

Development of Clinicians' Communication Skills Influences the Satisfaction, Motivation, and Quality of Life of Patients with Stroke

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Abstract

Objective: To evaluate the influence of structuring the clinician's communication according to coaching theory on stroke patients' quality of life and satisfaction.

Methods: Prospective observational study was carried out at outpatient clinics for patients in the chronic post-stroke phase. Thirty-four clinicians involved in the management of patients with stroke and their 105 patients in the chronic post-stroke phase. The clinicians enrolled in this study received training in communication skills based on coaching theory and utilized these skills when interviewing their patients with stroke. We assessed the main outcome measures and the clinicians' self-assessments of their communication skills before and after the training. The main outcomes were the patients' (1) satisfaction, (2) health-related quality of life, and (3) goal setting and action scores.

Results: The training significantly increased the patients' satisfaction with the clinicians' communication (46.8 before training vs. 48.6 after training, $p < 0.001$), overall satisfaction (16.8 vs. 17.4, $p < 0.001$), and goal setting/action (14.6 vs. 15.2, $p < 0.05$) scores. Additionally, the training significantly increased the SF-36 subscale scores for bodily pain (56.6 vs. 65.0, $p < 0.01$), general health (49.8 vs. 54.1, $p < 0.05$), and social function (61.1 vs. 69.9, $p < 0.05$). The patients whose satisfaction with the clinician's communication improved exhibited significantly greater improvements in their physical function scores and tended to exhibit greater improvements in their bodily pain and vitality scores than the no-improvement group. Furthermore, the patients whose goal setting and action improved tended to have greater improvements in their physical function, role limitation by physical problems, and mental health scores than the no-improvement group.

Conclusion: Training in coaching theory-based communication skills influenced stroke patients' satisfaction, goal setting and action, and HQOL. Clinicians should intentionally use structured communication to facilitate patients' active involvement in their rehabilitation.

Keywords: Stroke; Clinicians' communication; Patients' satisfaction; Health-related quality of life; Rehabilitation; Coaching; Outpatients

Introduction

Stroke is a disease with a high incidence and is one of the 3 major causes of death in Japan and the leading cause of need for long-term care, thus accounting for a high percentage of the total costs of medical care [1]. Residual disabilities after stroke include functional impairments, psychological problems, and loss of social adjustment, and the sequela of stroke hugely impact the quality of life (QOL) of both the patients and their family members for prolonged periods [2,3]. Clinicians involved in the management of stroke patients are required not only to deal with their patients' physical disorders but also to monitor such subjective aspects as the patients' and family members' adjustments to such disorders.

Patient/family education is a useful part of the holistic care of patients with stroke. Previous studies have shown the effectiveness of patient/family education [4]. Many researchers have considered what content should be included in the educational programs provided to the patient and family, but we should also consider the communication capabilities of the clinicians who are involved in advising and educating the patients. The objective of rehabilitation medicine is to help patients to improve their physical, psychological, social, occupational, and economic independence. Assistance from clinicians in setting goals and adopting spontaneous behaviors to minimize their disabilities is particularly important for stroke patients who have various residual disabilities that are anticipated to persist for prolonged periods. Therefore, providing clinicians with training in communication skills can be highly effective.

Coach training programs are based on coaching theory method for providing education in communication skills. The International Coach Federation defines coaching as partnering with clients in

a thought-provoking and creative process that inspires them to maximize their personal and professional potential [5]. Coaching has been adopted not only in the field of business but also in the field of healthcare, where it has begun to attract close attention. In the health care field, coaching has been adopted for management of the lifestyles of patients with lifestyle-related diseases [6] such as diabetes mellitus [7-9], hypercholesterolemia [10], and heart diseases [11] and has yielded excellent results. Other studies have shown that coaching reduced pain [12] and improved patients' adherence to hospital/clinic visits [13], continuation of treatment [14], and medication use [15,16]. In addition, a few studies on telephone coaching for patients with spinocerebellar degeneration [17,18] demonstrated improvement in the patients' self-efficacy.

Coaching comprises the use of communication skills to facilitate spontaneous behaviors by the coached individuals and the setting of goals and facilitation of the coached individuals' acquisition of the knowledge and skills needed to achieve those goals [6]. Clinicians involved in rehabilitation might be able to improve their assistance

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of the rehabilitation efforts of stroke patients and their families by learning coaching theory and practicing intentional and structured communication with their patients.

