SUMMARY OF THE LITERATURE REVIEW: WHAT PROBLEMS DOES LONG-TERM INPATIENT CARE FACE, WHAT TECHNOLOGICAL INNOVATIONS CAN REVOLUTIONIZE CARE AND WHAT ADVANTAGES DOES DIGITALIZATION OFFER THE CARE SETTING?

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ABSTRACT

The demographic change in Germany is characterized by an aging population and falling birth rates, which leads to significant challenges in inpatient long-term care. The resulting high age and the shortage of skilled workers in long-term care require innovative solutions, especially through technological advances. This article outlines the main problems, possible technological solutions, and the benefits of digitalization for long-term care.

Keywords: Care innovations, demographic change, robotics, digitalization.

INTRODUCTION

Digitization in the inpatient long-term care sector brings with it numerous improvements and increases in efficiency, which are urgently needed in view of the acute shortage of skilled workers in long-term care facilities. Furthermore, digitization offers extensive innovative solutions for inpatient long-term care (Paaß & Hecker, 2020).

Essentially, digitization in inpatient long-term care includes the introduction and use of electronic health records, the expansion of telemedicine, digital care documentation and the use of intelligent assistance systems. These technologies enable better networking between the various actors in the healthcare system, promote the exchange of information and contribute to making nursing measures more targeted (Korte, 2023).

Inpatient long-term care is characterized by various frequently occurring problems. These include, among other things, the high workload of nursing staff, which often leads to physical and mental exhaustion. Another problem is the lack of staff, which can affect the quality of care. The financing of care facilities is also a major challenge, as the costs often cannot be fully covered by the available funds. In addition, there are often difficulties in the individual care of those in need of care, which can reduce the quality of life.

PROBLEMS
Increasing need for care

- The number of very old people in need of care is rising steadily. This increases the pressure on long-term care facilities to continuously provide high-quality care services (Nowossadeck, 2013).

Shortage
- The shortage of qualified nurses makes it difficult to meet the growing demand for care. A large proportion of nursing professionals are overburdened with daily care work, and working conditions are often more precarious (Theobald, 2022).

High costs
- The costs of caring for those in need of care are rising steadily (Liebmann, 2023).

Quality of care
- With an increasing workload and limited resources, the quality of care often suffers, leading to dissatisfaction among those in need of care and their relatives (Drupp & Meyer, 2020)

After outlining the fundamental problems that cause difficulties in inpatient long-term care, innovative solutions will be presented at this meeting that can help to reduce the known problems.

INNOVATIONS
Care and assistance robots
- Care and assistance robots have the potential to take over numerous nursing tasks that were previously carried out by nursing professionals. These robots can perform tasks such as serving meals, lifting and repositioning residents, and assisting with personal hygiene. Studies show that the use of robots in nursing can significantly reduce the physical strain on nursing professionals and increase the efficiency of nursing processes (Kräft, 2021).

Sensor-based monitoring systems
- Sensor-based monitoring systems can be installed in the living areas of care recipients to monitor movements and activities. These systems detect unusual patterns of behavior and send automatic alarms to caregivers or relatives if necessary. Such technologies increase the safety of those in need of care and enable immediate intervention in emergencies. Sensor-based monitoring systems increase the sense of security of those in need of care and reduce the workload of nursing professionals (Klemm & Obser, 2019).

Artificial Intelligence (AI)
- AI can be used in long-term care to create and optimize individual care plans. By analyzing large amounts of data, AI systems can make personalized recommendations for the care and treatment of residents. This allows for more precise and effective care planning and execution. In addition, AI systems can help automate administrative tasks, which further relieves the burden on nursing staff (Irmler, 2023).

Telemedicine
- Telemedicine makes it possible to carry out medical consultations and health monitoring through digital channels. This is especially useful in long-term care, as regular visits to the doctor can be challenging for elderly and often immobile residents. By using telemedicine, health data can be continuously monitored and, if necessary, transmitted directly to medical professionals and nurses. This leads to improved medical networking, care and early detection of health changes (Müller-Wittig, 2024).

In the following, the advantages of digitization are presented, which will have a major influence on inpatient long-term care in the future.

ADVANTAGES
Person-centered care
- Residents benefit from person-centered care work, as digital systems continuously monitor the state of health. This enables nursing professionals to react to changes at an early stage and take appropriate measures.

Relief for nursing staff
- Digital documentation systems reduce the administrative effort for nursing staff. This gives them more time for direct care of the residents and working with relatives.

Involvement of relatives
- Digital applications can be used to optimally integrate relatives into the care process. They get a better overview of the state of health of those in need of care and can be more easily involved in care planning.

Improved networking and communication
- Digitization enables more efficient communication and networking between different care facilities, doctors and other healthcare providers. This promotes seamless and coordinated care for residents.

More efficient care processes
- Intelligent assistance systems and automated processes help to make care processes more efficient. This is particularly important in view of the shortage of skilled workers, as it allows the available resources to be used optimally.

COMPLEMENTARY SOLUTIONS
In addition to the technologies mentioned, electronic health records (EHRs) also play a crucial role in the digitization of long-term care. EHRs allow for centralized storage and easy access to residents' health data, improving coordination between different care and healthcare facilities. This leads to a more coherent and integrated care. Wearables and mobile health applications also help improve care by continuously collecting and analyzing health data. This data can be used to monitor residents' health status and respond early to potential issues (Stachwitz & Debatin, 2023).

