

*Original Article***The relationship between satisfaction in activities of daily living and perceived quality of life in recovery rehabilitation inpatients**

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ABSTRACT

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Purpose: The purpose of this study was to examine the relationship between subjective satisfaction in activities of daily living (ADL) and quality of life (QOL). We also investigated the difference between objective ADL and QOL.

Method: We recruited 40 participants from the recovery rehabilitation ward. Participants had no difficulty communicating, and scored 24 or more on the Mini Mental State Examination (MMSE). We used the Satisfaction of Selected Activities of Daily Living (SSADL) scale to assess participants' subjective satisfaction in ADL. We used the Functional Independence Measure (FIM) as our objective measure of ADL, and the World Health Organization's WHOQOL-BREF to assess QOL.

Results: Significant positive correlations were found between SSADL and total WHOQOL-BREF ($r_s = 0.44, p < 0.05$), SSADL and WHOQOL-BREF physical domain ($r_s = 0.41, p < 0.05$), and SSADL and WHOQOL-BREF psychological domain ($r_s = 0.49, p < 0.01$). Significant positive correlations were found between FIM and total WHOQOL-BREF ($r = 0.41, p < 0.05$), and FIM and WHOQOL-BREF physical domain ($r = 0.46, p < 0.01$).

Conclusions: Significant relationships were observed between subjective satisfaction in ADL and QOL. We also found differences between objective ADL and

QOL.

Key words: ADL, subjective satisfaction, FIM, QOL

Introduction

In the field of rehabilitation, activities of daily living (ADL) are primarily assessed using the Functional Independence Measure (FIM) and the Barthel Index (BI) [1]. These assessments can provide an objective evaluation of the patient's ADL. However, our previous research clarified the need for ADL assessment from the patient's perspective [2]. This is a difficult but important assessment as it has been shown that the evaluation of ADL varies between the patient and therapist. Previous studies have reported cases where the therapist did not consider high-scoring FIM items as a problem whereas the patient expressed concerns [3]. Moreover, other studies have reported differing values regarding ADL based on gender and the presence of impairment. In other words, ADL varies considerably among patients [4–6]. Based on these findings, we considered it important to assess ADL from the patient's perspective, and therefore developed the Satisfaction of Selected Activities of Daily Living (SSADL) scale [7]. The SSADL has high reliability and validity, and can assess ADL from the patient's perspective based on items that the patient considers important. Reliability and validity were determined from a sample of 86 examinations. Spearman's rank correlation coefficient and the Wilcoxon signed-rank test were used to determine the reliability. Intraclass reliability was adequate, as indicated by a significant positive correlation ($r_s = 0.86, p < 0.01$) without a significant median difference ($p = 0.48$). Interclass reliability had a significant positive correlation ($r_s = 0.81, p < 0.01$) without a significant median difference ($p = 0.18$). Thus, high intraclass and interclass reliability was established. In addition, Spearman's rank correlation coefficient was used to determine the validity between SSADL and

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the Canadian Occupational Performance Measure (COPM). The results indicated a strong correlation between satisfaction level and self-care in the COPM ($r = 0.65, p < 0.01$). Therefore, SSADL was shown to be a suitable assessment for subjective satisfaction in ADL [7].

Many studies have examined the relationship between ADL and QOL. Giaquinto et al. reported a significant correlation between ADL and QOL in women with cerebrovascular disorders upon discharge [8]. Ito et al. conducted a follow-up survey in neurology patients two years after hospitalization, and reported a decline in ADL [9]. Furthermore, the decline in ADL leads to a decline in QOL. Thus, ADL has been found to be one of the factors that influence QOL [8–12]. However, previous research used objective assessments such as FIM or Katz's Index for patient ADL, and assessment for subjective satisfaction in ADL was not considered in these studies. Therefore, the relationship between patient ADL satisfaction and QOL was unknown.

The purpose of this study was to examine the relationship between subjective satisfaction in ADL and QOL by using the SSADL. In addition, we also intended to determine the difference between objective ADL and QOL. Determining the relationship between subjective satisfaction in ADL and QOL may contribute to improved patient QOL, which is a primary objective of rehabilitation.

