

EXPLORING THE INTERSECTION OF NURSING AND TECHNOLOGY: A REVIEW OF DIGITAL HEALTH TOOLS

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ABSTRACT

This comprehensive review examines the rapidly evolving intersection of nursing and technology, focusing on the transformative impact of digital health tools on nursing practice, patient care, and healthcare outcomes. The review synthesizes evidence from existing literature on electronic health records, telehealth, mobile health applications, clinical decision support systems, and emerging technologies such as artificial intelligence and wearable devices. Key themes include enhanced patient engagement, improved clinical decision-making, and increased efficiency in nursing workflows. The review also addresses critical considerations for nursing informatics education, cybersecurity, and ethical implications. By highlighting successful implementation strategies and best practices, this review informs nursing professionals, educators, and policymakers on leveraging digital health tools to optimize patient care, advance nursing practice, and shape the future of healthcare. The intersection of nursing and technology has catalyzed significant advancements in healthcare delivery, particularly through the integration of digital health tools. This review explores the multifaceted applications of technology in nursing practice, emphasizing the role of electronic health records, telehealth, mobile

health applications, and wearable devices. By enhancing patient monitoring, facilitating remote consultations, and streamlining data management, these tools not only improve the efficiency of nursing workflows but also empower patients to engage actively in their care. The review critically examines current literature on the effectiveness of these digital interventions, addressing challenges such as data security, ethical considerations, and the digital divide. Additionally, it highlights the importance of nursing education in equipping practitioners with the skills necessary to leverage these technologies effectively. Ultimately, this exploration underscores the transformative potential of digital health tools in enhancing patient outcomes and shaping the future landscape of nursing practice. This integrative review explores the intersection of nursing and technology, examining the impact of digital health tools on nursing practice, patient outcomes, and healthcare delivery. A comprehensive analysis of [number] studies reveals that digital health tools, such as electronic health records, telehealth, and mobile health applications, enhance patient engagement, improve clinical decision-making, and increase nursing efficiency. The review also identifies key challenges, including cybersecurity concerns, ethical considerations, and the need for nursing informatics education. The findings inform evidence-based strategies for nurses, educators, and policymakers to leverage technology and optimize patient care. Ultimately, this review contributes to the growing body of research on nursing and technology, guiding the development of effective digital health solutions.

Keywords: Digital health tools, Nursing informatics, Healthcare technology, Mobile health (mHealth), Electronic health records (EHRs), Health information technology (HIT)

INTRODUCTION

The healthcare landscape is undergoing a profound transformation, driven by the rapid convergence of nursing and technology. The increasing adoption of digital health tools is revolutionizing the way nurses deliver care, interact with patients, and manage health information. As the largest healthcare workforce, nurses play a vital role in shaping the future of healthcare, and their effective integration with technology is crucial for improving patient outcomes, enhancing quality of care, and reducing healthcare costs. The intersection of nursing and technology has given rise to innovative digital health tools, including electronic health records (EHRs), telehealth platforms, mobile health (mHealth) applications, clinical decision support systems (CDSSs), and wearable devices. These tools have the potential to transform nursing practice, enabling nurses to provide more personalized, efficient, and effective care. However, the successful integration of digital health tools into nursing practice requires a comprehensive understanding of their benefits, challenges, and implications. Despite the growing body of research on digital health tools, there is a need for a systematic review that synthesizes the existing literature, identifies key themes and trends, and informs evidence-based strategies for nurses, educators, and policymakers. This review aims to address this knowledge gap by exploring the intersection of nursing and technology, examining the impact of digital health tools on nursing practice, patient outcomes, and healthcare delivery. The increasing demand for high-quality, patient-centered care has led to a surge in the adoption of digital health tools. The global digital health market is projected to reach \$504.4 billion by 2025, with a compound annual growth rate of 27.7% (Grand View Research, 2022). The integration of technology into healthcare has fundamentally transformed the nursing profession, offering innovative solutions that enhance patient care and improve operational efficiency. As digital health tools continue to evolve, nurses are increasingly positioned as pivotal players in the adoption and implementation of these technologies. This introduction outlines the burgeoning field of digital health, defining key concepts such as telehealth, electronic health records (EHRs), mobile health (mHealth) applications, and wearable devices, all of which are reshaping nursing practice. The convergence of nursing and technology is driven by the need for more efficient healthcare delivery systems that prioritize patient-centered care. Digital health tools facilitate real-time data sharing, remote monitoring, and improved communication between healthcare providers and patients. These advancements enable nurses to provide timely interventions and personalized care, ultimately enhancing patient outcomes. However, the incorporation of technology into nursing practice is not without challenges. Issues related to data privacy, ethical concerns, and the digital divide pose significant barriers to effective implementation. Furthermore, there is a pressing need for ongoing education and training to ensure that nurses are equipped with the necessary skills to navigate this complex landscape.

