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How to Perceive Rehabilitation at the Onset of Cerebrovascular Disorder Sequelae

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Abstract

In order for patients with cerebrovascular disorder to receive uninterrupted rehabilitation, it is necessary to implement a psychological approach at the time when recovery of physical function is expected, and it is imperative that the medical staff understands the patients' attitudes toward rehabilitation. For this reason, we conducted a survey among people who had experienced depression after a cerebral stroke in order to summarize their attitudes toward rehabilitation. **Methods:** The study subjects were patients with cerebrovascular disorder who had experienced melancholia, depression, or similar conditions. The survey was conducted using semi-structured interview techniques. Berelson's content analysis was used to analyze the data and perform a functional analysis. **Results:** A total of 168 words and 7 subcategories were extracted. Major categories of About Myself (40.5%), About the Rehabilitation Staff (33.9%), and About Rehabilitation (25.6%) were identified. **Conclusion:** As rehabilitation staff, we should always observe the motivation of our patients and consider the effect of our own influence as we suggest and implement clear objectives in order to achieve meaningful rehabilitation.

Keywords

Post-Stroke Depression, Rehabilitation, Qualitative Research

1. Introduction

The number of cases of cerebrovascular disorder in Japan was 1.47 million in 1999, but by 2017 the number had fallen to 1.11 million and is thus on a downward trend (Ministry of Health, Labor, and Welfare, 2019a). Consequently, the number of deaths due to cerebrovascular disorder has also decreased, from over 130,000 in 2000 to 108,000 in 2018 (Ministry of Health, Labor, and Welfare, 2019b). In addition, the rate of death from cerebrovascular disorder among the

Japanese population has shown a downward trend from 13.8% in 2000 to 7.9% (Ministry of Health, Labor, and Welfare, 2019b). However, the proportion of cerebrovascular disorder among those in need of care is high, roughly exceeding 50%, which is significantly higher than the proportion of other disorders. In particular, cerebrovascular disorder is the most common disorder among those requiring long-term care, especially those requiring level 4 or 5 long-term care (Ministry of Health, Labor, and Welfare, 2021). In other words, while the number of incidents of cerebrovascular disorder is decreasing, it is a disorder that requires a great deal of long-term care in the post-onset setting.

There have been reports of recovery of physical function in patients with cerebrovascular disorder with rapid recovery within 1 month of post-onset and gradual recovery at 3 to 6 months (Duncan et al., 2000) and significant improvement from 1 to 3 months after a cerebral stroke, but no significant improvement between 3 and 6 months after a cerebral stroke (Verheyden et al., 2008). In other words, recovery of physical function following cerebrovascular disorder occurs within 6 months of the onset, with rapid recovery in the first month after the onset, significant recovery within 3 months, and gradual recovery up to 6 months.

Additionally, depression is defined as episodes of depression in accordance with the diagnostic criteria of the DSM-V (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition). Episodes of depression include: 1) depressed mood, 2) loss of interest, 3) loss of appetite, 4) sleep disorder, 5) psychokinetic inhibition, 6) fatigability, 7) feelings of guilt, 8) poor concentration, and 9) suicidal ideation. When either (1) or (2) is always present and five or more of (3) to (9) are present, a diagnosis of depression is made (American Psychiatric Association, 2013). Regarding the morbidity rate, Ishikawa et al. reported a lifetime morbidity rate of 6.5%, 12-month morbidity rate of 2.3% (Ishikawa et al., 2016), while Laura et al. reported a lifetime morbidity rate of 3.0%, a 12-month morbidity rate of 1.2%, and a 1-month morbidity rate of 0.9% (Andrade & Caraveo, 2003). The lifetime morbidity rate for depression is approximately 3% - 6%, the 12-month morbidity rate is around 3%, and the 1-month morbidity rate is less than 1%.

The Japan Stroke Society developed the Cerebral Stroke Emotional Disturbance Scale in 2003 as a diagnostic criterion for Post Stroke Depression (PSD) (Goto, 2013), and Osada et al. explained that PSD is diagnosed when patients show endogenous depressive symptoms after a cerebral stroke (Osada et al., 2007). The incidence rate of PSD was 32% within 1 month of post-onset, 33% within 6 months, and 25% within 1 year (Ayerbe et al., 2013), and in other studies, 33% (Hackett et al., 2005) or 29.3% of patients were found to be symptomatic (Rafsten et al., 2018). In other words, PSD is a disorder that occurs in about 30% of patients with an incidence rate that is significantly higher than that of depression, and PSD has been observed in the early stages after the onset of a cerebral stroke.