Methods

1. Subjects

This study was conducted from November 2010 to

April 2011 in a recovery rehabilitation ward. Subjects selected for this study had no difficulty communicating, and scored 24 or more on the Mini Mental State Examination (MMSE). The total number of subjects was 40.

The subjects were given a sufficient explanation, in both written and oral form, of the study's objectives and methods. All subjects gave their consent prior to participating in the study. This study was conducted with the approval of the Kibi International University Institutional Review Board (reference number 10-03).

2. Measures

2.1 Subjective satisfaction in ADL

We assessed subjective satisfaction in ADL by using the SSADL, which consists of a semi-structured interview. Figure 1 shows the assessment form. Initially, the subjects selected the five most important items in their life from among the 13 motor items in FIM, and then determined their satisfaction level for those five items on a scale from 0 to 100 points. Next, using a circle graph, the subjects determined the percent relative importance of the five items for a total of 100%. The satisfaction level was then multiplied by the relative importance level for each item, and the total was summed to calculate the subject's ADL score. In these calculations, the relative importance level was divided by 100, and the overall score was in the range of 0–100. A higher score indicated higher subjective satisfaction in ADL. This assessment differs from conventional evaluation methods because the questions are not prepared in advance. Instead, the subjects intentionally determine and select their own items.

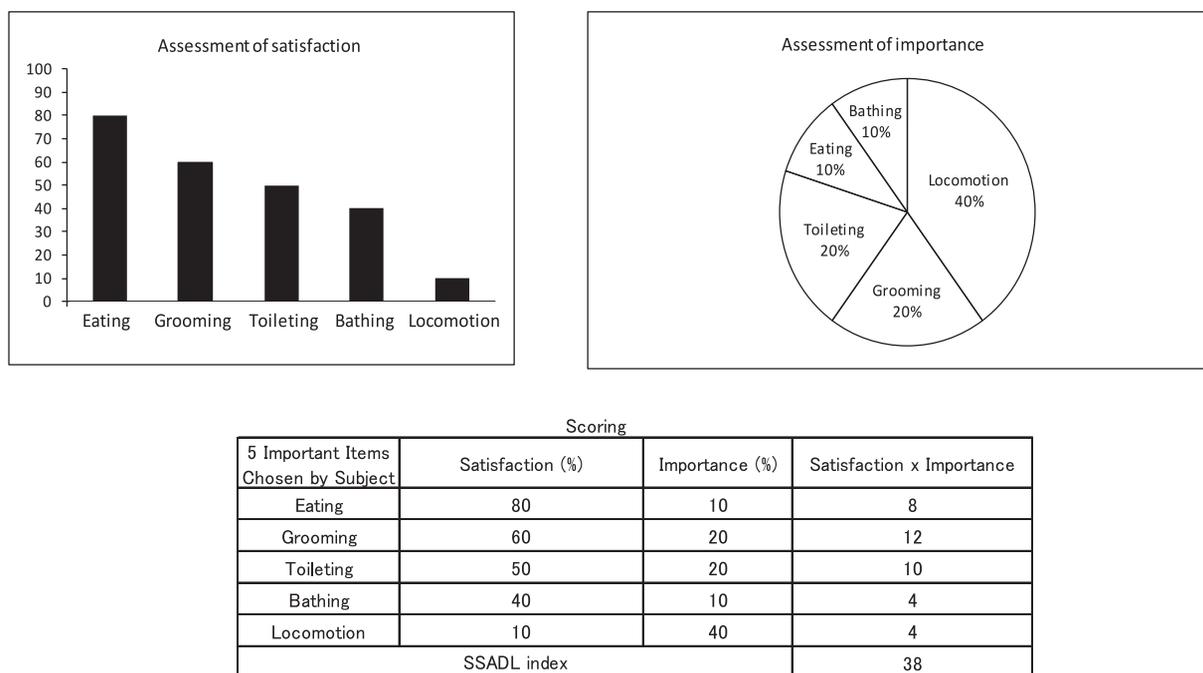


Figure 1. Sample of SSADL.

2.2 FIM

We used the FIM to objectively assess ADL [13]. The FIM is a conventional assessment tool for ADL where healthcare providers observe the daily living activities of the patients. The FIM is composed of 18 items (13 motor and 5 cognitive items). Each item is assessed on a seven-point scale (complete assistance needed = 1, complete independence = 7), and the highest total score is 126. A higher score indicates greater independence in ADL.

