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Evaluate the Effectiveness of Various Interventions and their impact on Functional Independence

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Abstract - Background: Depending on the cause and the site of anatomical damage, hemorrhage may have a wide variety of clinical presentations. It's a very frequent but potentially life-threatening medical issue that needs prompt attention. The function of the interprofessional team in enhancing treatment for patients with hemorrhage is highlighted in this learning exercise. The research was conducted to learn how informal caregivers' care burden and quality of life were affected by their charges' functional state after a Hemorrhage. Aim: The aim of this study is to analyze the effect of task-oriented intervention on the functional independence of people who have had a hemorrhage. Methods: The data was evaluated and statistically analyzed using the SPSS 15.0 package application. For counted variables, descriptive statistics were presented as counts and percentages, whereas for measured variables, they were presented as means, standard deviations, medians, and minimums and maximums. Caregiver burden and quality of life were evaluated using the Caregiver Burden Scale (CBS) and the Short-Form Health Survey Quality of Life Scale, while demographic information was gathered using the Patient and Caregiver Information Form. Results: The main findings of the research showed that all eight FIM subscales showed improvement, with seven of them showing statistically significant improvement. The only clinical characteristic associated with a statistically significant degree of correlation with functional independence among hemorrhage patients was bleeding duration (p<0.05). Conclusion: The caregiver's burden and quality of life are related to the hemorrhage survivors' functional state. As the patients' functional state declined, so did the caregivers' quality of life and the stress of their caregiving responsibilities.

Keywords - Intervention, Functional Independence, brain, patient, caregiver

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INTRODUCTION

The Functional Independence Measure (FIM) is a measure for assessing patients' functional status throughout the recovery process after a hemorrhage, traumatic brain injury, spinal cord injury, or cancer. It may be used in hospitals and skilled nursing institutions for acute, subacute, and rehabilitative treatment. It serves as a reliable data gathering tool for comparing rehabilitation results throughout the health care continuum and is completed upon admission to and discharge from a rehabilitation hospital. It also seeks to provide doctors the ability to monitor changes in patients' functional status from the start of rehab therapy through discharge and follow-up.

The patient's performance in 18 areas, with an emphasis on motor and cognitive function, determines the FIM's estimate of the degree of impairment. A scale of 1 to 7 points (1 = 25% independence; all help necessary, 7 = 100% independence) is used to score each category or item. As a result, FIM ratings may be used to determine a person's degree of independence or caregiving responsibility. The scale is designed to determine how reliant an individual will be on assistance from others based on how well they can manage basic daily tasks. Both the physical, such as how well patients move and walk, and the cognitive, such as how effectively they interact with people, communicate with them, and comprehend information, are also evaluated. FIM was first developed for hemorrhage patients, however it is also used in various situations to evaluate impairment.

Functional independence is the capacity to carry out activities of daily life without assistance. Achieving functional independence guarantees that people may take part completely in meaningful and purposeful activities in their lives. Participation in everyday activities or jobs is crucial to health and wellbeing, whether or not one has a physical

impairment. Anthropologists have observed that participation in everyday activities such as self-maintenance, production, and recreation allow people to express themselves, form connections with others, and develop a sense of self. The International Classification of Impairments, Disabilities, and Handicaps has been renamed the International Classification of Functioning, Disability, and Health by the World Health Organization in recognition of the significance of involvement in everyday circumstances to health.

By doing this, definitions of health that focused on its absence from sickness or disability have drastically changed. This celebrates the idea that a person can interact with and operate in their surroundings despite having a handicap and physical limitations. Emerging research on the significant therapeutic value of engaging in purposeful everyday activities supports this change. The likelihood of experiencing and reporting higher levels of energy, fewer physical illnesses, less discomfort, and better physical functioning is higher in those who are able to attain meaningful engagement in life events. The expenses of health related to the burden of care, the management of physical symptomatology, and poor mental health may ultimately be reduced as a result of this influence.

