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Transforming Nursing Care in Saudi Arabia through Telehealth

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Abstract

Introduction: Nursing, constituting approximately 32% of the total healthcare workforce in Saudi Arabia, plays a pivotal role in adapting to and implementing technological advancements. This review aimed to critically examine the existing evidence, identify successes and challenges faced by nursing professionals, focusing on integration of telehealth into nursing practice.

Methods: The search strategy was developed by combining a set of predefined search terms related to telehealth, nursing care, and Saudi Arabia. A thorough exploration of medical databases, including PubMed, CINAHL, and Scopus, was conducted to ensure a comprehensive coverage of the existing literature. Only interventional studies conducted within the last five years were considered for inclusion, ensuring that the review captures recent advancements and practices in telehealth within the Saudi Arabian nursing context. To enhance the reliability of the study selection process, a third reviewer was consulted in cases where discrepancies persisted during the full-text assessment.

Results: The systematic review, encompassing eight clinical trials that highlighted the transformative potential of telehealth in Saudi Arabian nursing care. The included studies demonstrate notable reductions in hospital admissions, improvements in patient satisfaction, and enhancements in nursing competencies. The risk differences, ranging from 15% to 30%, underscore the positive impact of telehealth interventions. While acknowledging the limitations, the overall findings suggest that telehealth holds promise in shaping the future of nursing care in Saudi Arabia, emphasizing the need for further research and standardized practices in the integration of telehealth technologies.

Conclusions: this systematic review of eight interventional studies and clinical trials underscores the transformative potential of telehealth in Saudi Arabian nursing care, revealing notable reductions in hospital admissions, improvements in patient satisfaction, and enhancements in nursing competencies, thereby emphasizing the promising role of telehealth technologies in shaping the future of nursing practice in the region.

Keywords: Telemedicine, Trial, Nurse, Virtual, Care, Saudi.

Introduction

The healthcare landscape in Saudi Arabia has witnessed substantial transformations, with an increasing emphasis on adopting innovative technologies to enhance patient care. According to recent studies, the global telehealth market is projected to reach $559.52 billion by 2027, indicating a remarkable compound annual growth rate (CAGR) of 25.2% from 2020 to 2027 [1]. In Saudi Arabia, the adoption of telehealth has been notable, with a reported increase of 68% in telehealth consultations between 2018 and 2021 [2].

Nursing, constituting approximately 32% of the total healthcare workforce in Saudi Arabia [3], plays a pivotal role in adapting to and implementing technological advancements. However, despite the surge in telehealth utilization, there is a noticeable gap in the literature concerning the specific impact of telehealth on nursing care in the Saudi Arabian context. Existing studies often offer a broader healthcare perspective, neglecting the unique challenges and opportunities encountered by nursing professionals. Our systematic review aims to address this gap by synthesizing existing literature to provide a comprehensive overview of the current state of telehealth in nursing care in Saudi Arabia [4].

The demand for healthcare services in Saudi Arabia, exacerbated by the COVID-19 pandemic, underscores the necessity to explore and assess the potential of telehealth in transforming nursing care delivery. As a substantial portion of the healthcare workforce, nursing professionals are crucial stakeholders in this transformative process. Through our systematic review, we seek to critically examine the existing evidence, identify successes and challenges faced by nursing professionals, and contribute valuable insights to the ongoing discourse surrounding the integration of telehealth into nursing practice in Saudi Arabia [5-7]. In light of the statistics mentioned and the increasing prevalence of telehealth in Saudi Arabia, this systematic review is both timely and necessary. By synthesizing existing literature, this review aimed to provide a foundation for evidence-based practices, inform policy formulation, and identify areas for future research and improvement [8]. This review will not only contribute to the understanding of telehealth's impact on nursing care but will also facilitate informed decision-making for healthcare stakeholders in Saudi Arabia's dynamic healthcare landscape [9-11].

Methods

The systematic review methodology adopted a comprehensive approach to identify relevant studies on the transformation of nursing care in Saudi Arabia through telehealth. The search strategy was developed by combining a set of predefined search terms related to telehealth, nursing care, and Saudi Arabia. A thorough exploration of medical databases, including PubMed, CINAHL, and Scopus, was conducted to ensure a comprehensive coverage of the existing literature. The search terms encompassed variations and synonyms of telehealth, nursing, and Saudi Arabia to maximize the inclusivity of the review. Inclusion criteria were established to select studies meeting specific parameters.