2.3 QOL

QOL was assessed using the World Health Organization’s WHOQOL-BREF, which is composed of 26 self-reported items split into physical domain (7 items), psychological domain (6 items), social relationships (3 items), and environmental domain (8 items) as well as 2 items related to overall QOL [14]. Respondents are required to consider the previous two weeks and accordingly rate each item on a five-point scale (not at all = 1, extremely = 5). The highest total score is 130; a higher score indicates higher patient QOL.

2.4 Other measures

Subjects’ gender, age, disease and number of days since onset were obtained from their medical charts.

3. Statistical analysis

Spearman’s rank correlation coefficient was used to examine the relationship between SSADL and the WHOQOL-BREF score, as well as between SSADL and the WHOQOL-BREF subscale score. The Pearson product-moment correlation coefficient was used to examine the relationship between FIM and the

WHOQOL-BREF score, between FIM and the physical domain score, between FIM and the psychological domain score, and between FIM and the environmental domain score.

Spearman’s rank correlation coefficient was also used to examine the relationship between FIM and the social relationships score, and between FIM and the overall QOL score. Furthermore, when a significant relationship was found, a comparison of two correlation coefficients was performed. Statistical significance was set at $p < 0.05$ from a two-tailed test in all statistical analyses. The Shapiro-Wilk test was used to confirm that all collected data fitted a normal distribution. All analyses were conducted using SPSS 15.0J for Windows.

Results

1. Subjects’ characteristics

The subjects consisted of 25 male patients and 15 female patients. The average age of the patients was 62.8 ± 14.7 years, average MMSE score was 27.6 ± 1.8 , and average number of days from onset was 83.2 ± 38.8 . The average SSADL score was 62.1 ± 32.6 , average FIM score was 93.9 ± 16.7 , and average total WHOQOL-BREF score was 78.3 ± 12.4 . The disease that afflicted the largest number of subjects (32 of 40) was stroke (Table 1).

2. Relationship between SSADL and FIM, SSADL and WHOQOL-BREF

Figure 2 shows the relationship between the scores for SSADL, FIM, WHOQOL-BREF, physical domain, and psychological domain in a scatter diagram. Significant positive correlations were found between

Table 1. Subjects’ characteristics.

Number of subjects	40
Gender	Male 25, Female 15
Age (mean \pm SD)	62.8 \pm 14.7
MMSE (mean \pm SD)	27.6 \pm 1.8
Days from onset (mean \pm SD)	83.2 \pm 38.8
SSADL (mean \pm SD)	62.1 \pm 32.6
FIM (mean \pm SD)	93.9 \pm 16.7
WHOQOL26 (mean \pm SD)	78.3 \pm 12.4
Diagnosis	Stroke 32 cervical myelopathy 2 spinal cord injury 2 lumbar compression fracture 1 peripheral neuropathy 1 fracture of the femur 1 allergic granulomatous angiitis 1

MMSE, Mini Mental State Examination; SSADL, Satisfaction of Selected Activities of Daily Living; FIM, Functional Independence Measure; WHOQOL26, The World Health Organization Quality of Life 26; SD, Standard deviation.

