Relationship Between Psychological Adjustment and Utilization of Medical Resources in a Severe Brain Injury Population

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Introduction

- An acquired brain injury (ABI) commonly affects multiple domains of functioning (e.g., psychological, physical, social/interpersonal)
  - Mood-related symptoms (e.g., depression, anxiety, anger) are common sequelae following an ABI.
  - A higher frequency of mood disorders may be found in more severe brain injuries.[1]
- Treatment for individuals who sustained more severe injuries typically includes partial or inpatient rehabilitation.
- To date, research in this area is limited primarily to mild ABIs and individuals enrolled in outpatient or short-term recovery programs.[2]

Participants

- Participants were adult residents with moderate to severe ABIs at a post-acute rehabilitation program (n = 63) for about 25% of their lives (M = 13.27, SD = 8.58).
- Residents were primarily male (61%), middle aged (M = 52.28, SD = 12.77), and averaged 26.50 years (SD = 10.43) post injury.
- Most common injuries included motor vehicle accidents, falls, and biological origins.
- Residents received therapies including speech, physical, occupational, and psychotherapy.

Measures

Clinician-Rated Functioning

- The Mayo-Portland Adaptability Inventory (MPAI-4)[3] is a 29-item questionnaire (α = .76-.83) comprised of three domains (Ability, Adjustment, Participation) designed to assess functional outcomes in patients following brain injuries. The Adjustment Index subscale was used to measure levels of depression, anxiety, and sensitivity to psychological factors. Lower scores indicate better adaptability.
- The World Health Organization Quality of Life (WHOQOL-BREF)[4] is a 26-item measure (α = .51-.77) that evaluates perceived well-being across four domains (Physical, Psychological, Social, Environmental). The measure is scored in the positive direction.

Medical Acuity

- A medical acuity composite outcome variable was created to include participants' emergency room visits and medical appointments in the same year.

Aims & Hypotheses

Among individuals with severe ABI, we examined:

1. The amount of medical resources utilized in a given year
2. The functional outcomes on clinician-rated measures
3. The relationship between utilization of medical resources, psychological adjustment, and quality of life.

Hypotheses:

1. Individuals with poorer psychological adjustment will utilize medical resources **more than** who have lower levels of adjustment.
2. Physical health quality will have a **negative relationship** with medical acuity, such that persons with better physical health will utilize resources less than those with a poorer physical health.

Procedures & Analyses

- The current study was a retrospective, cross-sectional single-cohort design.
- Outcome screenings were completed annually by the resident, direct staff, or family member to assess patient functional well-being and injury progression. Direct staff scored and documented all measures.
- Medical acuity information was collected from a review of patient records.
- Composite medical acuity was measured as emergency room (ER) visits and medical appointments in the same year.

Table 1. Relationship between years post brain injury and patient medical acuity

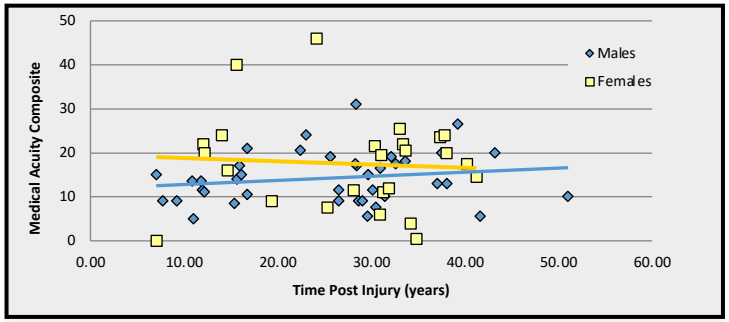

Table 2. Functional Outcomes

	MPAI-4 Indices			WHOQOL-BREF Domains			
	Ability	Adjustment	Participation	Physical	Psychological	Social	Environment
Mean	20.25	21.61	20.60	25.54	22.05	9.64	31.19
SD	6.75	6.45	5.24	5.15	4.55	3.50	6.22

Table 3. Relevant Correlations

	Ability Index[1]	Adjustment Index[1]	Psychological[2]	Physical Health[2]	Medical Acuity
Ability Index[1]	1				
Adjustment Index[1]	0.191	1			
Psychological[2]	-0.137	**-0.263***	1		
Physical Health[2]	0.066	-0.026	**0.384****	1	
Medical Acuity	0.091	**0.257***	-0.125	**-0.272***	1

*1. MPAI-4 Indices, 2. WHOQOL-BREF Domains, * p<.05, **p<.001*

Cross-Sectional Results

- MPAI-4 scores were considered average for people involved in residential rehabilitation following brain injury.[2]
- Resident age and gender were associated with medical resource utilization, such that older males had higher levels of medical acuity.
- Overall mood functioning was associated with psychological quality of life (p<.05).
- The WHOQOL-BREF Psychological and Physical domains were significantly correlated in the positive direction (p<.001)
  - Persons with lower levels of physical health also suffered from lower levels of psychological health.

- **Physical**: A linear regression revealed that the WHOQOL-BREF Physical domain significantly predicted medical acuity R^2=0.27, F(1, 58) =4.55, p<.05.
- Significant negative relationship between physical quality of life and utilization of medical resources (p<.05).
  - Persons with better physical quality of life did not require higher levels of medical acuity.
- **Psychological**: A simultaneous regression revealed that the MPAI-4 Adjustment Index explained a significant proportion of the patient's medical acuity score, R^2=0.34, F(4, 58) =5.540, p<.05.
  - Age, years post-injury, and gender were controlled for
- Significant positive relationship between psychological adjustment and utilization of medical resources (p<.05).
  - Persons with mood disorders or severe psychological mood symptoms utilized medical resources more than those who did not.

Conclusions

- Mood is an important component of an individual's well-being and an influential factor of rehabilitation, regardless various demographic factors (e.g., age, years post injury, gender).
- Findings highlight the utility of periodic outcome measures in post-acute rehabilitation facilities providing care to severe ABI populations.

Limitations & Future Directions

- The current study lacks some generalizability for persons with ABI outside of most post-acute rehabilitation facilities.
- Although the measures used in this study demonstrated adequate psychometrics, overlapping subscales measuring similar constructs may have contributed to stronger correlations.
- Further investigation is warranted and should explore predictive factors of recovery outcomes for severe ABI to improve clinical and medical outcomes for this population.

References

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