

Navigating the Global Landscape of Nursing Informatics Research Collaboration: A Blueprint for Success

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Abstract. International collaboration is crucial in the field of nursing informatics research to enhance our ability to conduct globally relevant research that informs policy and practice. In this case study we describe how we have established an international research collaboration to evaluate nurses' experiences of technology use during the pandemic. We firstly describe how the collaboration was created and the successes associated with our work, before highlighting the facilitators to make an international collaboration work. We also discuss the challenges we have encountered during this collaborative enterprise, to enable other researchers who wish to establish international collaborations and learn from our experiences.

Keywords. Collaboration, Partnership, Global, Nursing Informatics

1. Introduction

Research into, and adoption of, digital technologies post the COVID-19 pandemic is a global priority for nurses and other health professions, as highlighted by the

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International Council of Nurses (ICN) position statement on digital health transformation and nursing practice [1]. To address priorities as researchers in the field of nursing informatics, collaborating at an international level is crucial to learn from each other's experiences across countries, and use those findings to inform policy and practice. This case study reports on our experiences, as an international collaboration of nursing informatics researchers across continents, using our work on nurses' experiences of digital transformation during the pandemic as the focus. We explore the factors that constitute a successful global collaboration, including the indicators or deliverables that would provide a success measure for others wishing to establish such groups. We also discuss our findings of successes (what worked) and barriers (what didn't work) to give practical advice on how to establish successful international research collaborations for future networks.

2. Case Study Description and Relevance

This case study builds on a network of researchers who have come together to collaborate internationally on a study exploring nurses' experiences of digital transformation during the COVID-19 pandemic. In the United Kingdom (UK) one of the authors (DD) conducted a survey of nurses' experiences of digital transformation, using social media as a platform for recruitment [2]. In response to this call for participants a colleague in Australia (ZLT) suggested that they could also conduct the survey and potentially collaborate with comparison of the findings. From these initial discussions and then contacting others from other countries (including identifying potential collaborators when presenting findings of the survey at conferences and other talks), we now have a network of researchers who are conducting the survey in their own countries. Our network covers countries in Asia (Taiwan), Oceania (Australia and New Zealand), Europe (UK, Finland, Switzerland) and North America (United States of America (USA)). We are attracting new collaborators on an ongoing basis.

3. Project Design

The focus of work for the collaboration commenced with conducting a survey of nurses' experiences of digital technology use and transformation during the pandemic. The survey tool was initially designed by UK researchers and asks nurses to report on the digital technologies that were introduced into their area of practice in response to clinical/organizational needs during the time of the pandemic [2]. Respondents were asked to provide basic information about their area of practice or work and could then give detailed insights into up to three technologies that they had used during this time. Respondents were additionally asked to describe the characteristics of each technology and rate the usability of the technology using the system usability scale (SUS), which enables a formal comparison of usability across different technology types [3]. The survey tool has subsequently been adapted by each collaborator in the network for their context and healthcare system (for demographic data collection), with the key questions about technology adoption, use and usability remaining consistent across all countries. The questionnaire has also been translated into Mandarin, Finnish, and German.

4. Execution

The following activities were undertaken by each team in the network to conduct the survey in their own country, modified for the specific context:

- a) Cultural adaptation of the survey tool. This included altering some wording to the context of the country, ensuring that the options for care delivery organization were relevant, and the need for cross-lingual comparisons.
- b) Gaining ethical approval to conduct the study. The regulations for this varied according to the country. For example, in the UK and Switzerland, because the survey was conducted online, recruited individuals via social media/networks and collected anonymous non-health related data from nurses it was considered a service improvement study and did not require permission from an ethics committee. In the USA, the study was approved as exempt because it poses minimal risk. However, in Australia, Finland and New Zealand a low-risk human research ethics application was required. In New Zealand, ethical approval included consultation with Tangata Whenua (indigenous people of New Zealand) as per University protocol. In Taiwan, the study was approved by a full Institutional Review Board (IRB), and in Finland the review was done by the ethics committee of the University of Turku.
- c) Participant recruitment. The original survey conducted in the UK recruited participants using social media and other professional networks. This approach was also used in Australia, New Zealand and Finland. In the USA, to recruit a wide sample of nurses and ensure broad representation, the study team distributed the recruitment email and flyer using the New Jersey (NJ) State Nurses Association and the five State Board of Nursing (SBON) publicly available (or available upon request) registry lists (which included their email) including Florida (FL), Oregon (OR), New Mexico (NM), Nebraska (NE) and Ohio (OH). In Switzerland there is no national registry of nurses. Membership of the National Nurses Association is voluntary and therefore not solely suitable for recruitment. Hence, nurse directors of health organizations were additionally contacted and asked to forward the survey to their nurses. In Taiwan, data was collected in one large urban hospital.
- d) Data collection. All surveys were conducted online using specific software. The original survey was developed in Qualtrics, which is the supported online survey tool at the UK investigators' organization. Qualtrics was also used in the USA, Australia, and New Zealand. In Finland, the data were collected with Webropol. In Switzerland the data were collected using LimeSurvey.
- e) Data Analysis. Each collaborator in the network was responsible for analyzing the data from their country. To facilitate the process the coding to format the data file into a data set suitable for analysis, as well as the coding for the initial statistical analysis were shared across the team. Data will subsequently be pooled across international collaborators for an analysis comparing nurses' experiences across countries.

