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Article type: Original Article

Received: 28 January 2024

Accepted: 28 March 2024

Published online: 26 April 2024

eISSN: 2544-1361

Eur J Clin Exp Med

doi: 10.15584/ejcem.2024.3.8

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The impact of interpersonal support on quality of life in traumatic brain injury patients – a one-month post-treatment analysis

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ABSTRACT

Introduction and aim. Traumatic brain injuries often result in serious consequences affecting the quality of life of patients, necessitating a profound understanding of influencing factors. This study aims to explore the relationship between interpersonal support and the quality of life in traumatic brain injury patients one month after treatment. The research seeks to identify the extent to which interpersonal support influences the quality of life in traumatic brain injury patients and whether this relationship remains significant one month after hospital treatment.

Material and methods. The research method employed is quantitative, involving sampling of traumatic brain injury patients aged 18-50 years without complications or disabilities who are willing to participate. Data is collected one month post-treatment through questionnaires encompassing scales measuring

interpersonal support (ISEL) and post-TBI quality of life (QOLIBRI). Data analysis is conducted using Pearson's correlation test in SPSS version 26 software.

Results. Statistical analysis revealed that traumatic brain injury patients with good interpersonal support exhibited significantly higher quality of life ($p=0.002$), with a strong correlation between the two variables ($r=0.663$). These findings indicate the crucial role of interpersonal support in enhancing the quality of life in patients.

Conclusion. The study confirms a positive relationship between interpersonal support and the quality of life in traumatic brain injury patients.

Keywords. interpersonal support, post-traumatic brain injury, quality of life

Introduction

Traumatic brain injury (TBI) is a global health issue that poses significant challenges and can have a profound impact on individuals' quality of life. Those suffering from TBI often face complex and diverse challenges, including cognitive, physical, and psychological disturbances. In this context, interpersonal support becomes a critical element in the recovery of patients, emanating not only from medical professionals but also from family, friends, and the surrounding community.¹

While previous research has highlighted the relationship between interpersonal support and the quality of life for patients with head injury, there is an urgent need to understand in more detail the post-one-month treatment impact of this support.^{2,3} After one month, the initial recovery phase may have passed, and it is crucial to identify how the level of interpersonal support correlates with the ongoing development of quality of life.⁴

This study proposes a focus on the post-one-month treatment period, a critical phase in the recovery of patients with head injury. At this point, the challenges faced by patients and their families may have evolved, and interpersonal support relationships can significantly contribute to the improvement or deterioration of the patient's quality of life.^{5,6}

One reason this study is unique is lies in the integration of physical, cognitive, and psychological aspects of the impact of head injuries on quality of life. By considering these various dimensions, the study aims to provide a holistic understanding of how interpersonal support can help enhance these aspects and overall quality of life.⁷ While previous research often emphasized support from medical professionals, this study explored the significant role of support from family and the community. Involving a broader social environment will provide insights into how interpersonal support can be integrated into a larger social structure.^{8,9}

Furthermore, the novelty of this study lies in its comprehensive examination of the multidimensional impact of interpersonal support on TBI patients' quality of life. While previous research has predominantly focused on the role of medical professionals in providing support, this study takes a broader approach by exploring

the contributions of familial, social, and community support networks. Additionally, by specifically targeting the post-one-month treatment period, this study fills a crucial gap in the literature and provides timely insights into the ongoing recovery process for TBI patients, ultimately contributing to the advancement of knowledge in this field. By understanding the relationship between interpersonal support and the quality of life for patients with head injury one month after treatment, this research has the potential to lay the foundation for the development of more effective interventions.¹⁰ We have a hypothesis that interpersonal support plays a relevant role in improving the quality of life of patients.

Aim

This research is conducted to explore the relationship of interpersonal support in the recovery of patients with head injury and specify how it can impact their quality of life one month post-treatment.

Material and methods

Study design

The research methodology employed in this study is a quantitative approach aimed at exploring the relationship between interpersonal support and the quality of life in patients with head injury one month post-treatment. The study population focuses on patients with head injury in Indonesia within the age range of 18–50 years. Inclusion criteria involve patients without complications (patient does not have any psychological disorders or degenerative diseases such as Alzheimer's and dementia), disabilities (patient does not experience any disabilities or have any missing or amputated body parts), and those willing to participate as respondents in this study. The initial selection was conducted on 91 respondents who met the inclusion criteria, out of which 19 did not complete the process for one month due to health conditions, including mortality, and could not be contacted again for monitoring during the one-month period as depicted in Fig 1. The sample was selected using a purposive sampling approach, where patients meeting the criteria were invited to participate, resulting in 72 respondents.

Data collection took place one month after the patients underwent treatment at the hospital. Observations and data collection occurred during the patients' routine medical check-up visits to the hospital. Utilizing this method ensures that data is collected at a critical point in the patients' recovery while maintaining the regularity and consistency of data collection.

