Development of assessment indicators to decide when to stop observing stroke patients during transfer based on clinical judgments made by nurses

メタデータ	言語: eng 出版者: 公開日: 2017-10-04 キーワード (Ja): キーワード (En): 作成者: メールアドレス: 所属:
URL	http://hdl.handle.net/2297/26213

Original Article

Journal of the Tsuruma Health Science Society, Kanazawa University Vol. 34(2)
25～35 2010

Development of assessment indicators to decide when to stop observing stroke patients during transfer based on clinical judgments made by nurses

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Abstract

The objective of this study was to develop indicators to decide when to complete observation of the bed -wheelchair transfer of convalescent stroke patients based on clinical judgments made by nurses to promote the independence of patients.

The study involved the following 3 steps: In Step 1, aiming at collecting assessment items to decide on when to stop observation-only transfer, a focus group interview was performed involving 17 nurses working on convalescent rehabilitation wards. In Step 2, the validity of assessment items collected in Step 1 was investigated involving 12 nurses undergoing training in the certified nurse curriculum specializing in stroke rehabilitation. In Step 3, the assessment items prepared in Step 2 and judgment of the completion or continuation of observation by nurses were investigated involving 84 stroke patients under observation during transfer in 13 convalescent rehabilitation wards. Logistic regression analysis was performed regarding the gender and age of patients and assessment items in which significant differences were observed on univariate analysis as independent variables, and the clinical judgments concerning the completion of observation-only transfer made by nurses as dependent variables.

Nineteen assessment items were extracted through Steps 1 and 2. These comprised 6 domains: cognitive ability and transfer mobility, patient's feeling regarding transfer, risk of trauma by falling, and states of taking oral central nervous system-acting drugs and independence in activity related/similar to transfer activity. The following 2 assessment items were significantly associated with the clinical judgment concerning the completion of observation made by nurses on logistic regression analysis in Step 3: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' and 'the patient can move after putting on footwear every time'.

The above findings suggested that nurses assessed the cognitive and motion balance abilities of patients based on the above 2 items and made a decision on the completion of observation during transfer. For the assessment items concerning the completion of observation-only transfer in stroke patients, 2 items: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' and 'the patient can move after putting on footwear every time', may be useful.

Key words

clinical judgment, bed-wheelchair transfer, stroke rehabilitation nursing, convalescent rehabilitation ward, observation-only transfer

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Introduction

Cerebral stroke ranks as the primary cause of nursing care needs due to sequelae of motor and higher brain dysfunctions. Regarding the mobility of stroke patients at the time of discharge from acute-phase hospitals, it has been reported that the mobility of about 20 and 10% of patients with cerebral hemorrhage and infarction remain at the wheelchair-level, respectively[1]. Bed -wheelchair transfer is necessary for all ADL including eating and excretion for patients with difficulty in independent walking. The acquisition of independence through this activity markedly expands their ADL, showing its importance. When nursing convalescent stroke patients, nurses promote patients' independence from requiring full to partial assistance corresponding to their self-care level. During observation, nurses do not readily assist patients in order to comprehend their ability, and watch patients while paying attention to their safety. Deciding on when to complete observing stroke patients during transfer tends to be considered very carefully even after patients recover motor functions because of concomitant higher brain dysfunction.

One reason for this hesitation is a risk of falls. A high incidence of falls in stroke patients during bed -wheelchair transfer at the bedside has been reported[2-3]. According to an analysis of near-miss events at acute-phase hospitals reported by Kawamura[4], 3/4 of near-miss fall events occurred in the absence of intervention by caregivers. These could not be prevented and actually occurred in many cases, compared to those in the presence of caregivers. Observation during bed -wheelchair transfer in the convalescent period plays a major role in the prevention of falls, and clinical judgment concerning the timing of completing observation is very important with regard to support for independence and safety management. In previous studies involving convalescent stroke patients, an assessment sheet for fall prediction on convalescent rehabilitation wards was prepared[5] and predictors of the transfer ability were extracted[6]. However, only fall prediction and transfer independence were investigated, and no study described the clinical judgment at the time of completing observation-only transfer. Moreover, the high sensitivity but low specificity of clinical judgments concerning fall prediction by nurses have been reported[7]. Therefore, it may be useful to clarify clinical judgments made by nurses from the viewpoint of support for independence, not from fall prediction, and identify indicators to decide when to complete observation.