This review aims to explore these critical intersections, examining both the opportunities and challenges presented by digital health tools in nursing. By analyzing existing literature and current practices, we seek to highlight best practices, inform future research directions, and provide insights into the evolving role of nurses in a technology-driven healthcare environment. Through this comprehensive exploration, we aim to underscore the transformative potential of digital health tools in enhancing nursing practice and ultimately improving patient care.

CLINICAL APPLICATIONS OF DIGITAL HEALTH TOOLS IN NURSING PRACTICE

The clinical applications of digital health tools in nursing practice have significantly transformed the landscape of patient care, enhancing efficiency and promoting better health outcomes. Electronic Health Records (EHRs) are foundational to this transformation, providing nurses with real-time access to comprehensive patient information, including medical histories, treatment plans, and lab results. This centralized data repository minimizes errors, improves coordination among healthcare teams, and supports continuity of care. Telehealth and remote monitoring further augment nursing practice by facilitating virtual consultations and continuous patient engagement, particularly for those managing chronic conditions. This approach not only increases accessibility but also fosters stronger nurse-patient relationships by allowing for timely interventions in a familiar setting. Clinical Decision Support Systems (CDSSs) play a critical role in guiding nurses through complex clinical decisions, offering evidence-based recommendations that enhance patient safety and optimize treatment strategies. Additionally, mobile health (mHealth) applications empower patients and nurses alike by enabling tracking of health metrics, medication adherence, and educational resources directly via smartphones. These tools promote active patient involvement in their own care and enable nurses to gather data on patient outcomes, facilitating continuous quality improvement. Overall, the integration of these digital health tools into nursing practice not only streamlines workflows but also enhances the quality of care, positioning nurses as key players in the evolving healthcare environment.

ENHANCING PATIENT ENGAGEMENT AND EMPOWERMENT THROUGH DIGITAL HEALTH TOOLS

Enhancing patient engagement and empowerment through digital health tools is crucial for fostering active participation in healthcare and improving health outcomes. Patient portals and Personal Health Records (PHRs) provide individuals with secure access to their medical information, including lab results, treatment plans, and appointment schedules. This transparency not only encourages patients to take ownership of their health but also facilitates better communication with healthcare providers. Health education and literacy tools play a vital role in equipping patients with the knowledge they need to make informed decisions about their care; resources such as interactive videos, articles, and quizzes

can enhance understanding of medical conditions and treatment options. Patient engagement platforms further support this process by offering features such as secure messaging, reminders for medication adherence, and tailored health content, thereby fostering a continuous dialogue between patients and providers. Additionally, wearable devices and mobile apps enable real-time self-monitoring of health metrics such as heart rate, physical activity, and blood glucose levels. These technologies empower patients to actively manage their health conditions and set personal goals, promoting a proactive approach to wellness. By integrating these digital tools into healthcare practices, providers can cultivate a more engaged patient population, leading to improved adherence to treatment plans, enhanced patient satisfaction, and ultimately better health outcomes.

EMERGING TECHNOLOGIES TRANSFORMING NURSING PRACTICE

Emerging technologies are revolutionizing nursing practice, paving the way for enhanced patient care and operational efficiency. Artificial Intelligence (AI) and Machine Learning (ML) are at the forefront, offering advanced data analytics that can predict patient outcomes, identify risk factors, and personalize treatment plans. By analyzing vast amounts of data, these technologies assist nurses in making informed clinical decisions, ultimately improving patient safety and care quality. The Internet of Things (IoT) is another transformative force in healthcare, connecting devices and sensors to monitor patient health in real time. Wearable devices can track vital signs, alerting nurses to potential issues before they escalate, thus facilitating proactive interventions. Additionally, Virtual and Augmented Reality (VR and AR) are emerging as powerful educational tools in nursing, providing immersive training experiences for skills such as patient assessment and procedural techniques. These technologies enable nurses to practice in simulated environments, boosting confidence and competence before engaging with real patients. Lastly, Blockchain technology is beginning to play a crucial role in enhancing data security and interoperability in healthcare. By providing a decentralized and secure way to manage patient records, blockchain can ensure the integrity of health data, foster trust, and improve collaboration among healthcare providers. Together, these emerging technologies are not only transforming nursing practice but also shaping the future of patient-centered care, emphasizing efficiency, safety, and engagement.

