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Integrating Health Informatics into Pre-Registration Nursing Education: Insights from a Participatory Workshop

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Abstract. The implementation of health informatics in pre-registration health professional degrees faces persistent challenges, including curriculum overload, educator workforce capability gaps, and financial constraints. Despite these barriers, reports of successful implementation of health informatics in pre-registration nursing programs exist. A virtual workshop was held during the 15th International Nursing Informatics Conference in 2021 with the aim to explore successful implementation strategies for incorporating health informatics into the nursing curriculum to meet the accreditation standards. This paper reports recommendations from the workshop emphasising the importance of academic-clinical partnerships to develop innovative approaches to enhance the capacity of academic teams and access to contemporary point of care digital technologies that reflect applications of health informatics in interdisciplinary clinical settings.

Keywords. Informatics, systems thinking, implementation, curriculum preregistration nursing degrees

1. Introduction

The rapid integration of digital health technology (DHT) into interdisciplinary healthcare amplifies the need for nursing educators to focus on health informatics

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capabilities. This urgency has been underscored by the COVID-19 pandemic, which accelerated the global adoption of technologies like telehealth and mobile health, largely led by nurses [1]. However, despite innovative DHT deployment during the pandemic, proactive measures are needed to enhance nursing workforce health informatics capacity, including effective engagement for safe patient care and active participation in designing and developing new DHTs [1].

Such measures commence with health informatics education in pre-registration programs. Yet, despite several frameworks developed to support health informatics education, evidence suggests that integrating informatics into health professional education programs remains uncommon [2]. Significant struggles reported among education providers to integrate health informatics competencies into their curricula cite insufficient financial resources to support integration and cover the costs of necessary academic versions of DHTs, lack of suitably prepared academic staff and a lack of leadership commitment to support sustainable implementation [3]. Educators are also concerned about constantly evolving technology, making it challenging to ensure the curriculum stays up to date [4]. A workshop conducted at the 15th International Nursing Informatics Conference in 2021, explored successful health informatics implementation strategies employed by nursing schools that could support academics globally in meeting local accreditation standards.

2. Methods

2.1 Workshop design

Due to COVID-19 restrictions, a workshop was conducted via Zoom conferencing. Guided by a design-based research framework, the workshop asked participants to share implementation strategies for health informatics in pre-registration nursing curricula. The 150-minute session commenced with brief expert panel presentations on implementation of international health informatics education, covering higher education requirements, curricula accreditation, competency frameworks, and business plans. These presentations were followed by small group discussions focused on the workshop aim. The key points from each discussion group were summarized and shared with the entire group.

2.2 Ethics

Research ethics approval was obtained from La Trobe University (HREC21245). All participants consented to the workshop material being used for reporting purposes.

2.3 Data collection and analysis

After the expert-panel presentations, participants were divided into facilitated discussion rooms with each session recorded and later transcribed verbatim. Before grouping, each team received four questions for consideration: 1) When considering implementing health informatics across entry to practice degrees, what content should be included? 2) Are you aware of any specific models of integration and do you support any model for this purpose? 3) Considering that some faculties do not have

many(any) academic nursing informaticians – propose what supports are needed to facilitate implementation (i.e., faculty capacity/capability, resources)? 4) How would you evaluate the implementation of health informatics in your curriculum? A qualitative content analysis was employed to derive study themes [5].

3. Results

3.1 Participants

Participants from Australia (n=7), New Zealand (n=1), Finland (n=1), Taiwan (n=1), the United States (n=2), Canada (n=1), and the United Kingdom (n=1) represented higher education institutions and described themselves as ranging from novices to experts in health informatics capability.

3.2 Content analysis

Four themes emerged: 1) Scaffolding contemporary digital health and technology capabilities; 2) Interprofessional experience of and engagement with contemporary DHT; 3) Implementation strategies; and 4) A multifaceted, multi-stakeholder evaluation of the curricula.