The objective of this study was to develop indicators based on the clinical judgment made by nurses to decide on when to finish providing the minimum physical assistance, observation, for convalescent stroke patients during bed -wheelchair transfer and promote their independence.

Definitions of terms

Observation-only transfer: This represents the condition in which caregivers do not help patients during bed -wheelchair transfer regardless of whether a transfer aid is used, but observation and encouragement are provided when needed.

'Completion of observation' during transfer: Observation is completed when the patient is able to independently transfer safely to a wheelchair without observation defined above.

Clinical judgment: Referring to the definition by Corcoran[8], care-based decisions were made through perceptive and intuitive processes in consideration of the patients' data, clinical knowledge, and conditions. This study focused on information to which nurses paid attention in the clinical judgment process.

Methods

The study was performed following the 3 steps shown in Fig. 1. The data collection period was January-March 2009 in Step 1, July-August 2009 in Step 2, and January-May 2010 in Step 3.

1. Collection of assessment items for the completion of observing convalescent stroke patients during transfer (Step 1)

1) Subjects

The subjects were 17 nurses working on convalescent rehabilitation wards in 3 hospitals

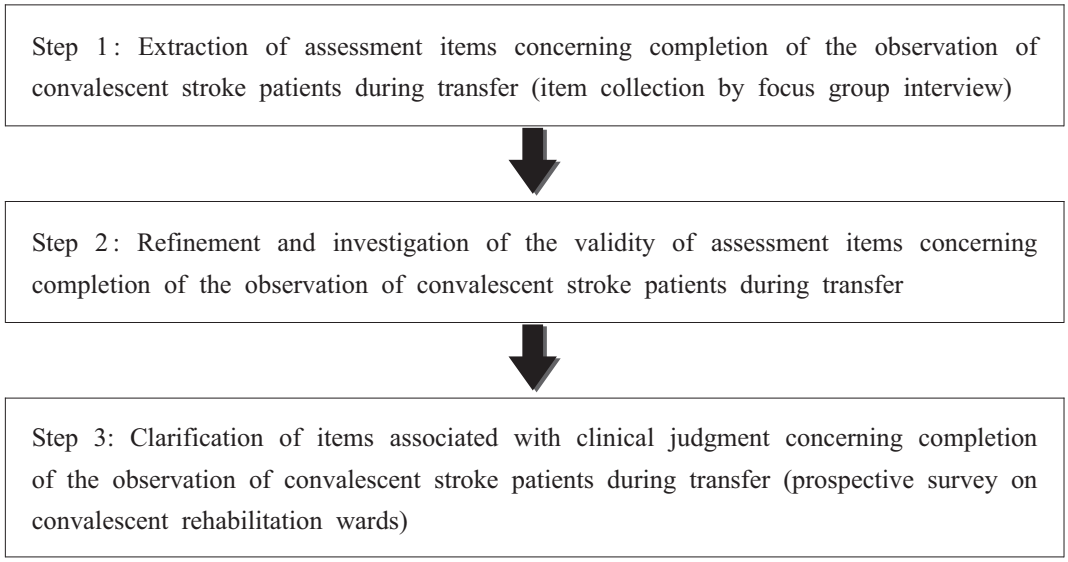

Fig. 1 Developmental process of assessment indicators concerning completion of the observation of convalescent stroke patients during transfer

with different backgrounds. They had a total of 5 years or longer nursing experience in stroke rehabilitation. The nursing of convalescent stroke patients on cranial nerve system wards, not limited to convalescent rehabilitation wards, was also included in nursing practice. The experience of nursing practice was set to 5 years or longer on referring to a report from Benner[9], in which nurses working for a similar patient population for 3–5 years could perform skilled practice, and it was difficult for nurses with insufficient experience to develop an overall view or identify the most characteristic and important aspects on observing the patient's condition, whereas skilled nurses could accurately identify problems and chose appropriate measures. Based on this, it is considered that nurses with 5 or more years of experience are appropriate to collect assessment indicators based on clinical judgments made by nurses.