To assess the amount of progress in patients after rehabilitation treatments, the Functional Independence Measure (FIM) scale was used to evaluate hemorrhage patients at the time of hospital admission, discharge, and six months after the hemorrhage. A total of 108 hemorrhage patients who were hospitalized to the neurology ward participated in the research. They all got occupational and physical therapy recommendations as well as rehabilitation consultations. Finally, the FIM scale was used to assess their functional condition. At admission, discharge, and six-month follow-up, the median (and range) FIM scores were 86 (15-119), 102 (16-123), and 119 (17-126), respectively. According to our findings, FIM scores significantly improved (P 0.001). On admission, discharge, and after six months, respectively, 13, 30, and 76 percent of patients in the motor domain and 61, 75, and 86 percent in the cognitive domain had scores of 6 or 7 (full or partial independence). Age and both the length of hospitalization and FIM improvement showed a reverse connection (P = 0.002). The research demonstrated that the FIM is a reliable instrument for assessing hemorrhage patients, monitoring their care, and monitoring the progression of the illness. Additionally, we came to the conclusion that hemorrhage patients significantly improve their functional status over time. It is necessary to conduct independent research to determine the precise impact of rehabilitation techniques and to compare them to no therapy [1]. The proprioceptive neuromuscular facilitation, neural mobilization, core stabilization, and neuromuscular technique are some of the methods that make up the modified physiotherapy combination technique. to evaluate the impact of a combined physiotherapy treatment on lumbar disc herniation patients' function and level of discomfort. Physiotherapy combination method and regular physiotherapy groups are randomly allocated to a total of 44 patients with lumbar disc herniation. At baseline and four weeks later, function and pain were assessed using the Visual Analogue Scale (VAS) and the Oswetry Disability Index (ODI), respectively. Both groups had ODI improvement (4 weeks into treatment) as compared to baseline. The ODI showed that the physiotherapy combination method greatly improved compared to the regular physiotherapy group. The physiotherapy combination approach is superior to regular physiotherapy in terms of helping patients with pain and function. In patients with lumbar disc herniation, the physiotherapy combination treatment reduces discomfort and improves function [2].

Hemorrhage occurs when a blood artery is broken and blood suddenly leaks out. Minor bleeding may occur when the skin's superficial blood vessels are broken, resulting in petechiae and ecchymosis. Changes in vital signs and changed mental state are only two examples of the more nebulous constellation of symptoms that might result. Both internal and external bleeding are possible. Bleeding from an external source, such as an orifice or a wound, is caused by trauma. Clinical suspicion of internal bleeding involves a comprehensive history and physical examination, laboratory investigations, imaging, and vigilant monitoring of vital signs. In the acute trauma population, hemorrhage is one of the most common causes of mortality. Hemorrhages manifest differently depending on their site of origin. Acute trauma may result in bleeding in a number of different anatomic locations; they include the skin, the head, the chest, the abdomen, the retroperitoneum, and any broken long bones. The first step in determining the cause of a hemorrhage is doing a complete history and physical examination. When a blood artery in the brain bursts, blood leaks into the brain or the space surrounding it, causing hemorrhaging. The location will be reflected in the symptoms. An intracranial hemorrhage describes bleeding within the skull and is frequently caused by artery wall weakness due to persistently high blood pressure [3].

METHODS

Caregiver burden and quality of life were evaluated using the Caregiver Burden Scale (CBS) and the Short-Form Health Survey Quality of Life Scale, while demographic information was gathered using the Patient and Caregiver Information form. Patients with hemorrhages made up the whole of the research population [4].

Exclusion criteria

- Those who have had a bone broken or an orthopedic procedure performed on them.
- Who suffered with mental health issues including sadness and anxiety.

Inclusion criteria

- Hemorrhage was diagnosed, and the patient should be able to communicate and understand what was spoken to them.

Sample size

Eighty patients from the Medical College Hospital made up the sample. The sample was selected using convenience sampling methods.

Data analysis

Design an analysis strategy Rates and proportions The average, the deviation, and the Chi-square test. The data was evaluated and statistically analyzed using the SPSS 15.0 package application. For counted variables, descriptive statistics were presented as counts and percentages, whereas for measured variables, they were presented as means, standard deviations, medians, and minimums and maximums.

Procedures for Use of the Data Set

Initialization and release Data from the FIM's subscales was analyzed. Analyses were performed on means and standard deviations. Mean differences between admission and discharge were analyzed using paired t-tests and Bonferroni correction for multiple comparisons. Client performance was examined for any gender differences. Age and the quantity of medical care provided were also investigated.

Baseline and discharge FIM scores for eating, grooming, bathing, upper/lower body dressing, toileting, transfers, and wheelchair mobility; age; gender; length of stay (LOS) in occupational therapy; number of minutes billed for therapeutic exercise; therapeutic activities; ADL training; cognitive training; orthotic check out; wheelchair training; and positioning/muscle re-education; and what was included were all collected from the original data sheets.