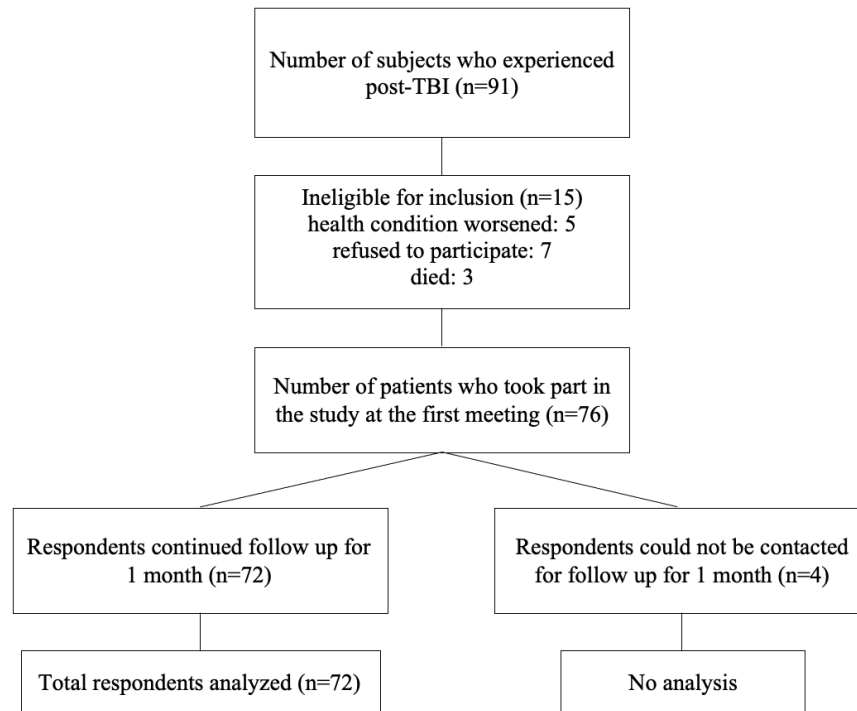


Fig. 1. Flowchart of the sampling process in this study

Instruments

The instruments used to measure interpersonal support and quality of life are structured questionnaires that have undergone validity testing ($p > 0.05$) and reliability testing (Cronbach's alpha $p > 0.361$). The questionnaire was specifically designed to understand the level of interpersonal support received by patients and measure relevant aspects of quality of life in the context of head injuries. The interpersonal support instrument employs the Interpersonal Support Evaluation List (ISEL), while the quality of life instrument utilizes the Quality of Life after Brain Injury (QOLIBRI). Meanwhile, the level of consciousness is assessed using the Glasgow Coma Scale (GCS), which consists of three parameters: eye opening response, verbal response, and motor response, with scores ranging from 3 to 15.

ISEL consists of 12 items with four response options: definitely wrong, probably wrong, probably right, and definitely right. QOLIBRI comprises 6 parameters, including cognitive abilities (7 items), emotions (7 items), independence (7 items), social relationships (6 items), feelings (5 items), and physical issues (5 items). During medical check-up visits, patients were invited to fill out the questionnaire containing questions related to interpersonal support and aspects of quality of life. Researchers provided guidance to respondents to ensure a clear understanding of the questions and minimize bias in questionnaire completion.

Data analysis

The collected data will be analyzed using the Pearson correlation test in the SPSS statistical software version 26 (IBM, Armonk, NY, USA). The Pearson test was chosen because it is suitable for evaluating linear relationships between two variables. Prior to analysis, data distribution will be checked to ensure conformity with normality assumptions using the Shapiro-Wilk normality test.

Ethical approval

The study has obtained ethical clearance with number 089.6/II.3.AU/F/KEPK/IV/2023 and received permission from the local health authorities. Adequate information for informed consent has been provided, and patient data confidentiality is maintained

Results

Table 1. Characteristic of Participants (n=72)

| | n | % |
|--------------------------------------|----------|----------|
| Sex | | |
| Male | 58 | 80.5 |
| Female | 14 | 19.5 |
| Education | | |
| No | 12 | 16.7 |
| Elementary/Middle/Senior High School | 46 | 63.8 |
| College | 14 | 19.5 |
| Marital Status | | |
| Not married | 5 | 6.9 |
| Married | 56 | 77.8 |
| Divorced | 11 | 15.3 |
| Trauma Mechanism | | |
| Accident | 42 | 58.3 |
| Fall | 18 | 25 |
| Other | 12 | 16.7 |

Table 2. Correlation analysis test results (n=72)

| | Median (Min–Max) | Mean±SD | r | p |
|-----|-----------------------------|----------------|----------|----------|
| Age | 47 (24–57) | 43.42±10.03 | 0.385 | 0.015 |
| GCS | 12 (8–14) | 11.33±1.55 | 0.226 | 0.037 |

| | | | | |
|------|------------|------------|-------|-------|
| ISEL | 32 (25–35) | 30.44±3.85 | 0.663 | 0.002 |
|------|------------|------------|-------|-------|

Table 3. Regression analysis test results (n=72)

| | | Coefficients | r | p |
|--------|-----------|---------------------|----------|----------|
| Step 1 | Age | 0.209 | 0.283 | 0.016 |
| | GCS Score | 0.753 | 0.180 | 0.116 |
| | ISEL | -0.529 | -0.417 | 0.005 |
| | Constant | 133.741 | | |
| Step 2 | Age | 0.234 | 0.317 | 0.017 |
| | ISEL | -0.624 | -0.515 | 0.007 |
| | Constant | 141.730 | | |

The Adjusted R Square value obtained from the regression test is 0.612, indicating a better fit. Good interpersonal relationships in patients with trauma brain injuries account for 61.2%, while the rest is attributed to other variables that need further investigation. During the initial regression testing phase, variables such as age, GCS score, and ISEL were found to meet the criteria. In the subsequent phase, only age and ISEL variables were considered. It was found that ISEL was the most dominant variable influencing the quality of life in post-TBI patients.