2) Data collection

Groups consisting of 5–6 nurses working at the same facility underwent an about 60-minute focus group interview, in which they were asked about and discussed the condition of convalescent stroke patients based on which they judge that observation can be completed and the patient may progress to independence. These were recorded after obtaining consent from all subjects.

3) Data analysis

A verbatim record was prepared from the data, and contexts related to the survey content were extracted. Similarities and differences were clarified, organized, and classified. Related contents were grouped. The verbatim and analytical results are presented for all subjects, and the subjects confirmed the truthfulness of data and validity of interpretation.

2. Refinement of the assessment items to decide on when to complete the observation of convalescent stroke patients during transfer and validation of the contents (Step 2)

1) Subjects

The subjects were 12 nurses undergoing training in the certified nurse curriculum specializing in stroke rehabilitation in Prefecture A.

2) Data collection

The validity of the assessment items established in Step 1 was investigated employing the 4-step method: '4: relevant' – '1: not relevant'.

3) Data analysis

The rate of subjects who chose 3 or 4 was calculated to determine the content validity index for items (I-CVI). Referring to the method reported by Polit et al.[10], the deletion or correction of items graded lower than 0.78 on I-CVI was investigated based on freely described contents.

3. Clarification of the assessment items related to clinical judgment concerning the completion of observation-only transfer (Step 3)

1) Subjects

Subjects were nurses working at 13 convalescent rehabilitation wards in 3 prefectures and stroke inpatients under observation during transfer

2) Data collection

Nurses in charge of observing stroke patients during transfer filled in a survey form containing the assessment items established in Step 2 and a description of their own judgment regarding the completion of observation. When the nurse in charge had difficulty in judging or was an assistant nurse, they consulted other nurses in the same team before filling in the form. When the continuation of observation was decided on, the nurse filled in the survey weekly until it was completed or the discharge of the patient.

3) Analysis

The latest survey forms were analyzed: The forms filled in at the time of observation completion in patients for whom observation was completed, and those filled in immediately before discharge or at the completion of data collection in patients for whom observation was continued.

The forms were divided into 2 groups based on the judgment concerning observation by the nurses: Forms in which the nurses judged that observation could be completed and the patients could move independently (observation-completed group), and those in whom the nurses considered observation was necessary (observation-continued group). Regarding the assessment items and basic attributes, the χ^2 test or Fisher's direct method was employed for the analysis of qualitative variables, and the t-test for quantitative variables. Logistic regression analysis employing the forward selection method and likelihood ratio was then performed regarding the clinical judgments concerning the completion of observation made by nurses as dependent variables, and gender, age, and items which showed a significance level of less than 5% on univariate analysis described above as independent variables. The goodness of fit of the model was evaluated employing the Hosmer-Lemeshow goodness-of-fit test. Statistical analysis was performed using SPSS 16.0J for Windows.

4. Ethical considerations

This study was performed after approval by the Niigata College of Nursing Ethics Committee (receipt numbers: 08-11, 09-4, and 09-014).

Results

1. Collection of assessment items to decide on when to stop observing convalescent stroke patients during transfer (Step 1)

1) Outline of the subjects

The focus groups are outlined in Table 1. The nurses had 21.8 ± 7.9 years of experience on average, being longer than 10 years in all excluding one nurse. All nurses at the rehabilitation-specialized hospital had 15 years or longer experience in stroke rehabilitation, but nurses in the other 2 groups had 5-9 years of practice.

2) Assessment items extracted from focus group interviews

A total of 32 items were extracted as indicators to decide on when to stop observing convalescent stroke patients during transfer. Features of the patients assessed by the nurses were investigated based on the acquired information and classified based on commonality. The items were categorized into 5 domains: 13, 7, 6, 3, 3, and 1 item concerning cognitive ability, transfer mobility, risk of fall-associated trauma, patient's feeling regarding

Table 1 Outline of the focus groups

Group	Number of participants	Experience of stroke rehabilitation nursing (years)
Rehabilitation-specialized hospital	6	18.7 ± 1.6
General hospital	5	6.0 ± 1.1
Cerebrovascular system-specialized hospital	6	7.3 ± 1.5

transfer, state of medication with oral central nervous system-acting drugs, and state of independence in activity related/similar to transfer activity, respectively. No correction of the verbatim or analytical results was suggested.

