

EFFECTIVENESS OF AN E-MODULE ON ENHANCING THE HEALTH-RELATED QUALITY OF LIFE AMONG DIABETIC PATIENTS' POST-SURGICAL AMPUTATION IN SAUDI ARABIA

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Abstract

Background

The issue centres on the limited accessibility and effectiveness of educational resources for diabetic patients following surgical amputation in Saudi Arabia.

Methodology

A quasi-experimental study was carried out using purposive sampling, following particular inclusion and exclusion criteria. The study included 80 diabetic patients who had undergone surgical amputation, with 40 in the experimental group and 40 in the control group. The Dielessen Amputee Quality of Life (DAQOL) was adapted to the Saudi context, incorporating domains such as vitality, physical functioning, role physical, and social functioning to assess the health-related quality of life.

Findings

The Mann-Whitney U-test results for vitality ($U = 350$, $p < 0.05$), physical functioning ($U = 320$, $p < 0.01$), and role physical ($U = 310$, $p < 0.05$) showed significant differences between the experimental and control groups, while the Kruskal-Wallis test for social functioning revealed a statistically significant difference between the groups ($H = 12.45$, $p < 0.01$).

Conclusion

An e-module can serve as an effective resource for improving the health-related quality of life in diabetic patients following surgical amputation.

Keywords: diabetic, health-related quality of life, post-surgical amputation, e-module, Saudi

Introduction

Diabetes mellitus remains a widespread chronic illness in Saudi Arabia, with complications like limb amputations significantly affecting patients' physical health, emotional state, and social lives (Shaqrان et al., 2023). While post-operative care typically centers on medical treatment and physical rehabilitation, there is limited emphasis on educational strategies that aim to enhance health-related quality of life (HRQoL) (Gálvez Galán et al., 2021). This research seeks to fill that gap by investigating the impact of a specially designed e-module for diabetic amputees. By addressing various HRQoL dimensions, the study intends to offer insights into innovative educational and rehabilitative approaches.

Materials and Methods

A quasi-experimental methodology was used to evaluate the outcomes of an e-module intervention. Participants were divided into two groups: one receiving the digital module and the other continuing with standard care. A total of 80 participants were selected using purposive sampling based on specific inclusion criteria, including a confirmed diagnosis of diabetes, recent surgical amputation, residency in Saudi Arabia, and the ability to understand and use the e-module. The subjects were equally divided, with 40 individuals in both the intervention and control groups. The Dielessen Amputee Quality of Life (DAQOL) tool, adapted for linguistic and cultural relevance in Saudi Arabia (MATOS et al., 2020), was utilized for pre- and post-assessment. A pilot study confirmed the reliability of four primary domains with a Cronbach's alpha of 0.73:

1. Vitality
2. Physical Functioning
3. Role Physical
4. Social Functioning

The e-module included interactive content covering self-care practices, mobility guidance, and psychological support. It incorporated various multimedia elements to appeal to different learning styles and was accessible via the following website: <https://albarqiahmadabdullah.wordpress.com/>. Baseline and post-intervention data were collected, and group differences were analyzed using non-parametric tests such as the Mann-Whitney U-test and Kruskal-Wallis test (Statistics Solutions, 2020).

Results

The selected domains—vitality, physical functioning, role physical, and social functioning—were chosen based on their relevance to the HRQoL of diabetic amputees as derived from the DAQOL framework.

1. **Vitality:** This domain reflects overall energy and fatigue levels, both of which are often compromised in diabetic individuals post-amputation. Measuring vitality helps determine how the intervention influences energy and daily activity motivation (Reina-Bueno et al., 2021).
 2. **Physical Functioning:** This measures the ability to carry out routine physical tasks, a capability that is often diminished after amputation. Gains in this domain suggest better mobility and reduced reliance on caregivers (Hsieh et al., 2023).
 3. **Role Physical:** This refers to how physical health impacts a patient's ability to fulfill daily responsibilities, including work and home duties. It highlights how well patients are reintegrating into pre-surgical roles (Hao et al., 2021).
 4. **Social Functioning:** Due to physical limitations, psychological strain, or societal stigma, amputees often experience social withdrawal. This domain evaluates the extent and quality of social engagement, reflecting broader emotional and psychosocial health (Byrnes et al., 2024).
- Together, these domains offer a comprehensive picture of the e-module's ability to enhance various facets of post-amputation life.

Vitality

Statistical analysis via the Mann-Whitney U-test revealed a significant increase in vitality scores for the intervention group ($U = 350$, $p < 0.05$), indicating reduced fatigue and increased energy levels.

Physical Functioning

The experimental group showed a marked improvement in physical ability, with a significant U value of 320 ($p < 0.01$), indicating enhanced independence and movement.

Role Physical

Participants who used the e-module scored significantly higher in the role physical domain ($U = 310$, $p < 0.05$), reflecting better capability in resuming daily and occupational activities.

Social Functioning

Social engagement improved notably in the intervention group, as confirmed by the Kruskal-Wallis test ($H = 12.45$, $p < 0.01$), suggesting the module helped reduce feelings of isolation and enhanced interpersonal interactions.

Discussion

These findings support the usefulness of e-module interventions in addressing both the educational and emotional needs of diabetic amputees (Iversen et al., 2020). Notable improvements across vitality, mobility, and social engagement domains underscore the complementary role of digital tools in conventional rehabilitation programs.

Cultural Adaptation

Localizing the DAQOL instrument to align with Saudi cultural and linguistic norms strengthened the module's applicability and effectiveness, emphasizing the necessity of cultural relevance in health education initiatives (Noël et al., 2024).

Strengths and Limitations

This research adds valuable insight to the relatively scarce literature on digital health tools in the Saudi context. Nonetheless, the use of a quasi-experimental approach and purposive sampling may constrain the ability to generalize the results broadly.

Conclusion

The study demonstrated that the e-module significantly enhanced the HRQoL among diabetic patients following amputation surgery. These results advocate for the integration of digital educational resources into existing healthcare frameworks to improve rehabilitation outcomes.

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