The FIM-Measured Dependent Variable

The degree of functional autonomy was assessed using the Functional Independence Measure (FIM). Eating, personal hygiene, bathing, getting dressed (upper and lower), using the restroom, transferring, and moving about in a wheelchair were all examined as part of the FIM. These dimensions were selected because they are the most often affected by bleeding in patients.

Data collection tools

- **Barthel Index (BI)**

This index was used to evaluate patients' ability to do daily tasks on their own; it was created by Barthel and Mahoney and translated into Turkish by Küçükdeveci. In the validity and reliability analysis of the Turkish version, the internal consistency coefficient was determined to be 0.93. All individuals with sensory and motor impairments are evaluated using this instrument. Ten different elements (eating, bathing, grooming, clothing, bowel/bladder control, toilet usage, transfer to/from bed, mobility, and stair climbing) make up this index, which measures physical impairment in everyday life. Independence is rated at 100, whereas complete reliance receives a score of 0. Independent functioning is considered as scores over 60 on this indicator. Complete dependency is indicated by a score of 0–20, strong dependence by a score of 21–61, moderate dependence by a score of 62–90, little dependence by a score of 91–99, and full independence by a score of 100 [6].

- **Functional Independence Measure (FIM)**

The Functional Independence Measure (FIM) was used to assess the recovery of the hemorrhage survivors. Küçükdeveci et al. [13] conducted research to determine the validity and reliability of FIM in Turkey, and they discovered a correlation coefficient of 0.90. There are 13 questions assessing motor skills and 5 assessing cognitive abilities in this assessment. The 18 tasks are divided into two halves and come from six different categories: self-care, sphincter control, mobility and transfer, locomotion and walking, communication and social cognition. The patient's level of dependency or independence on each item is assigned a score between 0 and 7; 0 indicates complete dependence, 2 partial dependence, and 3 or more independent actions. Scores on this measure might fall anywhere between 18 (total helplessness) to 126 (full autonomy) [7].

- **Short-Form Health Survey Quality of Life Scale**

Caretakers of hemorrhage survivors had their quality of life evaluated using the Short-Form Health Survey Quality of Life Scale. The Ware Wellness Rating Scale [8] was created by Ware to assess both physiological and psychological well-being. The test-retest reliability coefficients ranged from 0.73 to 0.90, while the Cronbach Alpha internal consistency coefficient for the scale was determined to be 0.92.

RESULTS

Table 1: demographic variables of patients

Demographic Variables	F	%
Gender		
Male	52	65
Female	28	35
Marital status		
Married	61	77
Unmarried	10	12
Widow/Widower	9	11
Hemorrhage duration in years		
Less than 3 months	56	70
4 – 6 months	24	30
Patients Glasscow Coma scale		
6 – 8	38	47
8 – 10	29	36
10 – 12	10	17

There were 52 men (65%) and 28 women (35%) in the sample. Patients' marital status looks like this Seventy-seven percent are married people, 12 percent are single, and 11 percent are widowed. Sixty-six (70%) had suffered from hemorrhage for less than three months, forty-seven (47%) had a Glasscow coma scale score of between eight and ten, and ten (17%) had a score of eleven or more [9].

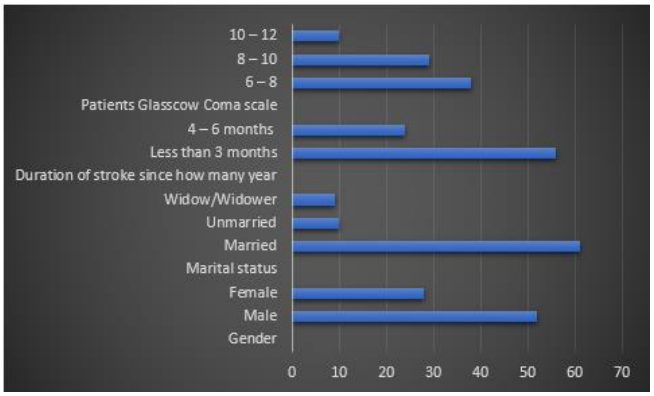

Figure 1: demographic variables of patients

Table 2: Patient functional independence distribution in hemorrhage

Functional Independence	F	%
Totally dependent (0 – 20)	10	12
Severely dependent (21 – 60)	30	37
Moderately dependent (61 – 90)	25	32
Slightly dependent (91 – 99)	15	19

Thirty (37%) were very dependent, 25% (32%) were somewhat reliant, 19 (19%) were somewhat dependent, and 10 (12%) were fully dependent, as shown in table 2.