Men in general engage in higher levels of activity and mobility, making them more susceptible to traffic accidents. Particularly for those in their productive years and already married, they bear responsibilities towards both their families and work. In this study, married men are often involved in accidents, as evidenced by the data presented in Table 1. The men involved in the accident in this study amounted to 84% (49 out of 58), all of whom experienced head injuries. Men in their productive age group are more likely to engage in activities using motorcycles for daily mobility. Educational status also plays a role, with individuals having only elementary, junior high school, and high school education being represented. Men have a strong work ethic. Higher education makes it easier for them to find jobs, often in fieldwork. On average, they have to travel more than 10 km from home to work every day.

The common accident that occurs is traffic accidents involving motorcycles. On average, patients are taken to the hospital still conscious if they arrive after the incident. The average age of the respondents is within the productive age range, and those who have experienced accidents show a decrease in consciousness with a Glasgow Coma Scale (GCS) score of 12. The respondents mostly have GCS scores ranging from 12 to 14. The lowest GCS score, which is 8, is only found in one respondent, while GCS scores of 10 are present in two respondents, and GCS scores of 11 are present in three respondents. The rest of the respondents have good GCS scores. Despite this, they exhibit good interpersonal support and a high quality of life, as indicated in Table 2. Statistical results demonstrate a significant correlation between good interpersonal

support and the quality of life of patients one month after a head injury, with a strong correlation strength, as depicted in Table 2. Good interpersonal support was identified as a predictive factor for better quality of life, as in Table 3.

Discussion

The data indicates that males are more prone to accidents, possibly due to their higher participation in risky activities and mobility. The fact that married men experience accidents more frequently highlights the impact of family and work responsibilities on accident rates.¹¹ Additionally, the relationship between educational status and accidents provides a more comprehensive picture, emphasizing the importance of health literacy in preventing head injuries.^{12,13}

The average age of the respondents reflects a population still in their productive years, facing a high risk of accidents. A decrease in consciousness with a Glasgow Coma Scale (GCS) score of 12 indicates the serious impact of head injuries, which may require specific attention and recovery efforts.¹⁴ This aligns with previous research findings indicating that the early level of consciousness can predict the prognosis of patients with head injuries.^{15,16}

Statistical test results show that patients with good interpersonal support have a good quality of life ($p=0.002$). The strong correlation ($r=0.663$) emphasizes the positive relationship between these two variables. This suggests that patients with head injury receiving adequate interpersonal support are more likely to experience a positive recovery in terms of their quality of life.

Social interaction and support from the social environment can help individuals cope with stress, reduce the psychological impact of injuries, and enhance overall well-being.^{17,18} Close relationships with family and friends, especially for men with family responsibilities, can provide the emotional and practical resources needed during the recovery process.^{19,20}

Furthermore, strong interpersonal support can help patients overcome the stress, depression, and anxiety often associated with health conditions that require long-term recovery.²¹ Balancing social support and mental health conditions plays a key role in improving the quality of life for patients.²²

The social support model has been recognized as a determinant of quality of life, especially in the context of chronic health conditions.^{23,24} Good interpersonal support is identified as a predictive factor for better quality of life. These findings align with current research, emphasizing the need to consider social support as an integral part of the care for patients with head injury. Although this research proves that interpersonal support has a significant impact on the quality of life of post-TBI patients, longitudinal studies need to be conducted over a longer period of time to see whether interpersonal support is still the most dominant variable influencing the quality of life of post-TBI patients.

Conclusion

The findings of this research provide a deeper understanding of the relationship between interpersonal support and the quality of life of patients one month after a head injury. Other factors such as gender, marital status, educational status, age, and the level of initial consciousness play a crucial role in patient recovery. These findings are not only relevant in the context of public health but also have practical implications for the planning and implementation of more effective rehabilitation programs.

Declarations

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors

Author contributions

Conceptualization, P.A.W.S and F.K.; Methodology, A.O. and S.K.D.S; Software, X.X.; Validation, P.A.W.S and A.O.; Formal Analysis, S.K.D.S.; Investigation, F.K.; Resources, P.A.W.S.; Data Curation, M.F.B.; Writing – Original Draft Preparation, P.A.W.S.; Writing – Review & Editing, F.K.; Visualization, P.A.W.S.; Supervision, F.K.

Conflicts of interest

All author declare have no conflict of interest.

Ethics approval

This study was approved by the local ethics committee (Health Research Ethics Committee in Universitas Muhammadiyah Gombong, date: 19.04.2023 decision number: 2112400003).

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