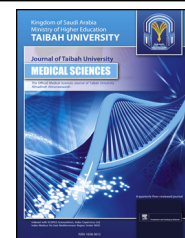




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Letter to the Editor

## Integration of genomic nursing in nursing education curriculum in Indonesia: A perspective

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Dear Editor,

Genomic nursing, a sub-discipline within the nursing profession that melds the understanding of genetics with nursing practice, assumes a pivotal role in propelling the healthcare sector into an epoch characterized by heightened precision.<sup>1</sup> In recent decades, significant advancements in genomics have led to a deeper understanding of the genetic foundations of diseases and the intricate variations in individuals' responses to therapeutic interventions. Unfortunately, it is imperative to acknowledge that the knowledge, attitudes, and practical experience of nurses in the field of genomic nursing, particularly in the context of patient care, still face notable constraints and, at times, significant limitations.<sup>2,3</sup> This situation is regrettable, considering the prevalence of genetic components in various health conditions within the healthcare sector. Nevertheless, nurses frequently face the daunting task of explaining genetic implications, predicting modes of inheritance, determining risk probabilities, conducting genetic screening, and coordinating relevant care management procedures in a comprehensive and coherent manner, both for patients and their caregivers.<sup>4</sup> The existence of this gap is exacerbated by the noticeable disparity between the evolution of genomic nursing and its integration into the academic curricula of nursing education. The primary aim of this perspective is to emphasize the importance of incorporating genomic nursing into the educational framework of nursing, as a strategic step, in order to prepare the nurses of the future with the necessary

expertise to meet the demands of an increasingly complex healthcare environment.

The integration of genomic nursing into nursing education curricula promises several substantial benefits.<sup>5</sup> Firstly, nurses will be more proficient in comprehending the genetic basis of diseases, enabling them to formulate more precise and efficient care plans. Secondly, nurses will be better equipped to provide genetic counseling to patients and their families, aiding in the understanding of genetic risks and facilitating more appropriate treatment choices. Thirdly, nurses will be capable of identifying potential medication side effects based on the patient's genetic profile, thereby enhancing safety in care. Fourthly, nurses can advocate for genetic disease screening tests, proactively mitigating future prevalence.<sup>6</sup> The integration of genomic nursing into nursing education offers substantial opportunities in addressing the intricacies of future healthcare. It empowers nurses to provide more autonomous, comprehensive, and pioneering care. Nurses trained in genomic nursing will have the capacity to discern genetic patterns that underlie diseases, facilitating early detection and the formulation of more effective and efficient care strategies.<sup>7</sup>

Despite the significance of genomic nursing in nursing education, there are challenges that require resolution. One such challenge pertains to revising nursing education curricula to incorporate sufficient genomics content.<sup>8</sup> The integration of genomic nursing into nursing education curricula requires consideration of clinical practice aspects, including the availability of laboratories and healthcare facilities for students' experiential learning.<sup>9,10</sup> Additionally, practicing nurses may require supplementary training to understand and apply genomic nursing in their practice, especially among those who serve as clinical instructors.<sup>11</sup> With unwavering commitment, these challenges can be overcome, offering substantial opportunities for advancing the future of healthcare.

Genomic nursing serves as the gateway to the era of precision care in nursing. Precision care represents a

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revolutionary approach in healthcare, aimed at customizing medical treatment and interventions to the unique characteristics of each patient. This approach acknowledges that individuals differ not only in terms of genetics but also in lifestyle, environment, and other factors influencing their health. Precision care utilizes advanced technologies, such as genomics, proteomics, and data analytics, to understand the distinct genetic and molecular profiles of patients. This data empowers healthcare providers to make more accurate diagnoses, forecast disease risks, and create personalized treatment plans, meticulously tailored to each patient. Precision care aims to optimize the effectiveness of medical interventions while minimizing potential adverse effects, ultimately striving to achieve superior health outcomes and enhance the quality of care for individuals.<sup>5</sup>

The role of nurses in precision care is of paramount importance, as they serve as a crucial intermediary between the patient and the healthcare team employing individually optimized approaches. Nurses are tasked with the responsibility of collecting and incorporating pertinent patient data, which encompasses medical histories, environmental factors, lifestyle, as well as the outcomes of genetic and molecular tests.<sup>12</sup> They also play a pivotal role in offering emotional support to patients and explaining complex information in readily understandable terms. Furthermore, nurses can contribute to developing individualized care plans and monitoring patient responses to administered therapies. The role of nurses is paramount in ensuring that each patient receives care tailored to their specific needs, thereby improving health outcomes and ensuring the effective incorporation of the precision care concept in everyday clinical practice.<sup>13</sup>

The integration of genomic nursing as a paramount key to adapt to the advancements in precision care within nursing education curricula is a pivotal step in preparing the nurses of the future with a deeper understanding.<sup>14</sup> Government bodies, such as the Ministry of Health and the Ministry of Education, along with nursing professional organizations and associations of nursing educational institutions, should take the lead in the integration of genomic nursing into nursing education curricula, recognizing its significant positive impact on both patients and healthcare providers. Widespread support from various stakeholders in the integration of genomic nursing into nursing education curricula represents a crucial agenda to enhance the knowledge and competence of nurses adapting to ever-evolving technologies.

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#### Conflict of interest

The authors have no conflict of interest to declare.

#### Ethical approval

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#### Authors' contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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