Functional Independence Improvement

The mean of the participants' initial FIM scores on each of the chosen eight subscales (see Table 3) provides insight into their starting point. Due to the typical limitation of mobility among the bleeding group, the greatest performance was recorded in eating (6.29). On average, people need moderate assistance with grooming (3.26), upper body clothing (3.17), and wheel chair mobility (3.27). Most patients needed maximum help or were totally reliant with regards to washing (1.88), lower body dressing (2.21), toileting (2.81), and transfers (2.91).

Table 3: Improvement in Functional Independence Following Hemorrhage

Functional Independence Measure Subscale	Baseline		Discharge		Paired-t	p-valuefor t-test
	Mean	S.D.	Mean	S.D.		
Self-Care						
Eating	6.29	1.611	6.32	1.584	-1.000	.323
Grooming	3.26	1.698	4.68	1.970	-7.356	.000
Bathing	1.88	1.202	3.52	2.084	-7.301	.000
UB Dressing	3.17	1.679	4.28	2.092	-6.033	.000
LB Dressing	2.21	1.327	3.42	2.170	-5.727	.000
Toileting	2.81	1.867	3.64	2.278	-4.574	.000
Mobility						
Bed, Chair, W/C transfer	2.91	1.686	4.36	2.079	-7.265	.000
Locomotion						
Walk/W/C	3.27	2.534	4.02	2.500	-3.746	.001

Note: The following scale is used: 1 indicates dependency, 2 maximum assistance, 3 moderate assistance, 4 minimum assistance, 5 supervision, 6 modified independence (device), and 7 independents.

Pairwise t-tests with post hoc analysis (see Table 3 for details) were used to determine the extent of the enhancement. On average, patients' Functional Independence Measure (FIM) scores increased by

1.06 points between admission and discharge across eight different subscales. The greatest improvement was shown in washing (1.64), followed by transfers (1.47), and finally grooming (1.42). The average score on the eight FIM subscales increased to the moderately helpful or excellent range at the time of discharge. All subscales of the FIM showed statistically significant improvement, with the exception of eating.

Table 4. The average results of the Caregivers' Quality of Life Scale and Burden of Care Scale from the Short-Form Health Survey

Measure	Sub-dimensions	Mean ± SD	Median	Min–Max
Short-Form Health Survey Quality of Life Scale	Emotional role functioning	46.7 ± 44.4	33.3	0.0–100.0
	Physical role functioning	46.7 ± 44.4	50	0.0–100.0
	Vitality	46.9 ± 22.6	45	5.0–100.0
	General health perceptions	51.7 ± 22.7	52	5.0–100.0
	Mental health	53.8 ± 19.1	52	12.0–96.0
	Bodily pain	56.5 ± 26.2	52	0.0–100.0
	Social role functioning	60.2 ± 20.8	62.5	12.5–100.0
	Physical functioning	70.4 ± 29.9	77.5	0.0–100.0

		n	%	
Caregiver Burden Scale	Little or no burden (0–20 pts.)	9	11	
	Mild to moderate burden (21–40 pts.)	31	39	
	Moderate to severe burden (41–60 pts.)	6	7	
	Severe burden (61–88 pts.)	34	43	
	Total score	Mean ± SD	Median	Min–Max
		39.2 ± 13.8	40.5	13.0–80.0

Mean Short-Form Health Survey-QLS and CBS scores for caregivers are listed in Table 4.

DISCUSSION

When a vessel bursts, blood leaks into or around the brain, causing hemorrhaging. The location will be correlated with the indications and symptoms. An intracranial hemorrhage is the medical name for any bleeding that occurs within the skull; it often happens as a consequence of persistently high blood pressure weakening artery walls.[3] The symptoms might range from headaches, nausea, vomiting, and altered mental state to unilateral weakness. Heavy drinking, smoking over an extended period of time, becoming older, and drug misuse are other risk factors for cerebral bleeding.[5] Another significant cause of intracranial hemorrhage is trauma. Known as a subarachnoid hemorrhage (SAH), intracranial bleeding also includes various types. Blood builds up between the delicate arachnoid matter and pia tissue in this form of bleeding, which directly irritates the meninges surrounding the brain and may cause excruciating pain. This type of bleeding is caused by the rupture of a bridging cortical vein. The typical situation is when a patient has the "worst headache of their life," sometimes referred to as a "thunderclap headache," all of a sudden. Most occurrences of subarachnoid hemorrhage are caused by ruptured aneurysms, although other possibilities include a concussion or arteriovenous malformations. [10] Subdural hematoma, epidural hematoma, and intraparenchymal hemorrhage are further forms of intracranial bleeding. Particularly after trauma, patients may have more than one form of intracranial hemorrhage.

