

Investigating User Experience and Its Relationship with Demographic and Clinical Factors in Chronic Pain Patients Using Therapeutic Devices

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Summary

Chronic pain affects individuals' quality of life, and therapeutic devices play a crucial role in managing symptoms and improving function. This study examines how user experience with these devices is influenced by education level, pain severity, and disability. A total of 21 individuals with chronic neck or low back pain who had used the StimaWELL 120MTRS system participated. Their experiences were evaluated using the USE Questionnaire, along with pain severity and disability assessments.

Findings indicate that individuals with higher education had better learning experiences, while those with greater pain severity reported reduced ease of use and satisfaction. Other demographic factors, including age, gender, and BMI, showed no significant association with user experience. These results highlight the need for personalized, user-centered device designs that accommodate educational differences and pain-related limitations to enhance usability and effectiveness. Incorporating adaptive features and ergonomic improvements could further improve accessibility, engagement, and adherence.

Introduction

Chronic pain is a significant health concern that affects millions of individuals worldwide, often leading to reduced quality of life, functional limitations, and increased healthcare costs. Among the most common chronic pain conditions are neck and low back pain, which can severely impact daily activities and work productivity. Technological advancements have led to the development of therapeutic devices aimed at managing pain and enhancing physical function. While these devices have shown promise in pain relief, the user experience associated with them remains a critical factor in their effectiveness and long-term adherence.

Understanding how demographic and clinical factors—such as age, gender, education level, body mass index, pain severity, and disability—affect the perceived usefulness, satisfaction, ease of use, and learning process of these devices is essential for optimizing their design and usability. This study explores these relationships to provide insights into how personalized approaches can improve patient outcomes and promote better engagement with therapeutic technologies.

Methods

The study included individuals aged 18-65 years with chronic neck or low back pain, all of whom had used a therapeutic technological device (StimaWELL 120MTRS system, Ehringshausen, Germany) [1] in at least one treatment session. Participants evaluated the therapeutic devices using the Usefulness, Satisfaction, and Ease of Use (USE) Questionnaire [2], which assessed dimensions such as

usefulness, satisfaction, ease of use, and learning. Additional data on age, gender, educational level, body mass index, pain region (lumbal, cervical), pain severity, and disability level (Neck Disability Index and Oswestry Disability Index scores) were collected.

Results and Discussion

This study highlights significant links between demographic and clinical factors and user experience with therapeutic devices in chronic neck and low back pain patients. Individuals with higher education demonstrated better learning ($r = 0.494$, $p < 0.05$), while greater pain severity negatively influenced ease of use, learning, and overall experience ($p < 0.01$). Interestingly, age, gender, BMI, and pain region had no significant impact, suggesting that cognitive abilities and pain intensity play a more decisive role than general demographics. Strong positive correlations between usefulness, satisfaction, ease of use, and learning reinforce that an intuitive, well-designed device enhances user experience. These findings underscore the importance of personalized, user-centric device design, incorporating adaptive learning features and ergonomic improvements to accommodate patients with varying pain levels and educational backgrounds. Further research with larger sample sizes is essential to refine these insights and develop more effective therapeutic solutions.

Conclusions

User experience with therapeutic devices in chronic pain patients is primarily shaped by educational level and pain severity, with higher education improving learning and greater pain intensity hindering ease of use and overall satisfaction. While factors like age, gender, BMI, and pain region show minimal impact, these findings emphasize the need for personalized, user-centric designs that accommodate pain-related limitations and educational differences to enhance device usability and effectiveness.

References

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