learn English was highlighted as a benefit. Some of the nurses noted that their enhanced knowledge had the positive impact of increasing their practice confidence.

(2) Learning experience

This theme amalgamates participant's experiences of blended learning and recommendations for future cohorts.

The concept of blended learning using the online repository was an unfamiliar teaching strategy but once orientated to the technology all found it useful and convenient. In particular, the dual translations enabled them to learn the English equivalent of medical terminology.

Unanimously all felt that the online resources were helpful but noted they still would have liked printed handouts. Additionally, the translated materials were insufficient in some scenarios and a Vietnamese textbook was required. A significant disadvantage of the online materials was the variability of the internet connection.

Recommendations for future cohorts included how to incorporate UK standard neonatal management with the resources and context in Vietnam. Resource limitations mentioned included patient versus staff ratio, overcrowding and maintaining treatment continuity with the sporadic availability of some medications. One response summed this up as knowing, *"what is appropriate and what is not to apply in our practice."* Whether this comment also related to cultural or conceptual variation in practices was not explicitly stated.

(3) Aspirations

The theme 'aspirations' was linked to an awareness of their own limited underpinning knowledge, the constraints of their current role and what they aspired their role to be. The future aspirations ranged from personal goals of practice improvement and enhanced patient outcomes. They were keen to expand their current role but this was caveated by the realisation that not all nurses in the unit would welcome change.

One participant noted she wanted to be '*challenged*' in her role and others commented they wanted to do '*more*' without detailing what that could be. One participant noted that as the course progressed she began to realise the disadvantages of routinised practices but also of her previous unquestioned acceptance of her role in this. This was described as

"Before …., I worked obediently to the order of doctors. I see what my colleagues and I were doing to babies needed to be changed to bring the benefits and best care."

This comment highlights the improvements in patient outcomes that could be achieved by enhancing the nursing role.

All mentioned the desire to achieve interdisciplinary teamwork between medical and nursing staff. However, when discussing dissemination of the training to nursing colleagues there was a latent undercurrent that they may encounter resistance,

"I want to spread what I know to my colleagues even though I know that it would be difficult- but I will always try."

Kirkpatrick's Level 2 and 3: Trainee knowledge and behaviour

Level 2 and 3 are reported simultaneously as these stages are interlinked when evaluating the nurse's acquired skills, knowledge and decision making.

All nurses achieved the summative MCQ pass rate of 80% with the results ranging from 88% to 98%. All successfully completed core clinical competence verified by the UK educationalists and proficiency of neonatal skills was found to be of a high standard.

An OSCE assessed knowledge and skills integration, and this was successfully passed by six of the eight nurses at first attempt. Following a retrieval session both nurses who initially failed achieved a pass grade.

Kirkpatrick's Level 4: Organisational change

As organisational change can be influenced by numerous variables and may take time to be fully realised an appropriate outcome measure was considered the introduction, and acceptance, of a service improvement initiative into routine practice. This was rationalised as an evidence-based initiative should lead to enhanced standard of care resulting in improved clinical outcomes and patient/carer satisfaction. Acceptance by the wider neonatal team would support the likelihood of this practice fully embedding into daily management.

The service improvement was implementation of kangaroo mother care for babies in the special care area of the neonatal unit. Kangaroo mother care originated as a means of providing warmth and supporting nutrition for neonates in low resource settings but has become universally accepted as an integral part of neonatal practice (Conde-Agudelo & Díaz-Rossello, 2016). Despite the considerable evidence of the benefits of kangaroo care there was local reluctance to introduce this practice due to a lack of understanding of kangaroo care, inexperience in the physical act of transfer between mother and baby and the potential of increasing the already stretched staff workload.

The service improvement initiative involved producing an instructional video demonstrating safe transfer and positioning of an infant onto the mother's chest. This was presented to parents and staff followed by an interactive quiz showcasing the benefits of kangaroo care. While the CPD has been on pause this initiative has subsequently been locally led by the training cohort. Kangaroo mother care has been fully implemented beyond the original scope of a single area but also into higher acuity areas of the neonatal unit and has been supported by medical, nursing and parents.

DISCUSSION

This study evaluated continued professional development for neonatal nurses in Vietnam.   All students successfully completed the course outcomes underpinning the short term effectiveness of the training. Integrating kangaroo care beyond the original intention is a positive sign of the nurses assuming ownership to promote and sustain good practices. Areas identified for consideration included the pedagogical approach and how, or should, UK practices be contextualised into the Vietnamese setting.