Pharmacotherapy is used to treat PSD (Osada et al., 2007), but cognitive be-

havior therapies and exercise therapies are employed as well. Occurring in approximately 30% of patients, PSD is a disorder in which depressive symptoms are most likely to occur at the same time as physical functions. However, depression after a cerebral stroke is often viewed as apathy (Marin, 1991), the mourning of disability acceptance (Cohn, 1961), or higher brain dysfunction, and is often overlooked by hospital personnel. In fact, in a survey of rehabilitation professionals, many respondents reported approaching physical symptoms but not mental symptoms (Sugita et al., 2020). Post-onset rehabilitation of a cerebral stroke is recognized to be highly effective up to 6 months post-onset and is an indispensable treatment for functional recovery. However, occurrence of depression at a time when recovery from cerebrovascular disorder is expected is a sign that rehabilitation is being conducted without sufficient psychological attention from the medical staff. This can lead to periods of lapse in rehabilitation, prolonging the length of hospitalization and limiting the degree of recovery. In order for patients with cerebrovascular disorder to receive uninterrupted rehabilitation, it is necessary to implement a psychological approach at the time when recovery of physical function is expected, and it is imperative that the medical staff understands the patients' attitudes toward rehabilitation. For this reason, we conducted a survey among people who had experienced depression after a cerebral stroke in order to summarize their attitudes toward rehabilitation.

2. Material and Methods

2.1. Design

This is a qualitative research study using an open-ended questionnaire.

2.2. Patients

The study subjects were patients with cerebrovascular disorder who had experienced melancholia, depression, or similar conditions. In addition, patients receiving hospital treatment who were difficult to survey due to significant higher brain dysfunction or cognitive dysfunction were excluded.

Patients suffering from cerebrovascular disease sequelae who were collaborating with a research group to which the researcher belongs were asked to participate in the study.

2.3. Data Collection Procedures

Prior to recruitment, a written request and description of the study was provided to the representative of the study group, and after consent was obtained, recruitment was conducted. To recruit participants, an overview of the study was provided via a contact e-mail address, then a description of the study, a consent form, and a consent withdrawal form were mailed to those who gave informal consent, and the survey was administered to those who gave consent after an explanation of the overview of the study was provided. We also explained that consent can be withdrawn and provided the deadline for withdrawal. It was de-

cided that if any indication of poor physical condition was confirmed during the study, or if the research subject requested to withdraw the study would be immediately terminated.

The survey was conducted using semi-structured interview techniques. Data was collected by contacting collaborators who had given informal consent to cooperate with the study, arranging schedules, and conducting interviews by telephone. The data target was 20 participants; however, if the data count fell short of the target, we would consider submitting another request to the representative. The primary research item was to investigate "thoughts and impressions about rehabilitation in patients in a depressed state following the onset of cerebrovascular disorder". In addition, secondary survey items were "presence or absence of depressive symptoms" and "symptoms and timing of depression". The recruitment and survey period were set to be from November 1, 2019 until December 31, 2019.

2.4. Data Analysis

Berelson's (Berelson, 1952) content analysis was used to analyze the data and perform a functional analysis.

1) Data was compiled for the responses obtained.

2) After the statements pertaining to the answers to the questions were taken as contextual units, they were divided into record units, and the frequency of occurrence was calculated.

3) The divided record units were extracted as groups of identical record units based on the similarity of their elements.

4) Names were given to identical groups of record units.

5) Identical groups of record units were extracted and named as categories based on their similarities.

2.5. Ethical Considerations

The explanation and consent documents approved by the Ethics Committee were provided to the research subjects, and after providing sufficient written and oral explanations, we obtained the research subjects' free and voluntary consent in writing. The explanation and consent documents were prepared with consideration to expressions that were easy for the research subjects to understand.

The information handled in this research will be anonymized by the researcher and used in research and analysis. Regarding the way of anonymization, information that can identify individuals (name, address, date of birth, telephone number, etc.) will be deleted from the information and a unique code will be added, and the information will be processed so that it cannot be immediately identified as pertaining to any individual subject of the research. A list of the correspondence between individuals and codes will be kept by the researcher.

Although we explained that withdrawal of consent to participate in this study can be made at any time after consent is given, we set December 31, 2019 as the deadline for withdrawal.