METHOD
This specialist text was prepared using the method of literature work. This method involves various steps to sift, analyze, evaluate, and synthesize existing literature (Noeske et al., 2023).
The individual process steps are illustrated below.

In order to narrow down the literature research, the topic was first defined and a precise question was derived from it, which formed the starting point for the research. Specific keywords were then defined to ensure a comprehensive and systematic search for relevant specialist literature. Various databases, such as Google Scholar and PubMed, were then searched. When selecting the specialist

literature, care was taken to ensure that it is up-to-date in order to ensure a reference to the current topic. To save time, the abstracts of the identified texts were read before the final decision. If the relevance of the abstract was confirmed, the full text was read. If the reader was able to answer the question in terms of content, the technical text was included in the analysis. The selected literature was then critically analyzed. Central theories, concepts, methods and results were identified. Care was taken to evaluate the quality of the studies and the credibility of the sources. The information obtained was systematically arranged and structured according to topics, concepts or questions. This was done by summarizing, comparing, and contrasting the different sources (Burmann et al., 2021).

VIEW

Advancing digitalisation and the use of innovative technologies in inpatient long-term care promise a sustainable transformation of the care sector. In the future, the integration of care and assistance robots, telemedicine, sensor-based monitoring systems and artificial intelligence (AI) will continue to advance and improve more and more aspects of care. These technologies will not only increase the quality of care, but also make a significant contribution to relieving the burden on nursing staff. Through continuous technological developments and their implementation, care processes can be made more efficient and patient-centered. More intensive use of electronic health records and mobile health applications will further improve communication and coordination between different actors in the healthcare sector. In addition, future innovations, such as more advanced wearables and personalized AI-powered care solutions, could enable even more precise and personalized care (Federal Ministry of Labor and Social Affairs, 2023).

The challenges of demographic change and the shortage of skilled workers will continue to put pressure on the care system. But ongoing technological support offers the potential to successfully meet these challenges. Sustainable care infrastructure, supported by digital innovations, will help to improve the quality of life of care recipients and reduce the burden on caregivers (Eidam, 2023). It should be noted that technological progress in nursing will also lead to the emergence of new job profiles and nursing professionals having to acquire additional qualifications in order to be able to make optimal use of the new technologies. This requires continuous training and adaptation of training occupations in the nursing sector (Federal Ministry of Health, 2024).

Overall, the digitization of long-term care offers a promising perspective for meeting the increasing demands of an aging society. With a targeted and thoughtful implementation of these technologies, a future-proof and high-quality care infrastructure can be created that benefits both care recipients and care professionals (Bleses et al., 2020).

INFERENCE

Demographic change poses major challenges for inpatient long-term care. However, technological innovations offer promising solutions to meet the increasing demand for care and alleviate the shortage of skilled workers. The implementation of nursing and assistance robots, telemedicine, sensor-based monitoring systems, and artificial intelligence can improve the quality of care while reducing the workload of nurses (Eppers, 2024).

In addition, scientific analyses and models offer insights into developments and challenges, which are consequently mapped.

By 2050, an increase in the elderly population is expected due to the increasing aging of the population. The proportion of people between the ages of 67 and 85 is expected to be 25.6% of the total population (Federal Agency for Civic Education, 2024).

As the population ages, so will the prevalence of chronic conditions such as dementia, cardiovascular disease, and diabetes. This will increase the complexity of care needs (Jobst, 2024). The use of care and assistance robots will increase in the future. These robots can provide physical support, perform administrative tasks, and encourage social interaction. They will play an important role in compensating for the shortage of nurses, but they will not replace them entirely (Kratky et al., 2023).

Telemedicine will be widely used, allowing medical consultations and monitoring to take place through digital platforms. This will be particularly important in rural areas where access to health care is limited (Brauns & Loos, 2015).

Sensor-based monitoring systems and artificial intelligence (AI) will play a major role in long-term care facilities. These technologies will continuously monitor residents' health, provide early warning systems, and create personalized care plans (Drägerhof & Koch, 2021).

There will be increased integration of health and social services. Multidisciplinary teams comprising doctors, nurses, therapists, and social workers will increasingly work in a coordinated manner to ensure holistic care (Kubitschke et al., 2017).

Care will be more personalized, supported by data analytics and individual health records. This allows for tailor-made care plans that address the specific needs and preferences of those in need of care (Ostermann & Rothgang, 2024).

Financing long-term care will remain a key challenge. In view of rising costs, new models of financing and insurance must be developed to make care sustainable (Ehrentraut et al., 2019).
The training and qualification of nursing professionals will change to meet the demands of new technologies and more complex care needs. There will be more opportunities for further training and specialised training programmes (Lizarazo-López & Spohn, 2021).

RESULT
In 2050, inpatient long-term care will be significantly shaped by the demographic ageing of the population, technological innovations and structural adjustments. The increasing demand for care services is driven by demographic change, while technological advances and integrated approaches to care offer potential solutions to both improve the quality of care and reduce the shortage of skilled workers.

In addition, technological innovations offer a wide range of possibilities for optimising care processes and improving the care of people in need of care. The use of electronic health records, telemedicine, digital care documentation systems, and intelligent assistance systems will help reduce the workload of caregivers while enabling more personalized care for those in need of care. This progress is crucial to meet the challenges of demographic change and the shortage of skilled workers in long-term care.

However, sustainably financing these developments and ensuring adequate training and qualification of nurses remains a significant challenge (Lizarazo-López & Tiryaki, 2021).

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