Collectively, all the nurses performed well with knowledge acquisition and clinical skills competency. However, integrating and applying these to clinical based problems proved more challenging, both in practice and during the assessed OSCE.   Traditionally, nurse

training in Vietnam is heavily focussed on procedural expertise with limited focus on developing clinical reasoning (Nguyen et al., 2018). Problem based learning was adopted as the pedagogical approach to stimulate clinical reasoning skills and embed the practical application of acquired knowledge (Wosinski 2018). PBL is heavily dependent on developing information literacy, that the learner recognises when and why additional information is required to support their individual learning needs (Aglen 2016). The lack of specialist neonatal resources in Vietnamese posed a barrier to this as the teaching materials were chosen in advance by the UK educationalists for translation. This may have limited both the depth and scope of learner exploration of topics.

There is also the additional concern that pre-determining the resources in advance may impose educational and cultural expectations from a UK perspective on the direction of the nurses' learning. Previous studies have noted that the direct transferability of existing materials from other settings may not be culturally or contextually appropriate to meet the inherent needs of the host country (Kang et al., 2018). McNiff et al. (2018) proposed that the process of improving practice should be linked to knowledge generation rather than the consumerism of other's knowledge. It is recognised that acquired knowledge does not necessarily equate to accepted or sustained changes in behaviour (Morseth et al., 2020). To transform their ways of working the participants need to create their own practice knowledge bound by their contextual values and understanding. This is supported by the normalization of kangaroo care into accepted practice as this had an evident and meaningful application to local clinical practice. Promoting the tangible benefits of the training can engage and persuade attitudinal and behaviour change which is necessary if changes in practice are to be sustained.

O'Connor and Andrews (2018) reported the benefits of technology to provide nursing students with wider access to the educational materials of their choosing. Translation software may provide a workable solution although it would be necessary to clarify the accuracy of both literal and conceptual meaning of translations. Meresier et al. (2018) suggested the use of questioning as a strategy to embed clinical reasoning within PBL.

This centres on directed and judicious questioning to target learner conceptual understanding of underpinning knowledge. This offers a technique which could minimise potential misconstruction of translated materials.

The advent of the global pandemic, and restrictions on international travel, highlighted the deficiency of this delivery model. The provision of synchronised online theoretical teaching was constrained by time differences and learning resources, without tutor direction, were at risk of misconstruction of the translation. Clinical skills could be demonstrated online but not supervised underpinning the urgency for local practice educators.

Strengths and limitations

A strength of the evaluation process is the use of Kirkpatrick's model which is widely recognised as a comprehensive method for assessing training and development programmes from individual to organisational perspectives. The use of a self-reported course evaluation, and that these were not translated using a validated back-forward translation process, may impact on the reliability of the feedback obtained. We are also aware that social desirability and expectancy bias may have affected the comments provided by the participants, but this was only one element of the extensive package of assessed outcome measure.

CONCLUSIONS

The pilot study suggests that rather than a direct replication of UK framework for neonatal nurse education it should be its assimilation, driven by and founded on, the cultural and clinical requirements of the Vietnamese workforce. The learning experience should enable the participants to construct their own practice knowledge, which is responsive to their specific contextual challenges, and meet their professional

development aspirations. Whilst providing a foundation to address existing knowledge gap it is essential to build capacity and confidence amongst the local nursing workforce to ensure sustainability of learning going forward and limit reliance on external input. The global pandemic has highlighted the limitations of this delivery model but it has also allowed reflection on the direction of future collaborations.

REFERENCES

.

Aglen, B. 2016., Pedagogical strategies to teach bachelor students evidence-based practice: A systematic review. Nurse education today. 36, 255-263. http://doi.org/10.1016/j.nedt.2015.08.025

Braun, V., & Clarke, V. 2006. Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101. http://DOI: 10.1191/1478088706qp063oa

British Association of Perinatal Medicine, Neonatal Nurses Association, Scottish Neonatal Nurses' Group. 2012. Matching knowledge and skills for Qualified In Speciality (QIS) Neonatal nurses: A core syllabus for clinical competency

Conde-Agudelo, A., & Díaz-Rossello, J. L. 2016. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane database of systematic reviews*, (8).