2. Refinement of the assessment items for completion of the observation of convalescent stroke patients during transfer and validation of the contents (Step 2)

1) Refinement of the assessment items

In addition to the 32 items extracted in Step 1, literature concerning transfer activity[11-13] was referred to, and a draft consisting of a total of 38 items was prepared. To investigate whether the intentions of the questions are accurately transmitted to those who answer and overlapping of the contents, a preliminary survey was performed involving 3 nurses working on convalescent rehabilitation wards. As a result, 2 items concerning the patient's feelings regarding transfer and one item concerning the risk of fall-associated injury were deleted, resulting in 36 items in the draft.

2) Validity of the assessment items

Of the 36 assessment items, those with an I-CVI of less than 0.78 were 2 items concerning the patient's feelings regarding transfer and 3 items concerning the risk of fall-associated injury (a total of 5 items). There was an opinion that the 2 items concerning the patient's feelings regarding transfer are insufficient as a factor for deciding on the completion of observation, although nurses attach greater importance to these. The items were integrated into one item to remain in this domain. The 3 items concerning the risk of fall-associated injury were deleted.

Items rated 0.78 or greater on I-CVI were also corrected in the expression of sentences and integrated referring to freely described opinions. For example, all items concerning transfer mobility were graded 0.78 or greater on I-CVI, but only one

Table 2 Assessment items for completion of the observation of stroke patients during transfer

Domain	Item number	Item
Cognitive ability	1	The patient can apply the brakes of a wheelchair during transfer every time.
	2	The patient can lift the footrest of a wheelchair during transfer every time.
	3	The patient previously fell during transfer and can explain the condition of the fall to others.
	4	The patient can move after confirming that the target of transfer is present at a transferable position every time.
	5	The patient can progress to other activities after completing transfer every time.
	6	The patient can ask for help in situations that he/she cannot safely move.
	7	The patient can pay attention to what has been instructed in later episodes of transfer.
	8	The patient can move after putting on footwear every time.
	9	No haste is noted in transfer activities.
	10	The patient can use a nurse call button.
	11	The patient can learn appropriate transfer activities to avoid falls based on experience of falls during transfer.
	12	The patient can comply with the range of ADL that he/she is permitted to perform independently.
Transfer mobility	13	The patient can perform the necessary series of activities from standing up though to sitting down without swaying.
Patient's feeling regarding transfer	14	The patient wishes to perform transfer without observation.
Risk of trauma due to falls	15	The patient can resume his/her posture independently when balance during movement is lost.
	16	Transfer activity can be stabilized by adjusting the bed or using a other aids.
State of medication with oral central nervous system-acting drugs	17	The patient is not medicated with any oral central nervous system-acting drug.
	18	The patient can similarly move at night and during the daytime even though medicated with drugs.
State of independence in activity related/similar to transfer activity	19	The patient can put on/take off trousers in a sitting position.

item assessing overall transfer mobility: 'the patient can perform the series of movements from standing up through to sitting down without swaying', remained because freely described opinions implied that individual items along the transfer movement process are not practical because patients under observation do not require direct assistance for transfer and are encouraged or helped only when needed. The domain concerning cognitive ability consisted of the largest number of items (13 items), and the I-CVI was 0.78 or greater in all 13 items, but one item was deleted because inconsistency of judgment among raters due to abstraction of the item was pointed out.

Nineteen items were prepared as assessment items through the above analytical process (Table 2).

3. Clarification of the assessment items associated with the clinical judgments concerning the completion of observation-only transfer (Step 3)

Eighty-four patients gave consent to participate in the study.

1) Basic attributes of the subjects

The patients consisted of 54 males and 30 females, aged 69.9 ± 11.4 years on average. The paralyzed side was the left and right in 38 and 39 patients, respectively, and 7 had no paralysis. The nurses who filled in the survey form and were included in analysis (including 11 assistant nurses) had 15.9 ± 8.6 years of nursing experience and 4.7 ± 7.6 years of practicing stroke rehabilitation.