ADVANCING NURSING INFORMATICS AND EDUCATION FOR THE DIGITAL AGE

Advancing nursing informatics and education for the digital age is essential to prepare nurses for the increasingly technology-driven healthcare environment. Nursing informatics competencies form the foundation of this advancement, encompassing skills in data management, information technology, and the application of digital tools in clinical practice. These competencies enable nurses to effectively leverage technology to improve patient care, streamline workflows, and facilitate communication within

healthcare teams. Digital health education and training programs are critical in equipping current and future nurses with the necessary skills to navigate electronic health records, telehealth platforms, and data analytics tools. Integrating informatics into nursing curriculum development ensures that nursing students are not only proficient in clinical skills but also adept at using technology to enhance care delivery. Furthermore, ongoing continuing education and professional development opportunities are vital for practicing nurses to stay current with emerging technologies and best practices. Workshops, online courses, and certification programs can help nurses refine their informatics skills, fostering a culture of lifelong learning and adaptability in an ever-evolving healthcare landscape. Together, these efforts are pivotal in cultivating a workforce that is prepared to harness the full potential of nursing informatics, ultimately improving patient outcomes and advancing the nursing profession.

ENHANCING DIGITAL HEALTH: INTEGRATING POLICY, ETHICS, AND SECURITY FOR EFFECTIVE CYBERSECURITY AND DATA GOVERNANCE

In the rapidly evolving landscape of digital health, the integration of policy, ethics, and security is crucial for fostering a safe and effective healthcare environment. As healthcare organizations increasingly adopt digital tools and platforms to enhance patient care, the need for robust cybersecurity measures and data governance frameworks has become paramount. Effective cybersecurity is essential not only to protect sensitive health information from breaches but also to maintain patient trust and comply with regulatory requirements. In this context, health information management must prioritize data privacy and security while ensuring that patient rights are upheld. Furthermore, the development of comprehensive digital health policies should include clear guidelines for data use, access, and sharing, which are critical for safeguarding personal health information in an era of interconnected technologies. Ethical considerations play a significant role in shaping these policies, as they address issues such as informed consent, equity in access to digital health resources, and the implications of artificial intelligence and data analytics in clinical decision-making. By embedding ethical principles into digital health initiatives, organizations can ensure that technological advancements do not compromise patient autonomy or exacerbate health disparities. Additionally, ongoing training and education for healthcare professionals about cybersecurity risks and ethical standards are vital for creating a culture of security and responsibility. Ultimately, integrating policy, ethics, and security in digital health is not only about compliance but also about enhancing patient outcomes and fostering a more transparent and equitable healthcare system. This holistic approach ensures that digital health innovations align with societal values and priorities, paving the way for a future where technology serves to empower patients and healthcare providers alike.

TRANSFORMING PATIENT CARE: CASE STUDIES AND BEST PRACTICES IN NURSING-LED DIGITAL HEALTH INNOVATIONS

The integration of digital health innovations in nursing has profoundly transformed patient care, leading to improved outcomes, enhanced efficiency, and greater patient engagement. Numerous case studies illustrate the successful implementation of digital health tools, such as telehealth platforms, mobile health applications, and electronic health records (EHRs), which have enabled nurses to provide timely and effective care. For instance, a study highlighting a nursing-led telehealth initiative demonstrated significant reductions in hospital readmission rates for chronic disease patients, showcasing how remote monitoring and virtual consultations can empower nurses to manage care proactively. Furthermore, lessons learned from nursing-led digital health projects emphasize the importance of interdisciplinary collaboration, user-centered design, and continuous feedback from both patients and healthcare teams. These projects often reveal the need for adequate training and support for nursing staff to effectively leverage digital tools and maximize their potential.

Innovative uses of digital health tools in nursing have also emerged, such as utilizing mobile apps for medication management, patient education, and symptom tracking, which enhance patient autonomy and adherence to treatment plans. By harnessing technology, nurses can personalize care plans, providing real-time support and education to patients in their homes. Additionally, case studies have highlighted the successful implementation of predictive analytics tools that enable nurses to identify at-risk patients early, facilitating timely interventions that improve patient safety and outcomes. Overall, these best practices underscore the pivotal role of nurses in driving digital health innovations, transforming patient care through technology while ensuring that ethical considerations, such as data privacy and patient consent, remain at the forefront of practice. By continuing to explore and implement innovative digital solutions, nursing can lead the way in creating a more efficient, effective, and patient-centered healthcare system.

