

GPS Trackers for Dementia People Analysis

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Assignment Title: Implementing GPS Trackers for People with Dementia: An Analysis

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Executive Summary

This report provides a comprehensive analysis of the research paper titled "Implementing Global Positioning System Trackers for People with Dementia Who Are at Risk of Wandering." The study evaluates the feasibility and acceptability of GPS trackers as a technological solution to manage wandering behaviors among individuals with dementia. The analysis highlights several key findings, including high acceptance rates of GPS technology, notable improvements in the independence of dementia patients, and a significant reduction in the stress and burden on carers. However, some challenges such as device comfort, data accuracy, and the need for more robust support systems were identified. Based on these findings, the report recommends the widespread adoption of GPS technology in dementia care, improved support and training for users, and further research to optimize the technology's design and functionality.

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1. Introduction

1.1 Background and Purpose

Dementia is a neurodegenerative condition characterized by progressive cognitive decline, which can result in a range of behavioral symptoms, including wandering. Wandering poses significant risks to the safety and well-being of individuals with dementia, as it can lead to falls, injuries, and even death. The increasing prevalence of dementia worldwide has prompted the exploration of technological solutions to manage these risks. Among these solutions, GPS trackers have emerged as a promising tool to monitor the movements of individuals with dementia and prevent dangerous wandering incidents.

The purpose of this report is to analyze the feasibility and acceptability of GPS trackers as a solution for managing wandering behavior among individuals with dementia. The use of GPS technology in dementia care has the potential to improve safety, enhance independence, and reduce the burden on carers. This report examines the findings from a recent academic study on this topic and discusses the implications for practice and future research.

1.2 Introduction to the Academic Research Paper

The research paper titled "Implementing Global Positioning System Trackers for People with Dementia Who Are at Risk of Wandering" provides an in-depth analysis of the implementation and effectiveness of GPS technology in dementia care. The paper explores how GPS trackers can be integrated into the daily lives of individuals with dementia and their carers, highlighting both the potential benefits and challenges associated with this technology. This report will analyze the paper's methodology, key findings, limitations, and implications to provide a comprehensive understanding of the role of GPS technology in dementia care.

2. Analysis of the Provided Academic Research Paper

2.1 Research Methods and Design

The study employed a mixed-methods approach, combining both quantitative and qualitative research methods to evaluate the implementation of GPS trackers among 45 dyads, each consisting of a person with dementia and their nominated carer. The selection of participants was based on a history or risk of wandering, a behavior commonly associated with dementia that poses significant safety risks.

The quantitative aspect of the study involved the use of pre- and post-intervention questionnaires, which were designed to capture data on the usability, acceptability, and perceived benefits of the GPS trackers. These questionnaires were administered to both people with dementia and their carers at the beginning and end of a six-month study period. Additionally, participants were asked to maintain logs of their experiences with the GPS devices, providing a continuous stream of data that allowed for real-time monitoring of the device's usability and the participants' changing circumstances. Monthly follow-ups, conducted either via phone or in-person visits, ensured that researchers could maintain consistent contact with participants, addressing any issues or concerns as they arose.

The qualitative component of the study involved four focus group sessions conducted at the end of the six-month period. Each session included three to four dyads, allowing for in-depth discussions about the experiences of both people with dementia and their carers. These focus groups were instrumental in uncovering the broader social and psychological impacts of using GPS trackers, providing valuable insights into how this technology affects daily life and the caregiving experience.

2.2 Key Findings

The study yielded several key findings that underscore the potential benefits of GPS technology in dementia care:

- **Feasibility and Acceptability:** One of the primary objectives of the study was to assess the feasibility and acceptability of GPS trackers among individuals with dementia and their carers. The findings were overwhelmingly positive, with 91% of participants reporting that they found the device practical and easy to use. Only a small minority (9%) of carers reported challenges, which were primarily due to the refusal of the person with dementia to wear the device. The high level of acceptance among participants is a crucial finding, as it suggests that GPS trackers can be successfully integrated into dementia care routines without causing significant disruption or discomfort.

- **Impact on Independence and Carer Burden:** A significant finding of the study was the positive impact of GPS trackers on the independence of individuals with dementia. Over half of the participants (54%) reported an increase in their ability to engage in daily activities independently, such as shopping and using public transportation. The technology allowed individuals with dementia to maintain a greater level of autonomy, which is essential for their psychological well-being and quality of life.

For carers, the use of GPS trackers significantly reduced the anxiety and stress associated with the constant monitoring of their loved ones. The ability to track movements in real-time and communicate directly via the device provided carers with peace of mind, reducing the need for more intrusive measures such as involving law enforcement. This reduction in stress is supported by quantitative data showing a significant decrease in Zarit Burden Scale scores from pre-test to post-test, indicating that the use of GPS trackers effectively alleviated the burden on carers.

- Effectiveness of Device Features: The success of the GPS trackers in this study can be largely attributed to their key features, including GPS tracking, two-way communication, fall detection, and geofencing. These features were not only practical but also critical in preventing potentially dangerous situations. For example, the fall detection feature automatically alerted carers when a fall occurred, allowing for immediate intervention. Similarly, the geofencing feature provided alerts if an individual left a predefined safe area, enabling quick responses to wandering incidents. Participants particularly appreciated the ability to save movement history, which proved useful when a person with dementia went missing without the device. The real-time updates and low battery warnings further ensured that carers could manage the safety of their loved ones effectively.

