

# Future Needs in Nursing Informatics – Preliminary Findings from the Global Nursing Informatics Survey

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**Abstract.** This study investigates the evolving landscape of nursing informatics by conducting a follow-up survey initiated by the International Medical Informatics Association (IMIA) Students and Emerging Professionals (SEP) Nursing Informatics (NI) group in 2015 and 2019. The participants were asked to describe what they thought should be done in their institutions and countries to advance nursing informatics in the next 5-10 years. For this paper, responses in English acquired by December 2023 were analysed using inductive content analysis. Identified needs covered a) recognition and roles, b) educational needs, c) technological needs, and d) research needs. The initial findings indicate that, despite significant progress in nursing informatics, the current needs closely mirror those identified in the 2015 survey.

**Keywords.** nursing informatics, future trends, follow-up studies, surveys and questionnaires

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## 1. Introduction

Nursing informatics (NI) is a fast-developing discipline with a constant need to adapt not only to the health needs of the global population, but also to keep pace with rapid technological advancements [1]. The COVID-19 pandemic that began in December 2019 has accelerated the adoption of novel technologies in nursing care, emphasizing the necessity for user-centric solutions that seamlessly integrate into the nursing workflow [2]. Furthermore, the significant strides in artificial intelligence have introduced new challenges, including educational needs [3] and posing significant ethical dilemmas [4] that demand attention from the NI community.

It is necessary to listen to the experiences and needs of the NI professionals to address current challenges and to prepare for future needs. This study is a third follow-up survey to the NI surveys conducted by the International Medical Informatics Association (IMIA) Student and Emerging Professionals (SEP) Nursing Informatics (NI) group in 2015 and 2019. Previous surveys have identified the most common trends in NI, which in 2015 covered big data science, standardized terminologies, education and competencies, clinical decision support and mobile health [5], and in 2019 clinical quality measures, clinical decision support, big data, artificial intelligence and care coordination [1]. The validity of these findings can be verified by investigating NI research literature, highlighting the focus of digital technologies, communication, patient safety and care quality in contemporary NI research [6]

This survey aims to explore the current landscape of NI, specifically considering all the nursing informatics transformations that occurred due to COVID-19 pandemic, with the overarching goal of identifying the global needs of NI professionals for the upcoming decade.

## 2. Methods

This study employed a cross-sectional survey design, where participants were invited through a snowball sampling method via the IMIA SEP NI members from August to December 2023. The questionnaire, available on Google Forms and Webropol, incorporated modified questions from the previous 2015 and 2019 surveys [1,5], with the addition of a new question inquiring prior participation in the surveys (e.g., 2015, 2019). Survey was available to respondents in various languages, including English, Spanish, French, and Chinese. The participants were asked to provide background information and elaborate on what they held most significant in advancing NI in their respective countries.

For this paper, the preliminary results of the survey in English were analysed due to the limited number of survey data in some of the languages and the faster process to gather the results (i.e., no need for translation). Two open-ended questions were analysed using inductive content analysis. These questions were “*What should be done in your institution to advance nursing informatics over the next 5 - 10 years*” and “*What should be done in your country to advance nursing informatics over the next 5 - 10 years*”. The study was approved by the University of Turku Ethics Committee for Human Sciences (#22/2023).

### 3. Results

A total of 49 participants responded to the English version of the survey by December 2023. The majority of the participants were from North America (n=34, 69.4%), followed by Europe (n=8, 16.3%), Australia (n=6, 12.2%) and Asia (n=1, 2%). One participant had responded to the previous survey in 2015 and two in 2019. Most of the participants (n=39, 79.6%) were registered nurses, followed by other roles (n= 7, 14.3%) (e.g. clinical consultants, dietitians) and educators (n= 3, 6.1%). The work experience of the participants ranged from four to fifty years (mean 23.1, sd 13.5), and their informatics experience from zero to fifty years (mean 11.5, sd 10.8).

The participants described needs for the upcoming decade, which were divided into four areas: a) recognition and roles, b) educational needs, c) technological needs, and d) research needs.

