

EXPLORING THE INFLUENCE OF NURSES' DEMOGRAPHIC PROFILES ON THE PERCEIVED IMPORTANCE OF WEARABLE HEALTH DEVICES IN HEALTHCARE SETTINGS

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Paper Received: 10.02.2025 / **Paper Accepted:** 07.03.2025 / **Paper Published:** 08.03.2025

Corresponding Author: Remedios D. David; doi:10.46360/globus.met.320251020

Abstract

Background: Wearable health monitors have received a considerable attention in the medical field due to their capability to track the vital signs and offer real-time data, which can improve the patient care and clinical outcomes. Wearable devices, such as smartwatches, fitness trackers, and biosensors, enable the ongoing monitoring of health parameters, enabling prompt detection of the health problems and personalized care. Yet, the effective embedding of wearable health technology within clinical practice is contingent upon its uptake among healthcare staff, nurses in particular. Nurses have a central role in patient care, and their attitudes, perceptions, and inclination to adopt new technologies are pivotal to the effective deployment of wearable health devices in healthcare environments. Identifying the factors that drive the acceptance of these devices among nurses is vital to maximizing their utilization and achieving effectiveness in patient outcome improvement.

Methods: The study adopted a descriptive-correlational quantitative design, gathering data from 200 nurses using structured questionnaires distributed through Google Forms. The survey aimed to explore nurses' views on wearable health devices, with a particular focus on their influence on patient care, clinical decision-making, and daily workflow efficiency.

Result: The findings of the study show that the demographic variables such as age, years of practice, education, and gender do not have a

significant influence on the nurses' attitudes or perceptions of the wearable health devices. Nurses from the different demographic groups had similar perceptions of the wearable devices' benefits, such as in real-time monitoring, early intervention, and tailored interventions, indicating a widespread awareness of their potential to improve patient care.

Conclusion: The research concludes that the demographic variables such as age, experience, education, and gender have a little impact on nurses' attitudes towards wearable health devices. Nurses in all demographic categories perceive the advantages of the real-time monitoring, early warning, and targeted interventions similarly, indicating that the wearable health devices are generally known for their ability to improve patient care. Subsequent the studies might investigate other determinants, like organizational support and training, which might impact the nurses' use of these technologies.

Keywords: Wearable Health Device, Influence, Nurses, Demographic Profile, Healthcare Setting.

Introduction

The changing face of healthcare, wearable health devices such as smartwatches, fitness trackers, and biosensors are becoming more popular for their potential to improve the patient monitoring, allow for early diagnosis of health complications, and aid in a personalized care plan. The technologies provide real-time data gathering, allowing for an informed decisions by healthcare professionals to be

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made on time. Yet, the effective integration of the wearable devices into clinical care does not merely rely on technology; it also depends on the frontline healthcare workers' acceptance and use, especially among nurses.

Nurses, who form the major part of the world health workforce, are the key players in the delivery of patient care. Nurses' attitudes, perceptions, and intention to use new technologies have important implications for the implementation and success of wearable health devices among clinical staff. Zhou et al. (2024) indicate that perceived ease of use and usefulness are key drivers of technology adoption among nurses.

Personal demographic factors - such as age, level of education, years of experience, and level of technology competence - could influence nurses' attitudes towards wearable health devices. For example, Al Kuwaiti and Alshammari (2025) discovered that individual and professional factors greatly impacted nurses' adoption of smart technologies within hospital settings.

Despite of the increasing literature on the wearable health technologies, there is still a knowledge gap regarding how the nurses' demographic characteristics directly influence their perceived significance of these devices. Closing this gap is important, as it can guide targeted interventions to maximize adoption rates and optimize the use of wearable health devices in healthcare. By probing the interface of nurses' demographic characteristics with how they understand wearable technology, the current research is intended to generate meaningful insight to help improve effective incorporation of such devices in practice, finally maximizing patient results as well as expanding healthcare services.

Methods

Research Design

The research applies a descriptive-correlational quantitative design to examine the relationship between the nurses' use of wearable health devices and outcomes of patient care. This is an appropriate method for establishing the associations without the disrupting actual healthcare settings. According to Creswell (2013) and Polit and Beck (2017), this design works well for the investigation intricate relationships and learning practical concerns such as integrating technology in nursing.