2) Association between the clinical judgments concerning the completion of observation-only transfer made by nurses and assessment items

The nurses included 38 and 46 patients in the observation-completed and -continued groups, respectively. The association between the clinical judgments and basic attributes and assessment items was investigated employing univariate analysis. The results are shown in Tables 3 and 4.

No basic attribute was significantly associated with the clinical judgment. Thirteen assessment items: item numbers 1, 2, 4, 5, 7, 8, 11–16, and 19, were significantly associated with the clinical judgments made by the nurses. To avoid multicollinearity, Spearman's rank sum correlation coefficients among the items were calculated, and a high-level correlation was present between item numbers 1 and 2 (rs=0.828, p=0.000). Thus, logistic regression analysis was performed regarding the 12 items, excluding item number 2, which showed significant differences on univariate analysis,

Table 3 Association between basic attributes of the patients and judgment regarding the completion of observation-only transfer (univariate analysis)

n=84

Collected data item	Category	Completion of observation (n=39) n (%)	Continuation of observation (n=46) n (%)	χ^2/t-value	p-value
Age	mean ± SD	68.1 ± 10.8	71.4 ± 11.8	1.25	0.215
Gender	Male	27 (71.1)	27 (58.7)	1.38	0.262
	Female	11 (28.9)	19 (41.3)		
Diagnosis	Cerebral infarction	18 (47.4)	31 (67.4)	4.60	0.066
	Cerebral hemorrhage	18 (47.4)	15 (32.6)		
	Subarachnoid hemorrhage	2 (5.3)	0 (0.0)		
Period between onset and admission to the hospital (days)	Mean ± SD	43.1 ± 26.3	40.4 ± 19.5	−0.50	0.617
Treatment	Surgery	6 (15.8)	6 (13.0)	0.88	0.725
	Conservative treatment	30 (78.9)	39 (84.8)		
	t-PA therapy	2 (5.3)	1 (2.2)		
Paralyzed side	Right	18 (46.4)	21 (45.7)	0.63	0.802
	Left	16 (42.1)	22 (47.8)		
	No paralysis	4 (10.5)	3 (6.5)		

Table 4 Association between assessment items and judgment regarding the completion of observation-only transfer (univariate analysis)

n=84

Domain	<Item Number>	Division	Completion of observation (n=38)	Continuation of observation (n=46)	χ^2 value	p-value
Cognitive ability	1	Capable	31 (81.6)	18 (39.1)	15.43	0.000
	2	Capable	31 (81.6)	19 (41.3)	14.01	0.000
	3	Capable	4 (10.5)	11 (23.9)	4.15	0.119
	4	Capable	36 (94.7)	24 (52.2)	18.47	0.000
	5	Capable	30 (78.9)	19 (41.3)	12.13	0.001
	6	Capable	24 (63.2)	21 (45.7)	3.94	0.145
	7	Capable	28 (73.7)	9 (19.6)	25.38	0.000
	8	Capable	36 (94.7)	28 (60.9)	13.16	0.000
	9	Not seen	25 (65.8)	26 (56.5)	0.75	0.501
	10	Capable	33 (86.8)	32 (69.6)	3.55	0.071
	11	Capable	7 (18.4)	5 (10.9)	9.07	0.010
	12	Capable	26 (68.4)	16 (34.8)	9.67	0.005
Transfer mobility	13	Capable	34 (89.5)	26 (56.5)	11.07	0.001
Patient's feeling regarding transfer	14	Wished	30 (78.9)	15 (32.6)	22.32	0.000
Risk of trauma due to falls	15	Capable	23 (60.5)	12 (26.1)	25.37	0.000
	16	Capable	28 (73.7)	20 (43.5)	26.78	0.000
State of medication with oral central nervous system-acting drugs	17	Without medication	30 (78.9)	31 (67.4)	1.40	0.326
	18	Capable	8 (21.1)	5 (10.9)	4.63	0.095
State of independence in activity related/similar to transfer activity	19	Capable	30 (78.9)	17 (37.0)	14.89	0.000

gender, and age as independent variables.