Eriksson, L., Huy, T.Q., Duc, D.M. et al.2016 Process evaluation of a knowledge translation intervention using facilitation of local stakeholder groups to improve neonatal survival in the Quang Ninh province, Vietnam. Trials 17, 23. http://doi.org/10.1186/s13063-015-1141-z

Gallagher, K., Partridge, C., Tran, H. T., Lubran, S., & Macrae, D. 2017. Nursing & parental perceptions of neonatal care in Central Vietnam: a longitudinal qualitative study. BMC pediatrics, 17(1), 161. http://doi.org/10.1186/s12887-017-0909-6

Kang, S., Ho, T. T. T., & Nguyen, T. A. P. 2018. Capacity development in an undergraduate nursing program in Vietnam. *Frontiers in public health*, *6*, 146. http://doi.org/10.3389/fpubh.2018.00146

Kirkpatrick, D., & Kirkpatrick, J. 2006. Evaluating training programs: The four levels. Berrett-Koehler Publishers.

Kunaviktikul, W., Turale, S., Petrini, M. A., Tungpunkom, P., & Avant, K. C. 2019. Experiences from Southeast Asia on nursing education, practice, mobility and influencing policy. International nursing review, 66(4), 474-481. http://doi.org/10.1111/inr.12556

Loyens, S. M., Jones, S. H., Mikkers, J., & van Gog, T. 2015. Problem-based learning as a facilitator of conceptual change. Learning and Instruction, 38, 34-42. http://doi.org/10.1016/j.learninstruc.2015.03.002

McNiff, J., Edvardsen, O., & Steinholt, M. 2018. 'Impact', educational influence and the practice of shared expertise. Educational Action Research, 26(5), 803-819. http://doi.org/10.1080/09650792.2018.1426469

Merisier, S., Larue, C., & Boyer, L. 2018. How does questioning influence nursing students' clinical reasoning in problem-based learning? A scoping review. Nurse education today, 65, 108-115. http://doi.org/10.1016/j.nedt.2018.03.006

Morseth, M. S., Nguyen, T. T., Skui, M., Terragni, L., Ngo, Q. V., Vu, H. T., … & Henjum, S. 2020. Health staff experiences with the implementation of early essential newborn care guidelines in Da Nang municipality and Quang Nam province in Viet Nam. BMC health services research, 20(1), 1-10. http://doi.org/10.1186/s12913-020-05449-2

Nguyen, T. A. P., Kang, S., Ho, T. T. T., Mai, B. H., Vo, T. D. B., & Nguyen, V. Q. H. 2016. Problem-based learning in nursing education at Hue University of Medicine and Pharmacy, Vietnam: perspective and needs assessment. Journal of Problem-Based Learning, 3(1), 9-14.

Nguyen, V. N., Duke, M., & Forbes, H. 2018. Nurse educator confidence in clinical teaching in Vietnam: A cross-sectional study. Collegian, 25(3), 335-340. http://doi.org/10.1016/j.colegn.2017.09.008

O'Connor, S., Andrews, T., 2018. Smartphones and mobile applications (apps) in clinical nursing education: a student perspective. Nurse Educ. Today 69, 172–178. http://doi.org/10.1016/j.nedt.2018.07.013

Renfrew, M. J., McFadden, A., Bastos, M. H., Campbell, J., Channon, A. A., Cheung, N. F., … & Declercq, E. 2014. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. The Lancet, 384(9948), 1129-1145. http://doi.org/10.1016/S0140-6736(14)60789-3

UNICEF and partners in the UN Inter-Agency Group for Child Mortality Estimation. Levels and Trends in Child Mortality Report 2020: Estimates developed by the UN Inter-agency Group for Child Mortality Estimation: United Nations Children's Fund; 2020 [Available from: data.unicef.org/resources/levels-and-trends-in-child-mortality/

Van Hecke, A., Duprez, V., Pype, P., Beeckman, D., & Verhaeghe, S. 2020. Criteria for describing and evaluating training interventions in healthcare professions–CRe-DEPTH. Nurse education today, 84, 104254 http://doi.org/10.1016/j.nedt.2019.104254

Wosinski, J., Belcher, A. E., Dürrenberger, Y., Allin, A. C., Stormacq, C., & Gerson, L. 2018. Facilitating problem-based learning among undergraduate nursing students: A qualitative systematic review. Nurse education today, 60, 67-74. http://doi.org/10.1016/j.nedt.2017.08.015

Yew, E. H., & Goh, K. 2016. Problem-based learning: An overview of its process and impact on learning. Health Professions Education, 2(2), 75-79. http://doi.org/10.1016/j.hpe.2016.01.004