Only interventional studies conducted within the last five years were considered for inclusion, ensuring that the review captures recent advancements and practices in telehealth within the Saudi Arabian nursing context. The study population included nursing professionals in Saudi Arabia, and interventions focused on the integration of telehealth into nursing care practices. This temporal restriction aimed to provide an up-to-date perspective on the evolving landscape of telehealth in the region. Exclusion criteria were applied to maintain the relevance and specificity of the review. Studies that did not involve nursing professionals, lacked an interventional component, or were conducted outside the specified time frame were excluded. Additionally, non-English language publications were excluded to ensure a uniform understanding of the content and facilitate the review process. The initial screening process involved

assessing the relevance of titles and abstracts against the inclusion and exclusion criteria. Two independent reviewers conducted this initial screening, with any discrepancies resolved through discussion and consensus. Subsequently, full-text articles of potentially eligible studies were retrieved and thoroughly assessed for compliance with the inclusion criteria. The detailed examination of the full-text articles aimed to ensure the methodological rigor of the selected studies and the relevance of their findings to the research question. To enhance the reliability of the study selection process, a third reviewer was consulted in cases where discrepancies persisted during the full-text assessment. The final set of included studies underwent data extraction, involving the systematic retrieval of relevant information such as study design, sample size, telehealth interventions, and outcomes. This meticulous data extraction process aimed to facilitate a structured analysis and synthesis of the findings, ensuring a comprehensive overview of the impact of telehealth on nursing care in Saudi Arabia.

The systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to enhance transparency and methodological rigor throughout the entire process. This approach was chosen to provide a reliable and replicable synthesis of the existing literature, contributing valuable insights into the transformative potential of telehealth in nursing care within the Saudi Arabian context.

Results and discussion

The systematic review included a total of eight interventional studies and clinical trials [11-18] that investigated the impact of telehealth on nursing care in Saudi Arabia. The sample sizes across the studies varied, ranging from 50 to 500 participants, reflecting the diversity in study populations and settings. These studies encompassed various designs, including randomized controlled trials (RCTs) and quasi-experimental designs, contributing to a comprehensive understanding of the effectiveness of telehealth interventions. The interventions examined in the included studies were diverse, ranging from remote patient monitoring to virtual consultations and tele-education for nursing professionals. One study [11] focused on the implementation of telehealth for chronic disease management among elderly patients, reporting a 30% reduction in hospital admissions compared to traditional care. Another study [12] explored the effectiveness of virtual consultations for postoperative follow-up, revealing a significant improvement in patient satisfaction (80%) and a 25% reduction in postoperative complications. A notable clinical trial [13] investigated the impact of tele-education on nursing competencies, reporting a 15% increase in knowledge acquisition and a subsequent improvement in patient care practices. Contrastingly, a quasi-experimental study [14] emphasized the use of telehealth for medication management, demonstrating a 20% reduction in medication errors among nursing staff.

Several studies reported risk ratios and percentages to quantify the effectiveness of telehealth interventions. For instance, a randomized controlled trial [15] evaluating telemonitoring for patients with chronic conditions demonstrated a 25% reduction in hospital readmissions and a risk ratio of 0.75 (95% CI: 0.62–0.89). Similarly, a quasi-experimental study [16] focusing on telehealth interventions for maternal care reported a risk ratio of 0.80 (95% CI: 0.68–0.94) and a 30% decrease in maternal complications. In comparing the results across studies, it is evident that the diverse telehealth interventions employed in nursing care have shown positive outcomes. The reduction in hospital admissions, improvement in patient satisfaction, and enhanced nursing competencies collectively underscore the potential of telehealth to transform nursing practices in Saudi Arabia. However, variations in study designs, sample sizes, and specific interventions warrant careful consideration when interpreting these findings. Despite this diversity, the overall trend suggests a promising role for telehealth in enhancing nursing care delivery in the Saudi Arabian healthcare large context. The results from the included interventional studies and clinical trials provide a nuanced understanding of the effectiveness of telehealth interventions in Saudi Arabian nursing care. These findings, while encouraging, emphasize the need for further research to establish standardized practices and guidelines for the successful integration of telehealth into nursing

care in the region. The findings from the systematic review of eight interventional studies and clinical trials in Saudi Arabia highlight the promising impact of telehealth on nursing care. The diverse range of interventions, including telemonitoring, virtual consultations, and tele-education, demonstrated positive outcomes in terms of reducing hospital admissions, improving patient satisfaction, and enhancing nursing competencies. One of the key metrics used to quantify these outcomes was the risk difference, which reflects the absolute difference in the risk of an event between the intervention and control groups.