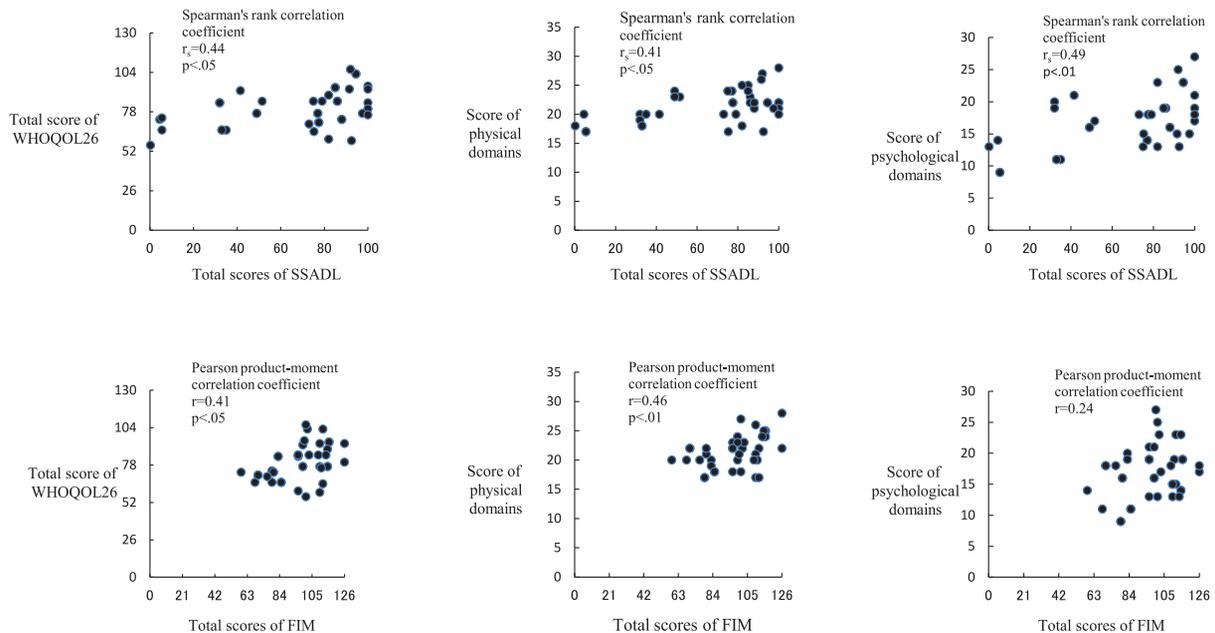


Figure 2. Relationship between SSADL and FIM, SSADL and WHOQOL-BREF.

SSADL and the total WHOQOL-BREF score ($r_s = 0.44$, $p < 0.05$), SSADL and the physical domain score ($r_s = 0.41$, $p < 0.05$), and SSADL and the psychological domain score ($r_s = 0.49$, $p < 0.01$). Significant positive correlations were found between FIM and the total WHOQOL-BREF score ($r = 0.41$, $p < 0.05$), and FIM and the physical domain score ($r = 0.46$, $p < 0.01$) (Table 2).

The correlation between SSADL and the WHOQOL-BREF physical domain score, and the correlation between FIM and the WHOQOL-BREF physical domain score were analyzed through the comparison of two correlation coefficients. We did not find a significant difference between these correlations ($z = 0.26$, $p = 0.7948 > 0.05$).

The correlation between SSADL and the WHOQOL-BREF psychological domain score, and the correlation between FIM and the WHOQOL-BREF psychological domain score were analyzed through the comparison of two correlation coefficients. We did not find any significant difference between these two correlations ($z = 1.26$, $p = 0.2076 > 0.05$).

Discussion

1. Relationship between SSADL and WHOQOL-BREF score

In this study, we found a moderate but significant positive correlation between SSADL and the total WHOQOL-BREF score. Lawton classified QOL on four levels: behavioral competence (e.g., ADL and health), perceived quality of life (e.g., satisfaction regarding health, cognitive ability, human relationships, and work), objective environment (e.g., income, residence and family), and psychological

well-being (e.g., depression and anxiety) [15]. Ishihara et al. reported that physical functions related to ADL and health, and subjective aspects including satisfaction, anxiety and subjective happiness, were included in the lower classification of QOL [16]. Furthermore, another study reported that the Japanese regard QOL as subjective aspects that are represented by satisfaction [17]. From these reports, ADL and psychological aspects, such as satisfaction, are part of QOL, and these factors also affect QOL. This may be why a significant positive correlation was observed between SSADL and the total WHOQOL-BREF score.

A significant positive correlation was also found between SSADL and the WHOQOL-BREF physical domain score. Subjects in this study were in need of ADL assistance in the recovery rehabilitation ward. The majority of patients were participating in daily rehabilitation in order to achieve independent living. Therefore, these patients were highly motivated to improve their ADL, and ADL became important in daily life. Ueda reported that improvement in ADL is often a prerequisite for QOL improvement [18]. Increasing independence in ADL is also an important factor in improving QOL [19, 20]. The patients in this study also showed a similar trend, and a significant relationship was observed between subjective satisfaction in ADL and the WHOQOL-BREF physical domain score.