Respondents of the Study

The study involved 200 nurses who were actively using wearable devices in patient care. Participants were selected using Slovin's Formula with a 0.05 margin of error. A purposive sampling method was applied to choose participants based on specific characteristics and experiences relevant to the

study's goals. Data were gathered through a structured questionnaire distributed via Google Forms, and informed consent was obtained electronically to ensure ethical compliance.

Instruments of the Study

The research instrument was self-formulated and self-structured by the researchers, then validated for content to ensure its relevance and clarity. A pilot test was conducted to evaluate the tool's reliability in the specific geographical context. The results were analyzed for consistency, and expert validation was sought to address potential challenges and develop solutions.

Result

Age

The respondents were primarily middle-aged or young adults, with 26.7% falling within the 21 to 31-year age range.

Gender

The sample showed a slight gender imbalance, with females making up 53.4% and males comprising the rest.

Years of Experience

The largest group of participants (29.8%) had between 6 to 10 years of professional experience. This was followed by those with 11 to 15 years of experience (28.2%) and those with 1 to 5 years (20.6%).

Educational Background

Regarding educational qualifications, the majority of respondents held Doctoral degrees (38.2%), followed by Bachelor's degrees (33.6%) and Master's degrees (28.2%).

Significant Difference in the Perceived Importance of Wearable Health Devices Based on the Demographic Profile of Nurses

The table analysis indicates that demographic factors including years of experience, age, educational attainment, and gender have no notable effect on nurses' attitudes or perceptions regarding wearable health devices. For all sub-sections real-time monitoring, early detection of health problems, tailor-made interventions, and perceived significance of wearable health devices there are no statistically significant differences, as shown by p-values > 0.05. The ANOVA F-values and t-values for t-tests also confirm this absence of significant relationships, indicating that the observed variations in nurses' responses are not highly related to these demographic variables.

Similarly, while about 30% of US adults use wearable devices (Chandrasekaran et al., 2020), adoption is influenced by factors such as age,

education, income, and technology self-efficacy. For nurses, demographic characteristics like occupation, position, clinical experience, and education level are associated with eHealth perceptions (Wong et al., 2023). Higher education levels correlate with more positive perceptions of eHealth technology. Wearable devices can increase

physical activity levels and health awareness (Edward et al., 2020), suggesting potential benefits for patient care. However, barriers to adoption persist, including gender, age, and voluntariness of use (Wynn et al., 2023).

Real-Time Monitoring	F-value	Sig.	Interpretation
Age	0.553	0.661	Not Significant
Years of Experience	1.454	0.236	Not Significant
Educational Background	0.601	0.552	Not Significant
Real-Time Monitoring	t-value	Sig.	Interpretation
Gender	0.047	0.829	Not Significant
Early Detection of Health Issues	F-value	Sig.	Interpretation
Age	0.587	0.626	Not Significant
Years of Experience	0.863	0.465	Not Significant
Educational Background	0.322	0.726	Not Significant
Early Detection of Health Issues	t-value	Sig.	Interpretation
Gender	3.227	0.078	Not Significant
Personalized Interventions	F-value	Sig.	Interpretation
Age	0.272	0.845	Not Significant
Years of Experience	0.509	0.678	Not Significant
Educational Background	0.601	0.552	Not Significant
Personalized Interventions	t-value	Sig.	Interpretation
Gender	0.716	0.401	Not Significant
Perceived importance of wearable health devices (Overall)	F-value	Sig.	Interpretation
Age	0.207	0.891	Not Significant
Years of Experience	0.513	0.675	Not Significant
Educational Background	0.158	0.855	Not Significant
Perceived importance of wearable health devices (Overall)	t-value	Sig.	Interpretation
Gender	0.571	0.453	Not Significant

Conclusion

The results of the present on the study indicate that the demographic characteristics like age, years of working experience, education level, and gender do not have a remarkable impact on the perceptions or attitudes of the nurses regarding to the wearable health devices. Notwithstanding the increased fascination with the wearable devices in the field of the healthcare, the research confirms that the nurses' opinions about the monitoring in real time, early intervention, and targeted interventions are in line with many different demographic populations. This means that the promise of the wearable health devices as a means of enhancing patient care might be generally recognized by the nurses, irrespective of their individual traits or work histories. More studies can investigate other variables, such as training or organizational support, that could affect the adoption and implementation of these devices to a greater degree by nurses.

Conflicts of Interest

The authors declare that there are no conflicts of interest related to the research, authorship, and publication of this study. No financial or personal relationships with other individuals or organizations have influenced the content or results of the study. All procedures and methodologies followed were independent and impartial to ensure the integrity of the research.

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