On logistic regression analysis, the following 2 assessment items were significantly associated with the clinical judgment: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' (odds ratio=14.2, 95% confidence interval: 2.9–69.1, p=0.001), and 'the patient can move after putting

Table 5 Assessment indicators associated with clinical judgment concerning the completion of observation-only transfer (logistic regression analysis)

n=84

Assessment indicator	Odds ratio	95% confidence interval	p-value
Item number 4			
The patient can move after confirming that the target of transfer is present at a transferable position every time	14.2	2.9–69.1	0.001
Item number 8			
The patient can move after putting on footwear every time	9.5	1.9–48.3	0.006

Model χ^2 test, p=0.000
Hosmer-Lemeshow test, p=0.061
Discriminant hitting ratio, 78.6%

on footwear every time' (odds ratio=9.5, 95% confidence interval: 1.9–48.3, p=0.006) (Table 5).

Discussion

Stroke rehabilitation is performed by a team of specialists playing individual roles in collaboration, and changes in ADL including the completion of observation-only transfer are generally decided based on consultation among specialists. In this study, viewpoints from which nurses with 5 years or longer practice of stroke rehabilitation assessed whether or not to complete observation were extracted from the focus group interviews. After the validity of the contents was investigated by experts, the assessment items were clarified by a prospective survey on convalescent rehabilitation wards. Through this developmental process, assessment items utilizable for nurses to practice stroke rehabilitation were identified.

1. Characteristics of the basic attributes of patients

In a nationwide survey performed in 2008 by the National Association of Convalescent Rehabilitation Wards[14], the mean age of inpatients with cerebrovascular diseases was 71.1 years, and the rates of male and female patients were 56.1 and 43.9%, respectively. Although strict comparison is impossible because the patients were limited to those under observation during bed -wheelchair transfer, the basic attributes of the patients were not markedly different from those in the above nationwide survey.

No basic attribute was associated with the judgment concerning the completion of observation-only transfer, suggesting the importance of nurses having precise views on assessment in daily transfer activities.

2. Assessment indicators associated with clinical judgment concerning the completion of observation-only bed- wheelchair transfer

On logistic regression analysis, the following 2 assessment items were significantly associated with the clinical judgment concerning the completion of observation-only transfer: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' and 'the patient can move after putting on footwear every time'. Compared to the findings on univariate analysis, only 2 indicators were significant on multivariate analysis. One reason may have been the small number of patients, but the significant indicators represent the concrete behavior of patients, and a similar judgment may be made by all nurses, suggesting their usefulness. At the observation level, patients move by themselves, and nurses encourage or directly help them as needed. Therefore, patients require observation due to cognitive problems in many cases, rather than problems with motor functions necessary for transfer. This was described as uncertainty in the focus group interview in Step 1, whereby patients cannot always safely move: they appropriately move on some occasions but not on others, and this condition was reflected in the expression of assessment items in the cognitive ability category, 'the patient can... every time'

Reduction of the cognitive ability in convalescent stroke patients is due to higher brain dysfunction in many cases, and the frequency of attention and memory disturbance is particularly high. In a study on the risk factors of falls in stroke patients reported by Hyndman et al.[15], divided and sustained attention disorders were associated with fall experience. Patients with attention disorder focus on only transfer activity and tend not to confirm the safety of the environment, such as whether the target of transfer is present at a transferable position. Their attention may also deviate to other things during transfer, and the patient cannot confirm the position of the target. Regarding 'the patient can move after putting on footwear every time', patients are likely to forget to put on footwear when going to the toilet because of urgency. Moreover, the activity of putting on footwear requires dynamic balance[16]. Although assessment items were included in the cognitive ability category, the nurses may have assessed not only the cognitive ability but also movement balance. These contents have not previously been reported as assessment viewpoints concerning when to complete the observation of stroke patients during transfer. These viewpoints may be

unique to nurses who are in charge of providing 24-hour support on wards. Izumi et al.[17] investigated the structure and types of intuitive fall prediction by nurses using video records of transfer and excretion in elderly patients, and found that the conditions observed by nurses instantly change from static to dynamic and from visible to invisible based on their experience and the individual characteristics. The observation of convalescent stroke patients during transfer cannot be discontinued in many cases because of a reduced cognitive ability associated with higher brain dysfunction, called 'invisible disorder', rather than due to motor function, showing the difficulty in making a clinical judgment concerning whether to complete observation. The established assessment items include the characteristics of stroke patients with higher brain dysfunction, and they may help in making a clinical judgment concerning the completion of observation.