This study will be conducted in accordance with the ethical guidelines based on the Declaration of Helsinki and in compliance with this research protocol. This study was conducted after approval by the Ethics Committee of Shonan University of Medical Sciences (Approved on April 16, 2019, Approval No.: Medical Research Institute Ethics No. 19-002). The authors have no financial conflicts of interest to disclose concerning the presentation.

3. Results

3.1. Subject of Analysis

There were 26 subjects who consented, and the survey time ranged from 3:05 minutes to 28:40 minutes, with an average of 9:10 minutes, for a total survey time of 238:20 minutes (3 hours 58 minutes 20 seconds). From these, 168 units of words related to the questions were extracted. Then, from these 168 units, 168 units that matched the survey content were selected for investigation, and the same content was extracted from the context of the 168 units, resulting in 28 record units. From these 28 units, 7 sub-categories and 3 main categories were extracted (Table 1). The subcategories are denoted below by [ ] and the main categories by **[ ]**.

3.2. Analysis

1) [About Myself]

The main category was extracted from the three subcategories [Goals and comparison objects], [My body], and [How I feel]. Consisting of statements about oneself during the state of depression following cerebral stroke, results for [My body] and [How I feel] were 24 (14.3%) and 18 (10.7%), respectively, and 68 (40.4%) for the main category [About Myself].

2) [About the Rehabilitation Staff]

The main category was extracted from two subcategories, [Staff behavior and attitudes] and [Relationship with staff]. Consisting of statements about rehabilitation staff, results were 35 (20.9%) for [Staff behavior and attitudes] and 22 (13.1%) for [Relationship with staff], and 57 (33.9%) for the main category [About the Rehabilitation Staff].

3) [About Rehabilitation]

The main category was extracted from two sub-categories, [Rehabilitation itself is mood altering] and [Rehabilitation system]. Consisting of statements about the rehabilitation itself, the resulting numbers of the record units for [Rehabilitation itself is mood altering] and [Rehabilitation system] were 30 (17.9%) and 13 (7.7%), and 43 (25.6%) for the main category [About Rehabilitation].

4. Discussion

The most common major category in the perception of rehabilitation during depression was [About myself], which was extracted from the subcategories

Table 1. Overview of categories.

Out Myself	68	40.5%	Goals and comparison objects	26	15.5%	Set a goal	7	4.2%
						Results are encouraging	5	3.0%
						Home rehabilitation is better	4	2.4%
						Information gathering	4	2.4%
						Compare with others	4	2.4%
						Having a job	2	1.2%
			My body	24	14.3%	Understand my symptoms	9	5.4%
						Believed to recover	7	4.2%
						Recovery of physical function	5	3.0%
						Presenting the current situation	3	1.8%
			How I feel	18	10.7%	Ingenuity not to fall	9	5.4%
						Have a strong feeling	7	4.2%
						Blame the staff	2	1.2%
About the Rehabilitation Staff	57	33.9%	Staff behavior and attitudes	35	20.8%	Uninformed staff	12	7.1%
						Told to give up	8	4.8%
						Saved by good staff	8	4.8%
						Attitude of staff causes depression	7	4.2%
			Relationship with staff	22	13.1%	Staff to talk to	6	3.6%
						Hard working staff	6	3.6%
						Staff not dealing with patients	5	3.0%
						Emotional support	3	1.8%
						Rapport with staff	2	1.2%
About Rehabilitation	43	25.6%	Rehabilitation itself is mood altering	30	17.9%	Depressed in rehabilitation	11	6.5%
						Relaxing with rehabilitation	9	5.4%
						Rehabilitation for a change	7	4.2%
						Not related to rehabilitation	3	1.8%
			Rehabilitation system	13	7.7%	Limited rehabilitation sessions	7	4.2%
						No choice of staff	6	3.6%