A moderate but significant positive correlation was also found between SSADL and the WHOQOL-BREF psychological domain score. Henderson classified the basic desires of human beings into 14 items, including 'Eat and drink adequately,' 'Eliminate by all avenues of elimination,' and 'Select suitable clothing, dress

Table 2. Relationship between SSADL and FIM, SSADL and WHOQOL-BREF.

	WHOQOL26					
	Total score	Physical	Psychological	Social	Environmental	Overall
SSADL	0.44*	0.41*	0.49**	0.19	0.23	0.04
FIM	0.41*	0.46**	0.24	0.09	0.25	0.29

SSADL, Satisfaction of Selected Activities of Daily Living; FIM, Functional Independence Measure; WHOQOL26, The World Health Organization Quality of Life 26; * $p < 0.05$; ** $p < 0.01$.

Table 3. Basic Needs by Henderson.

1. Breathe normally
2. Eat and drink adequately
3. Eliminate by all avenues of elimination
4. Move and maintain desirable posture
5. Sleep and rest
6. Select suitable clothing, dress and undress
7. Maintain body temperature within normal range
8. Keep the body clean and well groomed and protect the integument
9. Avoid dangers in the environment and avoid injuring others
10. Communicate with others in expressing emotions, needs, fears
11. Worship according to the patient's faith
12. Work at something that provides a sense of accomplishment
13. Play or participate in various forms of recreation
14. Learn, discover, or satisfy the curiosity that leads to normal development and health

and undress' [21](Table 3). These desires apply to ADL. Thus, the desire to satisfy ADL can be expressed as a basic desire. As mentioned earlier, the subjects of this study were participating in daily rehabilitation in the recovery rehabilitation ward with the goal of independent living. Therefore, their expectations and desire for recovery are great, and even trivial improvements in ADL are regarded as having value. Thus, increasing the subjective satisfaction in ADL, which takes into account the patient's desires and perspective, can lead to an improvement in the psychological domain of QOL.

Figure 2 shows that several patients who were remarkably close to a 0 score on SSADL also had a moderate score on WHOQOL-BREF. There may be some items on WHOQOL-BREF that have little association with ADL. For example, items such as "How satisfied are you with your sleep?" in the physical domain, and "Are you able to accept your bodily appearance?" in the psychological domain are not appropriate.

2. Differences in FIM and SSADL

SSADL and FIM scores showed a significant positive correlation with the total and physical domain scores of the WHOQOL. The psychological domain score of WHOQOL also showed a significant positive correlation with the SSADL score. Furthermore, in the

comparison of two correlation coefficients, significant differences between both the physical and psychological domain of WHOQOL-BREF were not observed. However, the SSADL p -value, when compared with FIM, showed a greater tendency to reflect the psychological aspects of QOL.

In the SSADL assessment method, the subjects select and determine the items that they consider important. In other words, SSADL assesses the subjective satisfaction in ADL based on the values and desires of the subject, and then suggests the state of the psychological aspects reflected.

3. Study limitations and future studies

This study used a cross-sectional design, and thus prevented us from determining chronological changes in the relationship between subjective satisfaction in ADL and QOL. In the future, we would like to follow the progress of a single group of subjects in order to determine possible chronological changes. In addition, previous studies on the relationship between ADL and QOL classified the participants based on various factors such as disease and physical functioning [22–24]. We predict that the recovery of body function and the future outcome of subjects affect the relationship between subjective satisfaction in ADL and QOL. In addition, SSADL tended to divide the subjects into three groups. The reason for this is not known, but the

characteristics of subjects that we were not able to collect and the small sample size may account for these effects. Therefore, we should have considered this point.

In this study, a significant relationship was revealed between subjective satisfaction in ADL and QOL. Moreover, differences between the objective ADL and QOL were found. Since SSADL uses the FIM motor items, it is easier to evaluate ADL in conjunction with FIM. In order to improve QOL, we can consider the need for ADL assistance based on FIM and ADL satisfaction by using SSADL. Future research is necessary to determine if SSADL reflects the psychological aspects of WHOQOL better than FIM does. Further studies should also be conducted with a larger sample size.

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