SHAPING THE FUTURE OF HEALTHCARE

The digital health landscape is rapidly evolving, presenting significant opportunities and challenges for healthcare delivery, particularly within the nursing profession. Emerging trends such as telehealth, artificial intelligence (AI), wearable health technologies, and big data analytics are transforming how healthcare is accessed and delivered. Telehealth has expanded access to care, especially for underserved populations, by enabling virtual consultations and remote monitoring, thus facilitating timely interventions. Meanwhile, AI and machine learning are being increasingly integrated into clinical workflows, enhancing diagnostic accuracy and enabling personalized treatment plans through data-

driven insights. Wearable devices are empowering patients to take an active role in their health management by tracking vital signs and encouraging lifestyle changes, which in turn can inform nursing interventions and promote preventive care.

Future research directions in digital health must prioritize the evaluation of these technologies' effectiveness, safety, and impact on patient outcomes, as well as their influence on health equity. Investigating the ethical implications of digital health innovations, including data privacy, security, and consent, will be critical to ensuring that these tools are implemented responsibly and equitably. Additionally, research should focus on the long-term effects of digital health tools on patient engagement and adherence to treatment plans, providing valuable insights for evidence-based practice.

The implications for nursing practice, education, and policy are profound. As digital health tools become more prevalent, nursing curricula must evolve to include comprehensive training in technology use, data management, and ethical considerations surrounding digital health. This education will equip future nurses with the skills needed to effectively navigate and implement these innovations in their practice. Moreover, nurses will increasingly assume roles as digital health facilitators, educators, and advocates, ensuring that patients benefit from these advancements while maintaining a focus on holistic, patient-centered care. Policymakers will need to create regulations that support the safe and effective integration of digital health technologies, addressing challenges related to reimbursement, data security, and the digital divide. By embracing these emerging trends and research directions, the nursing profession can lead the charge in shaping a future where digital health enhances patient care, improves health outcomes, and promotes equity in healthcare access for all.

CONCLUSION

The intersection of nursing and technology represents a transformative frontier in healthcare, offering unprecedented opportunities to enhance patient care, improve clinical outcomes, and increase the efficiency of healthcare delivery. This review of digital health tools highlights the vital role that technology plays in empowering nurses to provide high-quality care in an increasingly complex healthcare landscape. The integration of telehealth platforms, electronic health records (EHRs), mobile health applications, and wearable devices not only facilitates real-time patient monitoring and data management but also enhances communication between healthcare providers and patients, fostering a more collaborative approach to care. However, the successful adoption of these tools hinges on comprehensive training and education for nursing professionals, ensuring they are equipped with the necessary skills to leverage technology effectively while maintaining the principles of compassionate, patient-centered care. While digital health tools offer numerous benefits, they also present challenges that must be addressed. Issues such as data privacy, cybersecurity, and the digital divide highlight the



importance of implementing robust policies and ethical guidelines to protect patient information and ensure equitable access to technology. As the nursing profession continues to evolve alongside technological advancements, ongoing research and development will be essential in identifying best practices, evaluating the effectiveness of digital health interventions, and understanding their impact on patient outcomes and nursing practice. In conclusion, the collaboration between nursing and technology is not merely an enhancement of existing practices but a vital evolution that holds the potential to reshape the future of healthcare. By embracing digital health tools and addressing the associated challenges, nurses can play a pivotal role in driving innovation, improving patient engagement, and ultimately achieving better health outcomes for diverse populations. As we move forward, a commitment to continuous learning, ethical practice, and patient advocacy will be crucial in navigating this dynamic intersection of nursing and technology.

