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Exploring ChatGPT's Role in Educating Patients on Community Reintegration After Spinal Cord Injury: A Mixed-Method Study

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ABSTRACT

Background: Community reintegration following spinal cord injury (SCI) involves navigating a complex web of physical, psychological, social, and environmental challenges. Patient education plays a critical role in this transition, yet many existing resources are either too generic or not readily accessible. The emergence of artificial intelligence tools like ChatGPT offers potential as a supplementary educational resource.

Objective: This study aimed to evaluate the reliability, readability, and perceived utility of ChatGPT in delivering educational content about community reintegration after SCI, using a mixed-methods approach.

Methods: In Phase I, 15 structured and clinically relevant questions were submitted to ChatGPT-4. The responses were assessed for reliability (using the DISCERN tool), readability (Flesch Reading Ease and Gunning Fog Index), and domain-specific comprehensiveness (via a custom rubric across physical, psychological, social, and environmental domains). In Phase II, semi-structured interviews were conducted with SCI patients, caregivers, and rehabilitation professionals to gather qualitative perspectives. Thematic analysis was used to explore recurring patterns.

Results: ChatGPT's responses yielded a mean DISCERN score of 3.82 ± 0.51, with an inter-rater intraclass correlation coefficient (ICC) of 0.84. Readability analysis revealed a mean Flesch score of 70.4 and a Gunning Fog Index of 9.1, suggesting accessibility for most readers. Comprehensiveness ratings were highest in physical (4.5 ± 0.5) and social (4.2 ± 0.7) domains, but relatively lower in environmental aspects (3.1 ± 0.8). Thematic analysis of interviews revealed three key themes: ease of access, surface-level adequacy, and supportive emotional tone.

Conclusion: ChatGPT shows promise as a readable, moderately reliable, and emotionally supportive tool for patient education following SCI. However, its limitations in depth and individualization highlight the need for its integration under clinical guidance, rather than as a standalone solution..

Keywords: *Spinal cord injury, community reintegration, ChatGPT, artificial intelligence, patient education, mixed-methods*

1. INTRODUCTION

Living with a spinal cord injury (SCI) alters virtually every aspect of an individual's life from mobility and self -care to emotional well-being and social participation. Regaining a sense of autonomy and re-establishing one's role within the community are often seen as markers of successful rehabilitation. However, the journey to community reintegration can be overwhelming, especially when clear, accessible guidance is lacking.Traditional methods of patient education, such as printed handouts or brief clinician consultations, may not always meet the diverse and evolving needs of SCI patients. In recent years, artificial intelligence (AI) tools like ChatGPT have emerged as potential aids in health communication. These AI models are designed to generate responses that mimic human conversation and can potentially offer accessible, on- demand information for patients and caregivers alike [1,2,3].Although the use of AI in healthcare is expanding, its application in

highly individualized scenarios like SCI rehabilitationremains underexplored. This study set out to assess whether ChatGPT could support patients and families in better understanding the complexities of community reintegration [4].

2. METHODS

Study Design This mixed-methods study was conducted from January to April 2025 and received ethical clearance from the institutional ethics committee (Approval No: IEC/2025/021). It involved two phases: quantitative content analysis and qualitative interviews.

Phase I: Quantitative Evaluation Fifteen structured questions covering key areas of SCI reintegration were entered into ChatGPT-4. Responses were saved and independently evaluated by three domain experts using:

DISCERN tool [4]

Flesch Reading Ease (FRE) [5] and Gunning Fog Index (GFI) [6]

Custom 5-point rubric assessing comprehensiveness across four domains: physical, psychological, social, and environmental.

Statistical Analysis Descriptive statistics were calculated for all measures. Inter-rater reliability was assessed using intra-class correlation (ICC). Domain-specific differences were analyzed using Kruskal-Wallis tests with post-hoc Dunn's correction.

Phase II: Qualitative Interviews We conducted semi-structured interviews with 10 SCI patients/caregivers and 8 healthcare professionals. Interviews were recorded, transcribed verbatim, anonymized, and coded by two researchers using Braun and Clarke's thematic analysis framework [7].

3. RESULTS

Quantitative Findings ChatGPT responses had an average DISCERN score of 3.82 ± 0.51 (ICC = 0.84). Readability metrics were FRE = 70.4 and GFI = 9.1.

