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Technological innovations to improve the well-being of the elderly in nursing homes. Systematic review
Innovaciones tecnológicas para mejorar el bienestar en hogares de ancianos. Revisión sistemática

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ABSTRACT

Objective: to analyse the contributions of technological innovations to improving well-being in nursing homes based on a systematic review. **Method**: systematic review, population of 15 articles. **Conclusion**: Technological innovations represent a transformative opportunity to improve the well-being of residents in nursing homes, optimising their autonomy, quality of life and medical care. However, their successful implementation depends on overcoming barriers such as lack of resources, resistance to change and inequalities in access, especially in rural areas or in institutions with limited resources. The role of nurses is essential in this process, as they are primarily responsible for integrating these tools into daily care, educating residents and ensuring their safety and effectiveness. **Descriptors:** homes for the aged; halfway houses; assisted living facilities. (DeCS).

RESUMEN

Objetivo: analizar los aportes de las innovaciones tecnológicas para mejorar el bienestar en hogares de ancianos desde una revisión sistemática. **Método**: revisión sistemática, población de 15 articulos. **Conclusión**: Las innovaciones tecnológicas representan una oportunidad transformadora para mejorar el bienestar de las residentes en hogares de ancianas, optimizando su autonomía, calidad de vida y atención médica. Sin embargo, su implementación exitosa depende de superar barreras como la falta de recursos, la resistencia al cambio y las desigualdades en el acceso, especialmente en áreas rurales o en instituciones con recursos limitados. El rol de las enfermeras es esencial en este proceso, por cuanto son las principales responsables de integrar estas herramientas en el cuidado diario, educar a las residentes y garantizar su seguridad y efectividad.
Descriptores: hogares para ancianos; casas de convalecencia; instituciones de vida asistida. (DeCS).

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Original brief

INTRODUCTION

The ageing of the world's population has led to a significant increase in the demand for long-term care services, especially in nursing homes. These environments face challenges related to the quality of care, staff overload and the specific needs of older adults, many of whom have chronic conditions, physical disabilities or cognitive impairment (1,2). In this context, technological innovations are being developed as tools to address these issues, improving both the well-being of residents and the efficiency of care services (5,9).

Assistive technologies, remote monitoring systems, virtual reality platforms and digital tools for care management are just some examples of the technological solutions that are being implemented in nursing homes (9,11). These innovations have the potential to promote autonomy, improve quality of life and optimise medical and pharmacological care (4,11). However, their adoption is not without challenges, as it requires an adequate infrastructure, specialised training for nurses and a cultural change within the institutions (5,6,8).

The role of nurses is fundamental in this process, as they are primarily responsible for implementing and adapting these technologies to the daily care of the residents (1,3,15). In this sense, nurses play a key role in educating and motivating older women to accept and use these tools, as well as in evaluating their effectiveness and safety (6,9). Despite the progress made, significant barriers remain, such as unequal access to these technologies, especially in rural areas or in homes with limited resources (10), and resistance to change on the part of staff and residents (2,5).

The objective of the article is to analyse the contributions of technological innovations to improve the well-being in nursing homes from a systematic review.

METHOD

This work was carried out using a systematic review methodology, 15 scientific articles were analysed following the guidelines established by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol.

An exhaustive search was carried out in recognised scientific databases, including PubMed, CINAHL, Scopus and Web of Science, covering publications from January 2018 to October 2023. MeSH terms and keywords related to the topic were used, such as: 'nursing homes', 'technological innovations', 'elderly care', 'assistive technology', 'virtual reality' and 'nursing workforce'.

RESULTS

Assistive technologies contribute to promoting the autonomy and participation of residents. In this case, André et al. (11) pointed out that these technologies can improve independence and quality of life, especially in older women with physical or cognitive disabilities. However, their implementation requires adequate customisation and specific training for nurses, which can be a challenge in homes with limited resources, as also mentioned by Koenig et al. (1) and Shin & Kim (15). In this sense, the role of nurses as facilitators of the use of these technologies is fundamental to guarantee their success.

On the other hand, interventions based on virtual reality and exergames have shown significant benefits in improving the physical, cognitive and emotional function of residents, in view of which Peng et al. (9) concluded that these technologies are not only effective, but also well accepted by older people, suggesting their potential to complement traditional therapies. However, the lack of access to technological equipment and resistance to change on the part of staff and residents can limit its large-scale implementation, as also mentioned by Sturmberg et al. (2) and Nkodo et al. (6). In this context, nurses have an important role in educating and motivating residents to participate in these activities.

The organisational culture of nursing homes also has a significant influence on the adoption of technological innovations, therefore, Deprez et al. (5) explain that

person-centred care models, such as the Greenhouse model, can maximise the benefits of these technologies by prioritising the individual needs of residents, Williams & Joshi (8) emphasised that these approaches require a significant cultural change, including continuous training of nurses and the restructuring of organisational processes. On the other hand, the COVID-19 pandemic highlighted the importance of supporting nursing home staff in the adoption of new technologies. Likewise, Nkodo et al. (6) pointed out that the lack of resources and work overload during the pandemic made the implementation of technological tools difficult, which highlights the need for specific support strategies for nurses and other health professionals.

In the medical field, technological innovations have also shown potential for improving pharmacological care and the transition of care. Therefore, Tancredi et al. (4) analysed the use of pharmacological treatments in residents with osteoporosis, highlighting the need for technological tools to optimise the administration of medication. Likewise, Wang et al. (12) identified that technologies can facilitate the transition of care between nursing homes and emergency services, especially in patients with dementia. On the other hand, Orkaby (7) explored the use of statins in residents with and without dementia, highlighting the need to integrate scientific evidence into clinical decision-making in nursing homes. In this context, nurses play an essential role in the implementation of these innovations, ensuring that interventions are safe and effective.

A major challenge is the unequal access to these technologies, especially in rural areas or in homes with limited resources, in the face of which Sharma et al. (10) pointed out that the closure of nursing homes in rural areas can exacerbate disparities in access to quality care, which raises the need for public policies that promote equity in the distribution of technological resources. Likewise, the sustainability of these innovations depends on the ability of nursing homes to integrate these tools into their daily operations. Therefore, Sturmberg et al. (2) emphasised that systemic failures in geriatric care, such as a lack of trained

personnel and work overload, can limit the effectiveness of these technologies. In this vein, Koenig et al. (1) and Bowblis et al. (3) also emphasise the importance of strengthening the nursing home workforce, especially through training and support for nurses, to ensure successful implementation.

Consequently, technological innovations can influence long-term outcomes such as time to nursing home admission and mortality. In this regard, Brück et al. (13) conducted a meta-analysis that showed that technological interventions can delay nursing home admission and improve the quality of life of residents. McWilliam et al. (14) also highlighted that these tools can reduce unnecessary transfers between nursing homes and hospitals, improving continuity of care. In this sense, nurses have a crucial role in coordinating these transitions and implementing strategies to reduce the associated risks.

CONCLUSION

Technological innovations represent a transformative opportunity to improve the well-being of nursing home residents, optimising their autonomy, quality of life and medical care. However, their successful implementation depends on overcoming barriers such as lack of resources, resistance to change and inequalities in access, especially in rural areas or in institutions with limited resources. The role of nurses is essential in this process, as they are primarily responsible for integrating these tools into daily care, educating residents and guaranteeing their safety and effectiveness.

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CONFLICT OF INTEREST

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