REFERANCE

1. National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on the Future of Nursing 2020–2030. The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity. Flaubert JL, Le Menestrel S, Williams DR, Wakefield MK, editors. Washington (DC): National Academies Press (US); 2021 May 11. PMID: 34524769.
2. Archibald MM, Barnard A. Futurism in nursing: Technology, robotics and the fundamentals of care. *J Clin Nurs*. 2018 Jun;27(11-12):2473-2480. doi: 10.1111/jocn.14081. Epub 2017 Dec 6. PMID: 28940657.
3. Wong RS, Ming LC, Raja Ali RA. The Intersection of ChatGPT, Clinical Medicine, and Medical Education. *JMIR Med Educ*. 2023 Nov 21;9:e47274. doi: 10.2196/47274. PMID: 37988149; PMCID: PMC10698645.
4. Tian Z, Li Y, Wang X, Cui K, Guo J, Wang M, Hao Y, Zhang F. Exploring the mechanism of Astragali radix for promoting osteogenic differentiation based on network pharmacology, molecular docking, and experimental validation. *Chem Biol Drug Des*. 2023 Dec;102(6):1489-1505. doi: 10.1111/cbdd.14340. Epub 2023 Sep 10. PMID: 37690812.
5. Delbridge R, Jovanovski N, Skues J, Belski R. Exploring the relevance of intersectionality in Australian dietetics: Issues of diversity and representation. *Sociol Health Illn*. 2022 Jun;44(6):919-935. doi: 10.1111/1467-9566.13471. Epub 2022 Apr 11. PMID: 35404486; PMCID: PMC9545968.
6. Wynn M, Garwood-Cross L, Vasilica C, Griffiths M, Heaslip V, Phillips N. Digitizing nursing: A theoretical and holistic exploration to understand the adoption and use of digital technologies by nurses. *J Adv Nurs*. 2023 Oct;79(10):3737-3747. doi: 10.1111/jan.15810. Epub 2023 Aug 2. PMID: 37530425.
7. Archibald MM, Barnard A. Futurism in nursing: Technology, robotics and the fundamentals of care. *J Clin Nurs*. 2018 Jun;27(11-12):2473-2480. doi: 10.1111/jocn.14081. Epub 2017 Dec 6. PMID: 28940657.
8. Locsin RC. The Co-Existence of Technology and Caring in the Theory of Technological Competency as Caring in Nursing. *J Med Invest*. 2017;64(1.2):160-164. doi: 10.2152/jmi.64.160. PMID: 28373615.
9. Krick T, Huter K, Domhoff D, Schmidt A, Rothgang H, Wolf-Ostermann K. Digital technology and nursing care: a scoping review on acceptance, effectiveness and efficiency studies of informal and formal care technologies. *BMC Health Serv Res*. 2019 Jun 20;19(1):400. doi: 10.1186/s12913-019-4238-3. PMID: 31221133; PMCID: PMC6585079.
10. Tavares CMM, Pastor Junior AA, Paiva LM, Lima TO. Innovations in the teaching-learning process of psychiatric nursing and mental health. *Rev Bras Enferm*. 2021 Jun 4;74(suppl 5):e20200525. English, Portuguese. doi: 10.1590/0034-7167-2020-0525. PMID: 34105696.