Table 1. Comprehensiveness Scores Across Domains

Domain	Mean ± SD
Physical	4.5 ± 0.5
Psychological	3.7 ± 0.6
Social	4.2 ± 0.7
Environmental	3.1 ± 0.8

Qualitative Findings Three main themes emerged:

Ease of Access: ChatGPT was described as convenient and immediately accessible.

Surface-Level Adequacy: Users noted general usefulness but a lack of personalized depth.

Supportive Tone: Responses were perceived as empathetic and non-judgmental.

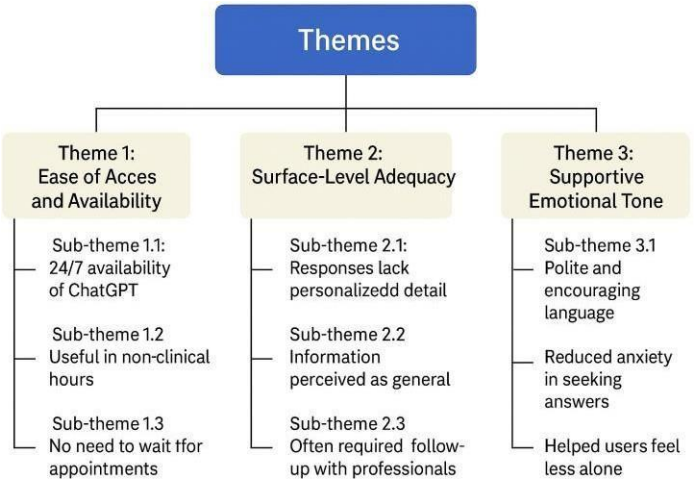

Figure 1. Thematic Map of Interview Findings [A conceptual map linking major themes and sub-themes.]

4. DISCUSSION

Our findings suggest that ChatGPT offers a promising, though not exhaustive, resource for individuals navigating SCI reintegration. Its readable, emotionally supportive responses make it approachable for patients and caregivers. However, the content often lacked the nuanced specificity required for tailored rehabilitation advice.

The lower scores in environmental content highlight an important gap, echoing similar findings in AI literature where contextual understanding remains limited [8,9]. While the chatbot performed well in areas like mobility and social re-engagement, it faltered in providing detailed guidance on home accessibility or vocational rehabilitation.

Participants' appreciation for ChatGPT's tone aligns with recent studies indicating AI's ability to foster user engagement through language [10,11]. However, its generic nature calls for integration with professional oversight to ensure safe and relevant application.

5. CONCLUSION

ChatGPT is a valuable adjunct in the realm of SCI education, especially for initiating learning and offering reassurance. While it cannot replace personalized clinical care, it has the potential to supplement it, particularly when patients lack immediate access to rehabilitation professionals.

Future research should focus on enhancing the contextual awareness of such tools, possibly by training domain-specific models or embedding expert review mechanisms.

REFERENCES

[1] Jeblick K, Schachtner B, Dexl J, et al. ChatGPT makes medicine easy to swallow: An exploratory case study on the utility of AI-generated patient education materials. JMIR Med Educ. 2023;9:e46844.

[2] Gilson A, Safranek CW, Huang T, et al. How well does ChatGPT answer medical questions? J Med Syst. 2023;47(1):33.

[3] Krittanawong C, Johnson KW, Rosenson RS, et al. Artificial intelligence in cardiology: current applications and future perspectives. J Am Coll Cardiol. 2021;77(3):312-329.

[4] Charnock D, Shepperd S, Needham G, Gann R. DISCERN: an instrument for judging the quality of written consumer health information. J Epidemiol Community Health. 1999;53(2):105-111.

[5] Kincaid JP, Fishburne RP Jr, Rogers RL, Chissom BS. Derivation of new readability formulas for Navy enlisted personnel. Research Branch Report. 1975;8-75.

[6] Gunning R. The Technique of Clear Writing. New York: McGraw-Hill; 1952.

[7] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.

[8] Cascella M, Montomoli J, Bellini V, et al. Evaluating the reliability of ChatGPT in answering medical questions: A benchmark study. Cureus. 2023;15(4):e37643.

[9] Patel SB, Lam K. ChatGPT: the future of discharge summaries? Lancet Digit Health. 2023;5(3):e107.

[10] Xu J, Zhang Y. Empathy in artificial intelligence: Can language models support emotional well-being? Comput Human Behav. 2024;146:107783.

[11] Yang Y, Guo Y, Li T, et al. Emotional responses to AI-generated messages: A study on tone and trustworthiness. J Med Internet Res. 2023;25:e41567