[Goals and comparison objects], [My body], and [How I feel]. In the subcategory [Goals and comparison objects], the respondents were encouraged to set goals during depression, and these goals were extracted from the record units indicating that they set goals in various ways relative to return to work and relative to others. It is conceivable that even in a state of depression, patients are setting goals to improve their motivation. However, although the number of people with cerebral stroke disorder in Japan was 1.11 million in 2017 (Ministry of Health, Labor, and Welfare, 2019a), the number of people with cerebral stroke as a percen-

tage of the population was less than 1%, and cerebral stroke is not considered an everyday disorder for the general public in their daily lives. Therefore, while many patients suffering from cerebral stroke have high expectations for recovery at the time of their onset, they seem to understand that the post-onset experience is different from other diseases in which a complete recovery is expected. In this context, shouldn't setting goals for rehabilitation be an essential part of constructing a vision of one's personal life? The subcategory of [my body] was extracted from the units of record about being presented with and understanding the current situation and the restoration of bodily functions. The symptoms of cerebral stroke include paralysis of and loss of sensation in half of the body, and it is conceivable that the inability to move or feel half of the body is an unknown experience for patients, and that they may be unable to understand what is happening to their bodies. Although a cerebral stroke patient may be in a period of depression, he or she will want to understand what is happening to his or her body so that he or she can actively engage in rehabilitation. In addition, many of the respondents who indicated [How I feel] indicated that they tried to stay strong in order to avoid depression, but there were also those who noted that they blame others for not being able to get back to normal.

The next most common major category was [About the Rehabilitation Staff]. In a prognostic study of cerebral stroke (Honda et al., 2018), the average length of stay in acute care hospitals was 16.3 days, but only about 20% of cases were subsequently discharged home, and over 70% of patients were discharged to a convalescent hospital. In other words, many patients suffering from cerebral stroke do not make a complete recovery through the treatment in an acute care hospital, but have chronic aftereffects. In Japan, convalescent hospitals are also called rehabilitation hospitals, and since rehabilitation is the center of treatment, patients spend much of their time in contact with the rehabilitation staff. In the sub-category [Staff behavior and attitudes], while some record units noted that patients felt the rehabilitation staff helped them, there were also many record units reporting that the staff's behavior and attitudes had a negative effect on them, such as causing depression due to comments or reactions that made them feel like giving up. In Japan, rehabilitation in convalescent wards is permitted for 180 days with 9 units of rehabilitation per day at 20 minutes per unit, which means that a maximum of about 3 hours of rehabilitation per day is provided for about 6 months. In a convalescent hospital, cerebral stroke patients spend a lot of time with the rehabilitation staff, which may increase the influence the staff has on patients. Although the rehabilitation staff can be supportive and helpful to patients, it is essential that we keep in mind that thoughtless comments, actions, and lack of knowledge can lead to depression. In medical situations, patients want clinical results from the staff, but they also want to feel happy as patients (Lipson-Smith et al., 2021). In addition to the provision of medical skills, interpersonal skills may also be needed.

There were also record units about rehabilitation itself. Some were favorable, such as "rehabilitation relaxes me" and "it's a change of pace", while others, such

as "rehabilitation itself was the cause of my depression", were not. The record units were extracted from the two sub-categories of [Rehabilitation itself is mood altering] and [Rehabilitation system], and the main category was named [About Rehabilitation]. This main category had the fewest number of record units. In general, a rehabilitation facility is a place for training your body to reacquire difficult movements in daily life. However, Mikawa et al. reported that in the early stages of a cerebral stroke onset, subjects are unable to understand their own condition due to lack of knowledge of the disorder and impaired consciousness in the early onset period (Mikawa et al., 2020). The subject is convinced that he/she can recover with rehabilitation, but the degree of recovery is poor, which may lead to a depressed mood. In this context, the recovery of physical function may motivate the subject to engage in rehabilitation, which in turn may lead to a calming of his/her mood.

In this survey, it was found that although cerebral stroke patients have difficulty judging their own current stage of recovery and confirm their recovery by comparing themselves with others, many of the patients recorded that they were able to maintain their feelings by setting goals for themselves. The goals may be easier to understand and set for themselves rather than for the recovery of the function itself, namely the recovery of activity level as defined by The International Classification of Functioning (World Health Organization, 2001). It may be necessary to present goal setting at the activity level, where individual goals are easy to set and achievement and non-achievement are easy to understand, even for stroke patients. Among these, the activity that many patients suffering from cerebral stroke aimed for was toilet activity. Patients can be reluctant and embarrassed to ask for help to use the toilet (Yoshimoto, 2008), and many recorded that they were actively engaged in rehabilitation to achieve independence in using the toilet.

As rehabilitation staff, we should always observe the motivation of our patients and consider the effect of our own influence as we suggest and implement clear objectives in order to achieve meaningful rehabilitation.

5. Conclusion

PSD patients want to understand their physical condition and the embodiment of their goals.

Rehabilitation and rehabilitation staff have a large impact on PSD.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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