However, it was not verified in this study whether the 2 items: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' and 'the patient can move after putting on footwear every time', actually serve as precise assessment items to decide on when to complete observation. It is necessary to perform a follow-up survey after the completion of observation and clarify the weight of individual assessment items, aiming at preparing useful assessment items.

3. Study limitations

Since Step 3 was designed to prospectively collect data, the number of patients was small, and the 95% confidence intervals of the odds ratios were wide on logistic regression analysis. Moreover, many convalescent rehabilitation wards were within several years after their opening, and half of the nurses had less than 3 years of practice in stroke rehabilitation, which may have reduced the accuracy of the clinical judgments. Regarding the assessment items concerning patients with fall experience, many patients had no such experience, which may have reduced the power of the test.

It is necessary to ensure inter-rater reliability and investigate the validity of the prediction and construct.

Conclusion

The study was performed to develop assessment indicators based on the clinical judgments made by nurses to complete the observation of convalescent stroke patients during bed -wheelchair transfer and promote their independence, and the following points were clarified:

1. Skilled nurses working on convalescent rehabilitation wards participated in a focus group interview to clarify knowledge acquired through practice, and nurses undergoing training in the certified curriculum specializing in stroke rehabilitation investigated the validity of the contents, through which 19 assessment items were extracted.
2. On the prospective survey in convalescent rehabilitation wards, the following 2 assessment items were significantly associated with the clinical judgment made by nurses regarding the completion of observation-only transfer: 'the patient can move after confirming that the target of transfer is present at a transferable position every time' and 'the patient can move after putting on footwear every time'.

It was suggested that these 2 items are useful for deciding on whether to complete the observation of stroke patients during transfer.

Acknowledgement

The author is grateful to the patients, directors of the hospitals, chief nurses and nursing staff, and those undergoing training in the certified nurse curriculum specializing in stroke rehabilitation for their cooperation. I also deeply appreciate Professors Kiyoko Izumi, Masami Hasegawa, and Michiko Inagaki, of Kanazawa University.

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看護師の臨床判断を基盤とした脳卒中患者の移乗時における「見守り解除」のアセスメント指標の開発

髙栁　智子

要　　旨

本研究の目的は、回復期にある脳卒中患者のベッド・車椅子間移乗において、見守りを解除し自立へと移行する際の看護師の臨床判断に基づいた指標を開発することである。

本研究は以下の３段階で実施した。第１段階では、移乗時の見守りを解除する際のアセスメント指標の収集を目的として、回復期リハビリテーション病棟看護師17名を対象にフォーカス・グループ・インタビューを行った。第２段階では、脳卒中リハビリテーション看護認定看護師教育課程に研修中の看護師12名を対象に、第１段階で得られたアセスメント指標の内容妥当性の検討を行った。第３段階では、回復期リハビリテーション病棟13病棟で移乗時の見守りを受けている脳卒中患者84名と看護師を対象に、第２段階で作成したアセスメント指標と移乗時の見守り解除してよいかどうかの看護師の判断を調査した。さらに、患者の性別と年齢および多変量解析にて有意差の認められたアセスメント指標を独立変数、移乗時の見守り解除に関する看護師の判断を従属変数としたロジスティック回帰分析を行った。

その結果、第１段階および第２段階を通して19項目のアセスメント指標が抽出された。第３段階において、看護師の移乗時の見守り解除における臨床判断と有意な関連が認められたアセスメント指標は、「毎回移乗目的物が移乗可能な位置にあることを確認してから移乗できる」と「毎回履き物を履いてから移乗できる」の２項目であった。

以上から、脳卒中患者の移乗時の見守り解除に関するアセスメント指標として上記２項目が有用である可能性が示唆された。