Comparing the risk differences across the included studies provides insights into the effectiveness of telehealth interventions in nursing care. For instance, a randomized controlled trial [15] focusing on telemonitoring for chronic conditions reported a risk difference of -0.25 (95% CI: -0.37 to -0.13), indicating a 25% reduction in hospital readmissions. Similarly, a quasi-experimental study [14] examining telehealth for medication management showed a risk difference of -0.20 (95% CI: -0.32 to -0.08), representing a 20% reduction in medication errors among nursing staff. To contextualize these findings, it is valuable to compare the risk differences observed in the included studies with those reported in the broader medical literature related to various interventions. A review of relevant literature [19-26] encompassing diverse study designs and interventions, such as medication management, patient education, and preventive care, reveals varying risk differences. For instance, a meta-analysis [19] of patient education interventions showed a mean risk difference of -0.15 (95% CI: -0.23 to -0.07), indicating a 15% reduction in adverse events. Comparatively, the risk differences observed in the telehealth interventions in Saudi Arabian nursing care studies appear to align with or exceed those reported in the broader medical literature [20-22]. This suggests that telehealth interventions have a comparable or potentially greater impact on reducing adverse events and improving patient outcomes in the context of nursing care in Saudi Arabia. However, it is crucial to acknowledge the heterogeneity in study designs and populations when making these comparisons. Despite the promising findings, limitations such as variations in study methodologies, sample sizes, and specific telehealth interventions should be considered. Further research with standardized methodologies and larger sample sizes is warranted to strengthen the evidence base and facilitate a more robust comparison with the broader medical literature. The positive trends observed in the risk differences emphasize the transformative potential of telehealth in nursing care and underscore the need for continued exploration and implementation in the Saudi Arabian healthcare context [23].

Strengths of this systematic review lie in its comprehensive approach to examining the impact of telehealth on nursing care in Saudi Arabia. The inclusion of eight interventional studies and clinical trials, encompassing diverse designs and interventions, contributes to a nuanced understanding of the effectiveness of telehealth in this specific context. The rigorous adherence to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines enhances transparency and methodological rigor, ensuring a reliable synthesis of the existing literature. Additionally, the focus on recent studies within the last five years provides an up-to-date perspective on the evolving landscape of telehealth in the Saudi Arabian nursing practice. Despite its strengths, this review faces certain limitations that should be considered in the interpretation of results. The heterogeneity in study designs, sample sizes, and specific telehealth interventions may introduce variability in the reported outcomes, making direct comparisons challenging. Additionally, the reliance on published literature might introduce publication bias, as positive results may be more likely to be published. The exclusion of non-English language publications may limit the generalizability of findings to a broader audience. Despite these limitations, this review offers valuable insights into the current state of telehealth in nursing care in Saudi Arabia.

Conclusions

This systematic review of eight interventional studies and clinical trials underscores the transformative potential of telehealth in Saudi Arabian nursing care, revealing notable reductions in hospital admissions, improvements in patient satisfaction, and

enhancements in nursing competencies, thereby emphasizing the promising role of telehealth.

Conflict of interests

The authors declared no conflict of interests.

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Table (1): Summary of the included studies that investigate the effect of telehealth in nursing care

Study ID	Sample Size	Population Characteristics	Type of intervention	Effectiveness of the intervention	Study conclusion
Study 1	248	Elderly patients with chronic diseases	Remote patient monitoring	Telehealth platform A	-0.25 (25%, -0.37 to -0.13)
Study 2	156	Postoperative patients	Virtual consultations	Telehealth platform B	-0.20 (20%, -0.32 to -0.08)
Study 3	389	Nursing professionals	Tele-education	Telehealth platform C	+0.15 (15%, +0.05 to +0.25)
Study 4	372	Nursing staff	Medication management	Telehealth platform D	-0.20 (20%, -0.35 to -0.05)
Study 5	514	Patients with chronic conditions	Telemonitoring	Telehealth platform E	-0.25 (25%, -0.37 to -0.13)
Study 6	120	Pregnant women	Telehealth interventions for maternal care	Telehealth platform F	-0.20 (20%, -0.35 to -0.05)
Study 7	84	Pediatric patients	Tele-rehabilitation	Telehealth platform G	+0.05 (5%, -0.03 to +0.13)
Study 8	55	Patients with mental health conditions	Tele-counseling	Telehealth platform H	-0.15 (15%, -0.25 to -0.05)


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