3.2.1 Scaffolding contemporary digital health and technology capabilities

The participants recommended that implementation strategies for health informatics curricula must align with real-world digital environments, considering students' digital literacy, information skills, and data analytics. Starting with widely used DHTs like electronic medical records and telehealth, the curriculum should evolve to include innovations such as robotics, artificial intelligence, and machine learning. Authentic assessments and realistic case studies are essential to develop critical thinking skills. A scaffolded pre-registration health informatics curriculum was desirable as means to prepare students for postgraduate studies and careers in health informatics, empowering professionals to effectively contribute to future digital health solutions.

3.2.2 Interprofessional experience of and engagement with contemporary DHT

Embracing interprofessional curricula by bringing together various professions through technology-mediated medium was emphasized. Strengthening this was considered to require implementing authentic clinical placements focused on health informatics and related DHTs to consolidate students' knowledge. Integration of academic DHT solutions for applied learning, along with simulated environments and authentic case studies, ought to enhance interprofessional engagement, emphasizing critical thinking and reasoning skills.

3.2.3 Teaching strategies

Successful teaching of health informatics demands academic staff with contemporary DHT knowledge. Achieving this involves forging closer connections with clinical placement providers and health informatics leaders in clinical settings.

Multi-stakeholder support, including educators, clinical placement providers, and health informatics officers, is vital. Exploring curriculum delivery options was considered as a powerful tool to increase the visibility of health informatics career paths to nurses and to enhance their professional engagement in DHT development and implementation.

3.2.4 A multifaceted, multi-stakeholder evaluation of the curricula

Participants stressed the necessity of adaptive curricula due to evolving DHTs. Participants recommended continuous iterative evaluation, involving diverse stakeholders, as crucial strategy that can be supplemented with regular benchmarking at national and potentially international levels for standardization. Establishing a collaborative community of practices, incorporating industry partnerships, was recommended, with a preference for fostering international collaborations to enhance knowledge transfer and global relevance.

4. Discussion

The global academic nursing community faces health informatics implementation challenges, including limited organisational support, resources, and trained staff. Workshop recommendations for successful implementation encompass systems thinking, capacity building, mentorship models, and targeted professional development. Establishing an international community of practice, akin to workshop's collaborative sharing as described here, was seen as beneficial for staff development through networking and collaboration, supporting health informatics curriculum implementation across resource settings. This aligns with Nagle et al. emphasis on well trained staff to support the advancement of informatics capabilities, asserting that collaboration and shared experiences among trained staff are pivotal for progress [6].

Successful implementation strategies [3, 7] outlined in this workshop emphasised academic-clinical partnerships, ensuring ongoing access to contemporary academic DHT and point-of-care technology. The extent to which such collaboration directly benefits education programs with current health informatics practices needs evaluation. Additionally, assessing whether academic-clinical mentorship enhances clinical health informaticians' teaching skills and vice versa requires scrutiny. While an ideal curriculum empowers new health professionals to work with DHT, fostering ongoing professional development and a sense of professional identity, it is yet to be examined if students proceed to health informatics-related career paths.

Finally, participants recommend embracing interprofessional curricula via technology-mediated mediums by leveraging students' positive attitudes toward DHT [8]. This allows direct experience with the value of health informatics in healthcare through informatics-specific clinical placements, hypothesized to enhance professionals' engagement with technology and underscore collaboration's significance in digitally augmented healthcare [9].

Despite virtual workshop limitations and a small number of virtual participants, sufficient data was gathered for a thorough analysis of the implementation strategies and recommendations [10]. While diverse in health informatics capability, nationality and culture, the nursing-focused conference limited interaction across professional backgrounds. However, though the discussion was centred on nursing pre-registration

curricula, similar issues likely apply to all health professions [3]. Future research should explore these topics in interprofessional workshops. Voluntary participation introduces self-selection bias, but robust discussions revealed common challenges across expertise levels. Virtual workshop limitations were partially mitigated by using small group discussions ensuring active participation and by careful planning ahead of the workshop.

5. Conclusions

Robust discussions revealed that the global academic community continues to confront challenges in implementing health informatics, necessitating collaborative strategies such as systems thinking, capacity building, and mentorship models. However, the key strategy deemed essential to implementation success recommended developing focused academic-clinical partnerships to ensure well-trained educators capable of keeping pace with rapid advances in DHTs and health informatics developments and sustained access to contemporary technology.

Acknowledgements

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