5. Impact and lessons learned

Despite literature that suggests collaborations can be difficult [4], this case study illustrates that a successful collaboration across multiple countries, time zones, and languages is possible but takes effort. Following on from our experiences working in this international network there are a number of impacts and lessons learned to share. To date we have collected data from five countries, two additional countries are currently in the data collection phase, and we are in the process of recruiting more collaborators to join this study.

5.1. *Facilitators to a successful international collaboration*

There are a number of factors that have made this collaboration a success. Having a focused research question of relevance to all collaborators, using a survey that is easily adapted for different countries, and using measures that have been tested and available in different languages have proved highly successful. It is important to establish methods for discussion and collaboration across time zones, using digital tools such as Microsoft Teams (for joint working) and videoconferencing for meetings. We have established a schedule of online meetings to set shared goals, and discuss practicalities and progress, as well as a shared technology platform to enable easy collaboration on written documents. Variations in languages, customs, and work styles were addressed through discussion with clear expectations defined early in the collaboration. Even when a common language is used (UK, Australia, New Zealand and USA), discussions were required to ensure that misunderstandings were minimized. Having clear deliverables at both national and international levels has been important. At each phase of the collaboration, we have established clear goals to work towards, with defined outputs, and identified individuals who will provide input at each stage. As a collaborative, we have presented our initial findings as well as publishing a peer reviewed journal article. Building trust and strong relationships can be challenging when team members are not physically present. Face-to-face interactions often play a crucial role in establishing trust. In our case, our opportunity to connect presented itself at MedInfo23 in Sydney where the team members consciously chose to present a panel on their work and further cement their working relationship [5]. What characterized our collaboration was good will, flexibility, and adaptability that all collaborators brought to the team, which allowed the group to navigate obstacles more effectively. Furthermore, feedback from all team members helped identify areas for improvement towards ongoing success. New members were quickly integrated into the current phase on an equal basis, which promoted motivation and willingness to implement the project promptly in their own country.

5.2. *Challenges encountered*

Whilst the collaboration has been a success, we have encountered a number of challenges that we have had to overcome to enable us to work successfully as a team across countries and time zones. A key challenge is the difference in time zones across participants; it is almost impossible to get every person in the collaboration network in a videoconferencing meeting at the same time. We have overcome this by organizing two meetings, which between them cover the time zones for all collaborators.

Occasionally, internet access and quality affected meeting progress, however, this was supported by email communications prior to, and after the meetings, to clarify what had been discussed and identify action points. Other challenges relate to the practicalities of conducting research in different countries, with different regulations regarding ethical approvals, data sharing and the types of survey tools available for use. This has also meant that the time taken to conduct the study has varied across countries. By enabling some flexibility with the ways in which the research has been developed (for local context and demographics) we have overcome some of these issues. Each country has taken responsibility for gaining the appropriate regulatory approvals to conduct the study and has also had an approach to recruitment that suits its context. One specific issue we have encountered relates to data sharing; we have overcome this by providing data from those countries that allow the sharing of anonymized data to those countries where there is less openness to this approach.

In conclusion, we have demonstrated how practically we have been able to conduct a research study across different countries and time zones, with specific deliverables that will potentially have relevance and impact on the international nursing community. As health trends continue to migrate from national to international levels, collaboration in research on relevant health topics will be becoming increasingly important. This case study gives a robust example on how international collaboration can contribute to effect change in health.

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