We decided to include all patients who had hemorrhagic stroke in our research but to adjust for the existence of medical problems in order to retain more participants. Medical issues had a significant impact on functional result, according to earlier research by P. Tidswell, P.S. Dias, H.J. Sagar, A.R. Mayers, and R.D. Battersby [15]. Additionally, we limited our ability to predict functional improvement to in-patient rehabilitation therapy; we made this decision to prevent losing follow-up cases from the sample.

Caregivers of hemorrhage survivors reported the lowest quality of life in the area of emotional role functioning, the lowest quality of life in the area of physical role functioning, and the best quality of life in the area of physical functioning. Similar to our results, Morimota et al. [4] found that caregivers for stroke survivors rated their own quality of life as best in the areas of bodily discomfort, physical functioning, and social role functioning, and lowest in the domain of overall health perceptions. McPherson et al. [11] showed that caregivers for stroke patients had worse average quality-of-life ratings across all categories compared to the general population. Most stroke survivors need long-term care since their functional status is severely diminished and they become reliant, which causes a variety of issues for caregivers in terms of their health, relationships, finances, and overall happiness [12]. As a result, our findings showed that caregiving negatively impacted the caregivers' quality of life. This study's findings demonstrate that the FIM may be used to assess post-stroke patients' functional improvement from admission to release. The literature backs this up as well. Based on their research, Chumney et al. (2010) concluded, "evidence exists that FIM scores can be used to accurately predict outcomes in patients poststroke" [13]. Further, "the FIM detected change in more patients than the BI and did not exhibit the ceiling and floor effects seen in BI" [14] (Dromerick, Edwards, & Diringer, 2003). This demonstrates that the FIM is a reliable tool for gauging improvement between hospitalization and release, particularly among stroke patients.

LIMITATIONS OF THE STUDY

Only a 4-week time frame in which to conduct the research was allowed. Only patients with hemorrhages should use this [16]. repeated hospitalizations for certain individuals were observed in the present investigation. The problem was solved by using the patients' entrance and discharge dates at the period of greatest therapeutic progress.

Physicians, specialists, specialty-trained nurses, and pharmacists must work together to obtain the best possible outcomes for patients undergoing hemorrhage treatment.

SCOPE AND SUGGESTIONS FOR FUTURE RESEARCH

Using the FIM to evaluate progress in the hemorrhage population is a topic that requires more investigation. It's possible that future research may include a bigger sample size or differentiate between individuals requiring long-term care and those who can go home following a hemorrhage. The outcomes of hemorrhages in various contexts, such as long-term care vs home, and in response to varying treatment modalities might benefit from more investigation. Other disability and functional independence measures may be used to draw comparisons. The sample size for this research might be rather considerable.

CONCLUSION

This paper's findings demonstrate that the FIM may be used to assess post-treatment performance improvement in patients with hemorrhage. The goal of this research was to investigate the effect of ability and skill retraining combined with task-oriented intervention on functional independence in people who had suffered a hemorrhage, as judged by the Functional Independence Measure (FIM) subscales. As a consequence, the Barthel index and the Modified Ranking Scale proved to be reliable tools for gauging patients' levels of functional independence and impairment after a hemorrhage. The FIM and BI ratings indicated that the survivors of the hemorrhage were very dependent on others. Caregiver quality of life was rated as below moderate in the areas of physical role functioning, emotional role functioning, and vitality, and as moderate or above in the areas of social role functioning, mental health, bodily pain, and overall health perceptions. Almost half of all caregivers feel a significant amount of stress from their roles. Based on the study's findings, nurses are advised to assess hemorrhage survivors' functional status because it relates to the caregiver burden, refer patients to physiotherapy and rehabilitation facilities to help them regain their functional status, counsel patients and caregivers about goods and services that will make their jobs easier, include caregivers in the care plan, and prepare caregivers for the task at hand.

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