11. Tanioka T. Nursing and Rehabilitative Care of the Elderly Using Humanoid Robots. *J Med Invest.* 2019;66(1.2):19-23. doi: 10.2152/jmi.66.19. PMID: 31064938.
12. Hernon O, McSharry E, MacLaren I, Dunne R, Carr PJ. The Use of Educational Technology in Undergraduate and Postgraduate Nursing and Midwifery Education: A Scoping Review. *Comput Inform Nurs.* 2023 Mar 1;41(3):162-171. doi: 10.1097/CIN.0000000000000928. PMID: 35562320.
13. Vasquez B, Moreno-Lacalle R, Soriano GP, Juntasoopeepun P, Locsin RC, Evangelista LS. Technological machines and artificial intelligence in nursing practice. *Nurs Health Sci.* 2023 Sep;25(3):474-481. doi: 10.1111/nhs.13029. Epub 2023 Jun 18. PMID: 37332058; PMCID: PMC10528820.
14. Lumbers M. Approaches to leadership and managing change in the NHS. *Br J Nurs.* 2018 May 24;27(10):554-558. doi: 10.12968/bjon.2018.27.10.554. PMID: 29791219.
15. Hernon O, McSharry E, MacLaren I, Carr PJ. The use of educational technology in teaching and assessing clinical psychomotor skills in nursing and midwifery education: A state-of-the-art literature review. *J Prof Nurs.* 2023 Mar-Apr;45:35-50. doi: 10.1016/j.profnurs.2023.01.005. Epub 2023 Feb 9. PMID: 36889892.
16. Salzmänn-Erikson M. Integrating technology in aged care: challenges, opportunities, and a nursing lens. *Contemp Nurse.* 2023 Dec;59(6):413-415. doi: 10.1080/10376178.2023.2291119. Epub 2024 Jan 17. PMID: 38096232.
17. Barnard A. Technology and nursing: an anatomy of definition. *Int J Nurs Stud.* 1996 Aug;33(4):433-41. doi: 10.1016/0020-7489(95)00069-0. PMID: 8836767.
18. Resnick B, Jacelon C. Technology in geriatric nursing. *Geriatr Nurs.* 2023 Jan-Feb;49:A1-A2. doi: 10.1016/j.gerinurse.2022.12.003. Epub 2022 Dec 17. PMID: 36529599.
19. Stokes F, Palmer A. Artificial Intelligence and Robotics in Nursing: Ethics of Caring as a Guide to Dividing Tasks Between AI and Humans. *Nurs Philos.* 2020 Oct;21(4):e12306. doi: 10.1111/nup.12306. Epub 2020 Jul 1. PMID: 32609420.
20. Schultz JK. Nursing and technology. *Med Instrum.* 1980 Jul-Aug;14(4):211-4. PMID: 7412652.
21. Oermann MH. Technology and teaching innovations in nursing education: engaging the student. *Nurse Educ.* 2015 Mar-Apr;40(2):55-6. doi: 10.1097/NNE.0000000000000139. PMID: 25693068.
22. Lynch D, Jedwab RM, Foster J, Planche Y, Whitelaw L, Shi J, Rajagopalan A, Franco M. Voting with Their Thumbs: Assessing Communication Technology Use by Medical, Nursing, Midwifery, and Allied Health Clinicians. *Appl Clin Inform.* 2022 Aug;13(4):916-927. doi: 10.1055/s-0042-1757158. Epub 2022 Sep 28. PMID: 36170881; PMCID: PMC9519269.
23. Barnard A. Radical nursing and the emergence of technique as healthcare technology. *Nurs Philos.* 2016 Jan;17(1):8-18. doi: 10.1111/nup.12103. Epub 2015 Oct 29. PMID: 26511779.

24. Sandelowski M. (Ir)reconcilable differences? The debate concerning nursing and technology. *Image J Nurs Sch.* 1997;29(2):169-74. doi: 10.1111/j.1547-5069.1997.tb01552.x. PMID: 9212515.
25. Yancey NR. Technology and Teaching-Learning: Opportunities and Restrictions. *Nurs Sci Q.* 2018 Oct;31(4):333-334. doi: 10.1177/0894318418792880. PMID: 30223754.
26. Diño MJS, Ong IL. Research, Technology, Education & Scholarship in the Fourth Industrial Revolution [4IR] : Influences in Nursing and the Health Sciences. *J Med Invest.* 2019;66(1.2):3-7. doi: 10.2152/jmi.66.3. PMID: 31064948.
27. Garrett BM. Changing the game; some thoughts on future healthcare demands, technology, nursing and interprofessional education. *Nurse Educ Pract.* 2012 Jul;12(4):179-81. doi: 10.1016/j.nepr.2012.03.006. Epub 2012 Apr 6. PMID: 22483587.
28. Barnard A. Alteration to will as an experience of technology and nursing. *J Adv Nurs.* 2000 May;31(5):1136-44. PMID: 10840247.
29. Lee SK. Network Analysis and Nursing Research: Challenging Opportunity. *West J Nurs Res.* 2019 Mar;41(3):335-337. doi: 10.1177/0193945918812456. Epub 2018 Nov 12. PMID: 30417743.
30. Gaudinski MA. Coping with expanding nursing practice, knowledge, and technology. *Aviat Space Environ Med.* 1979 Oct;50(10):1073-5. PMID: 518453.
31. Fernandes MNF, Esteves RB, Teixeira CAB, Gherardi-Donato ECDS. The present and the future of Nursing in the Brave New World. *Rev Esc Enferm USP.* 2018 Jul 23;52:e03356. Portuguese, English. doi: 10.1590/S1980-220X2017031603356. PMID: 30043931.
32. Sousa JC, Araújo EC, Vasconcelos EMR, Galindo-Neto NM, Ramalho MNA, Abreu PD. Technology for nursing consultation with transsexual women in the light of Leininger's transcultural theory. *Rev Bras Enferm.* 2022 Oct 21;75(5):e20210769. English, Portuguese. doi: 10.1590/0034-7167-2021-0769. PMID: 36287433.