- Challenges and Areas for Improvement: Despite the overall positive feedback, the study also highlighted several areas where GPS trackers could be improved. Some participants reported issues with the accuracy of the location data, which could lead to difficulties in locating a person if the tracker was misplaced. Additionally, some individuals with dementia found the device bulky and uncomfortable to wear, particularly around the neck, leading to initial resistance to using the tracker. The study also noted the need for better technical support and training for both carers and individuals with dementia, as some participants struggled with learning to operate the device, especially those in more advanced stages of dementia.

2.3 Challenges and Areas for Improvement

The challenges identified in the study highlight important areas for future development and improvement of GPS technology in dementia care. Issues such as the accuracy of location data and the physical comfort of the device need to be addressed to enhance user experience and acceptance. Moreover, the need for comprehensive technical support and training is evident, as both carers and individuals with dementia require guidance on how to effectively use the technology. Addressing these challenges will be crucial in ensuring the successful integration of GPS trackers into dementia care practices.

2.4 Discussion of Research Limitations and Future Directions

While the study provides valuable insights into the potential benefits of GPS technology in dementia care, several limitations need to be considered. Firstly, the sample size was relatively small and lacked diversity, with most participants being from a White British background. This homogeneity limits the generalizability of the findings to other cultural and ethnic groups. Future research should aim to include a more diverse population to better understand how different communities may respond to GPS technology in dementia care.

Secondly, the study did not include a control group, which makes it challenging to draw definitive conclusions about the effectiveness of GPS trackers compared to other interventions. A larger randomized controlled trial would provide more robust evidence of the benefits and potential drawbacks of using GPS technology in dementia care. Additionally, the study did not measure the severity of dementia at baseline or follow-up, which could have provided more insights into how the technology's effectiveness varies at different stages of the disease. Future research should

explore this aspect, as the cognitive abilities of individuals with dementia decline over time, potentially affecting their ability to use and benefit from GPS trackers.

3. Supporting Literature Review

3.1 GPS Technology in Dementia Care

Research on the use of GPS technology in dementia care has consistently shown that it can play a crucial role in enhancing the safety and independence of individuals with dementia. Studies by Ehn et al. (2021) and Firouraghi et al. (2022) have found that GPS trackers can significantly reduce the risk of harm by allowing carers to quickly locate and assist individuals who have wandered. These studies also noted improvements in the quality of life for both individuals with dementia and their carers, as the technology enabled greater independence and reduced anxiety. The findings of the current study align with these conclusions, further supporting the potential of GPS technology as a valuable tool in dementia care.

3.2 Balancing Safety and Privacy

The use of GPS technology in dementia care raises important ethical considerations, particularly regarding the balance between safety and privacy. While the primary concern is often the safety of the individual, it is crucial to consider the person's right to privacy and autonomy. Dreyfus et al. (2018) and Gibson et al. (2015) have explored these ethical implications, highlighting the need to carefully balance these competing concerns. In the current study, privacy concerns were secondary to the perceived benefits of increased safety, but future implementations must consider ways to ensure that privacy is not unduly compromised.

3.3 Integration into Broader Care Networks

The concept of a “techno-organisational network,” as discussed by Spilker et al. (2019), is particularly relevant to the successful implementation of GPS technology in dementia care. This approach emphasizes the importance of integrating the technology into a broader network of care that includes human and non-human actors, such as carers, healthcare providers, community members, and law enforcement. This integrated approach is essential for ensuring that the technology is used effectively and that the individual with dementia is supported in a holistic manner. The findings of the current study underscore the importance of such an approach, as the successful use of GPS trackers depended not only on the technology itself but also on the support provided by a network of stakeholders.

4. Recommendations

4.1 Widespread Adoption of GPS Trackers

Based on the findings of the study, it is recommended that GPS trackers be widely adopted in dementia care settings. This technology has demonstrated high feasibility and acceptability among users and has the potential to significantly enhance the independence of individuals with dementia while reducing the burden on their carers. By enabling people with dementia to remain independent for longer, GPS trackers can reduce the need for costly and stressful interventions, such as 24-hour residential care.

4.2 Integration into Comprehensive Care Networks

The successful implementation of GPS trackers requires a collaborative approach involving multiple stakeholders. Healthcare providers, community organizations, and law enforcement agencies should work together to create a supportive network that maximizes the benefits of the technology. This network should provide comprehensive support to both individuals with dementia and their carers, ensuring that the technology is used effectively and safely.

4.3 Targeted Support and Training Programs

To ensure that both carers and individuals with dementia can effectively use GPS trackers, targeted support and training programs should be developed. These programs should focus on the technical aspects of the device, as well as strategies for integrating its use into daily routines. Training should be tailored to the needs of different user groups, including those in more advanced stages of dementia who may require additional support.

4.4 Future Research Directions

Further research is needed to explore the effectiveness of GPS trackers across different stages of dementia and to evaluate the economic benefits of their widespread use. Studies should also aim to include a more diverse population to better understand the technology's applicability across different cultural contexts. Additionally, research should investigate the potential for GPS trackers to be integrated with other technologies, such as mobile health apps and wearable sensors, to provide a more comprehensive approach to dementia care.

4.5 Enhancements in Device Design

Based on user feedback, it is recommended that future iterations of GPS trackers be designed to be more comfortable and easier to use, particularly for individuals in advanced stages of dementia. Improvements in location accuracy and additional features, such as audible alerts and more intuitive interfaces, could further enhance the usability and effectiveness of the devices. Developers should also consider the specific needs of different user groups, ensuring that the devices are adaptable to various care settings and individual preferences.

5. References

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