**a) Recognition and roles:** Common concerns among the participants included low levels of recognition of the NI role and limited resources available from their institutions. Some expressed that the importance of NI was not sufficiently acknowledged and that the number of NI positions were inadequate, especially on nursing management and decision-making levels. These issues were evident also at the national level. Participants brought the need to create national standards to guide NI and suggested that governmental actions could be undertaken to establish and bring visibility to NI roles, to promote digital capabilities for the nursing workforce, as well as to advance NI practice and research through legislative and regulatory actions.

**b) Educational needs:** Education was perceived as a vital key to advancing NI. Participants expressed a need to further develop educational programs to improve nurses' technological competencies and integrate more NI into nursing curricula, both institutionally and nationally at all educational levels.

**c) Technological needs:** Participants expressed that higher-performing technologies could also support NI. At an institutional level, this could be operationalized by investing in developing and implementing user-friendly and high-quality technologies to all levels of care. Participants suggested that, at a country level, these endeavours could be complemented with increasing interoperability and integration of technologies, by promoting standardized nursing language, and facilitating data exchange.

**d) Research needs:** Lastly, participants emphasized the importance of research in investigating the value and effect of NI on high-quality and affordable care, better patient outcomes, and nurse retention. Some participants called for changes in legislation and regulations, and better funding opportunities to advance NI research in the future.

### 4. Discussion

These results indicate that NI can be supported in the future by increasing the recognition and roles of NI in education and practice, increasing NI education and depth across educational levels and in continuous education, improving technological resources available for nurses, and investing in rigorous research to address the needs and show the impact of applying technology into nursing and care. These findings are in line with previous discussions regarding the challenges faced by nurse informaticians [7], highlighting that despite the continuous advancements made in the

field, the priorities for the upcoming decade have not shifted. Moreover, these needs highly resemble recommendations based on the survey results in 2015, calling for actions related to education and training, research, practice, visibility, and collaboration [8].

The low recognition of NI is not a new concern among professionals, and the need to advocate NI and its impacts on better patient outcomes has been long recognized [7]. However, an unambiguous and global definition of NI is still lacking, resulting in confusion and a low understanding of the advantages NI could bring to the nursing workforce [9]. One key facilitator for better recognition could be further increasing self-promotion and highlighting the added benefits of the discipline to nursing care. In fact, the survey participants underlined the importance of better disclosing the outcomes and the added value of NI to patient care. Care quality and patient safety are at the core of modern NI research [6], yet more emphasis could still be placed on the presentation of value-based outcomes that bring forth the clinical and operational impacts of NI [10]. This warrants for continuing the intradisciplinary discussion on the common aspirations of NI research in general and for developing refined guidelines to support NI research and reporting.

Education was perceived as one big facilitator of NI. A significant foundation for incorporating NI into nursing curricula has already been laid in the field, such as The TIGER International Recommendation Framework of Core Competencies in Health Informatics 2.0, which incorporates the differing informatics needs of various clinical and administrative roles [11]. The current research literature reveals a body of work on developing instruments to assess the NI competencies, but further research is still warranted on validating them in other contexts, as well as defining NI competencies for the nursing faculty [12]. For nurse leaders, increased informatics knowledge not only fosters the acquisition, implementation and use of novel technologies institutionally but also extends the acknowledgement of the significance of promoting NI competencies [13]. However, improving the informatics competencies of nursing leaders is not enough. Implementing digital health leadership roles is an essential next step to harness the potential of novel technological advances fully. For example, utilization of informatics nurse specialists in evaluating of electronic health record systems throughout the entire product lifecycle has been recognized as a facilitator for the adoption and usability of these systems in clinical contexts [14].

Limitations of this study include the small sample size and small representation of the global NI network, resulting from admitting only the preliminary results of the English survey answers.

## **5. Conclusions**

Nearly a decade has passed since the first survey distributed by the IMIA SEP NI in 2015, and even considering all the major transformation nursing and healthcare professions went through due to the COVID-19 pandemic, the needs of the professionals and experts in NI for the upcoming 5-10 years have not changed. These findings highlight the need to keep up with the fast-evolving clinical and research trends, as well as to overcome unexpected exceptional circumstances such as the global pandemic. Additional efforts to promote NI roles and recognition, education, technologies, and research remain as relevant as before, and a call for the nursing

profession as a whole on how together can move nursing (and informatics) science forward.

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