

Technological Solutions to Enhance Accessibility of Customized Physical Activities for People with Disabilities: Exploring the Potential for App Development through Qualitative Data Analysis

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Abstract

Participation in physical activities is essential for the well-being of people with disabilities, promoting both physical health and social inclusion. However, accessibility barriers limit their engagement. This study explores the potential of mobile app development to enhance accessibility through tailored programs. Using qualitative research methods and thematic analysis of interviews with government officials, six key themes emerged: physical activity access, need for customized programs, information availability, technology's role, institutional support, and implementation challenges. The findings suggest personalized apps can promote participation, but success requires accurate data, program customization, and continuous user feedback. This study provides practical insights into using technology to improve accessibility and calls for future research to test these solutions in real-world settings.

Keywords

Accessibility, Disabilities, Physical Activity, Mobile App, Customized Programs, Thematic Analysis

Introduction

Participation in physical activities plays a crucial role in improving the physical and mental well-being of people with disabilities while also fostering social interactions (Biernat & Piatkowska, 2017; Jaarsma & Smith, 2018; Maher & Haegele, 2022; Smith & Wightman, 2021; Rimmer et al., 2004). However, individuals with disabilities still face various accessibility challenges that limit their involvement in sports and recreational activities. Recent technological advancements offer the potential to provide tailored solutions to these challenges, creating opportunities to enhance their participation. This study explores methods to support people with disabilities in easily accessing and engaging in physical activities.

This research aims to deepen our understanding of how people with disabilities access physical activities and highlight the importance of developing programs tailored to their needs. It also seeks to explore how mobile app development can make physical activities more accessible for individuals with disabilities.

This study employed qualitative research methods, using interviews and thematic analysis to gather and analyze data. The focus was on

identifying key themes and challenges related to the accessibility of physical activities for people with disabilities, forming the basis for developing customized solutions.

Literature Review

Physical activity is recognized as a vital factor in promoting both physical and mental health for people with disabilities. Research emphasizes the benefits of sports participation, such as improved cardiovascular health, increased strength, weight management, and mental health benefits like reduced depression and improved self-esteem. Biernat and Piatkowska (2017) highlight the positive impact of physical activity on the quality of life for people with disabilities. Similarly, Jaarsma & Smith (2018) discuss how participation in physical activities contributes to social integration.

Access to information plays a critical role in the participation of individuals with disabilities in physical activities. While mass media such as TV and the Internet offer general information, community networks and informal relationships are often more effective in motivating participation. Many studies demonstrate that enhanced access to information increases participation rates, suggesting the need for customized systems to provide relevant information to people with disabilities (Haegele & Sutherland, 2015; Rowland et al., 2016; Riley et al., 2008; Bice et al., 2016).

Technology can play a key role in offering personalized physical activity programs that align with the abilities and health conditions of individuals with disabilities (Nigg, 2003; Hurling et al., 2007). However, existing apps often lack personalized approaches, providing only standardized programs. Other studies also point out

the limitations of these applications, indicating the need for advanced data analysis and feedback systems to offer tailored programs (Matthews et al., 2016; Page et al., 2020). Overcoming these limitations and developing personalized solutions through new technologies will be crucial for improving accessibility.

Methodology

Based on the literature review, this study applies qualitative research methods to explore the potential of app development to enhance the accessibility of physical activities for people with disabilities. In-depth interviews with officials from relevant government agencies were conducted, and thematic analysis was employed to identify key themes.

Qualitative research methods are suitable because the research questions require an in-depth understanding of the challenges and needs related to exercise and health for people with disabilities. These questions address subjective experiences, making it essential to hear directly from officials responsible for their physical well-being.

Data was collected through semi-structured interviews, allowing participants to share their thoughts and experiences freely while the researcher followed a prepared set of questions. The interviews were recorded, transcribed, and analyzed to identify recurring themes and patterns.

Thematic analysis was used to systematically organize the data and identify key insights,

comprehensively understanding the participants' experiences and challenges.

Five officials from government agencies responsible for promoting health and physical activities for people with disabilities participated in the study.

Results

Thematic analysis of the interviews identified six key themes:

1. Accessibility of Physical Activities

This theme focuses on the opportunities and challenges individuals with disabilities face when accessing physical activities. For example, Participant 1 compared accessibility between the U.S. and South Korea, emphasizing the need to address infrastructure gaps.

“In the U.S., facilities are open-minded and foster community formation, while in Korea, there are dedicated gyms for people with disabilities, with ongoing efforts to expand such facilities.” (Participant 1)

2. Need for Customized Physical Programs

This theme highlights the importance of tailored programs that address the diverse needs of people with different disabilities. Participant 4 stressed the need for individualized assessments.

“While people with physical disabilities often engage in fitness programs, those with developmental disabilities tend to focus on functional development. Tailored programs are essential to maximize their

effectiveness.” (Participant 4)

3. Access to Information and Knowledge

This theme explores how individuals with disabilities obtain information about physical activities and how such information translates into participation.

“Although TV and the internet are common sources of information, personal recommendations and local welfare centers play a crucial role in actual participation.” (Participant 2)

4. Enhancing Accessibility through Technology

This theme focuses on how technology, particularly app development, can support individuals' access to and participation in physical activities.

“We are planning to develop an app that suggests exercise programs based on the user's health status, requiring detailed data collection for personalized content.” (Participant 5)

5. Institutional Support and Resources

Institutional support plays a critical role in the success of programs for people with disabilities.

“In Korea, the government collaborates with local municipalities to fund programs and facilities. Professional instructors are essential to ensure safe and effective participation.” (Participant 3)

6. Challenges in Program Development and Implementation

This theme addresses the difficulties in

developing and implementing customized programs.

“The success of a program depends on understanding individual needs and providing feedback-driven improvements.” (Participant 4)

Discussion

The six themes identified reflect the challenges and opportunities in promoting physical activity participation among people with disabilities. The results highlight the importance of institutional support and technological advancements in improving accessibility.

While previous research emphasizes the benefits of physical activity, this study focuses on specific accessibility issues and the need for personalized solutions. The findings underline the significance of technology and tailored programs in enhancing health outcomes.

The study confirms the need for technological solutions to improve accessibility. Developing an app that offers customized exercise programs can encourage participation. However, collecting accurate user data and providing personalized programs pose challenges that require ongoing feedback and improvements.

Conclusion

This study analyzed the accessibility challenges faced by people with disabilities and

emphasized the importance of tailored programs and information access. Technological solutions, such as app development, emerged as a key strategy to increase participation.

To enhance participation, it is essential to improve not only physical accessibility to facilities but also access to customized programs and information. Government agencies and institutions should provide greater technological and institutional support.

The study's scope was limited to five officials from government agencies, indicating a need for broader research involving diverse participants and disability types. Future studies should also focus on evaluating the developed app's real-world effectiveness.

Governments and institutions should actively support the development and expansion of tailored programs. Developers should focus on creating user-friendly apps that enhance accessibility. Finally, efforts to raise public awareness about the importance of physical activities for people with disabilities are necessary to foster positive social perceptions.

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