The purpose of this study was to evaluate the influence of coaching theory-based structured communication by clinicians on the QOL and satisfaction of patients with chronic stroke. Therefore, we trained clinicians involved in the management of patients with stroke in coaching theory-based healthcare communication skills and assessed the efficacy of this training.

Methods

Participants

The participants in this study were clinicians involved in the management of patients with stroke and whose patients are in the chronic post-stroke phase.

The inclusion criteria for the clinicians were (1) 2 or more years of clinical experience, (2) responsibility for outpatients in the chronic post-stroke phase, and (3) the desire to participate in this training program. The inclusion criteria for the patients were (1) receipt of ambulatory care provided by one of the clinicians participating in this study, (2) age between 20 and 80 years, (3) onset of stroke at least 6 months prior, (4) retention of cognitive functions (score of 24 or higher on the Mini-Mental State Examination (MMSE) [19] or score of 21 or higher on the Revised Version of the Hasegawa Dementia Scale (HDS-R) [20]) and the ability to engage in daily conversation, and (5) absence of psychiatric diseases such as depression.

The clinicians were recruited through public announcements, such as advertisements in the Japanese Journal of Rehabilitation Medicine and on the study webpage. Each clinician participating in the study selected his or her patients who met the inclusion criteria. The protocol of this study was examined and authorized by the Institutional Review Board of Tohoku University Graduate School of Medicine.

Intervention

The clinicians received training in the use of coaching theory-based communication skills in clinical scenarios. This training consisted of 2 days of lectures and role-playing exercises about the principles and structure of coaching and the necessary communication skills (such as pacing, active listening, acknowledgement, questioning, suggestion, and assessment of the communication type) and was delivered by a certified master coach accredited by the International Coach Federation. The training was followed by a 3-month follow-up program. Each clinician received coaching-related tips by e-mail once a week. In addition, every other week each clinician reported the status of his or her practice of the skills in routine clinical practice. If the clinicians had any questions, they could ask their tutor and receive a reply.

Study design

This was a prospective observational study. Before and 1 month after the training, each clinician and patient completed a questionnaire. In addition, the patient's health-related QOL (HQOL, described later) was assessed 5 months after the training because we hypothesize that a patient's HQOL begins to change only after he/she sets some goals and begins engaging in the tasks needed to achieve those goals; therefore, 1 month is insufficient time for a valid evaluation of changes in the HQOL.

Outcome measures

The main outcomes were the patients' (1) satisfaction, (2) HQOL,

and (3) goal setting and action. Each patient's satisfaction was evaluated using the Patient Satisfaction Questionnaire prepared by the American Board of Internal Medicine (ABIM-PSQ) [21,22]. The ABIM-PSQ was designed as a scale for assessing a patient's satisfaction with his or her communication with his or her clinicians. It includes 3 sub-scales comprising a total of 18 items. This study employed 2 of these sub-scales: "satisfaction with the communication," consisting of 11 items (range of score: 11-55), and "overall satisfaction," consisting of 4 items (range of score: 4-20). The HQOL was assessed using the SF-36v2 (MOS 36-item Short Form Health Survey) [23,24]. The SF-36v2 is the most frequently used scale for general HQOL. It comprises 8 sub-scales: physical functioning, role limitation by physical problems (role physical), bodily pain, general health, vitality, social functioning, role limitation by emotional problems (role emotional), and mental health. The patient's "goal setting and action" was evaluated using 4 items (range of score: 4-20) adapted from the Coaching Skill Evaluation System prepared by the Japan Coach Association [25] and focused on evaluation of the patients' spontaneous behaviors (i.e., "I was able to take action towards achieving my goals after consulting with my doctors").

In addition, the clinicians' self-assessments of their communication skills were analyzed as a secondary outcome. The self-assessment consisted of evaluation of 12 items that were listed by the web program entitled "Coaching for medical interviews" as a coach-type clinician's competencies [26].

Statistical analysis

We calculated the mean and standard deviation or the frequency and percentage of the characteristics of the clinicians (sex, age, and length of career) and patients (sex, age, Barthel Index (BI), and time after onset of disease).

Before beginning the analysis of the outcomes, we verified the reliability and validity of the new scales used in this study. The factorial validity of each of the scales used for the assessment of "goal setting and action" and "clinician's self-assessment of communication skills" was analyzed by factor analysis (principal factor method and Varimax rotation), and the reliability was estimated using Cronbach's alpha coefficients [27].

The mean scores and standard deviations of the 4 outcome measures were calculated before and after the training, and paired t-tests were used to assess the levels of statistical significance of any differences in the mean values. Additionally, we calculated Cohen's effect size (Δ /baseline SD), for which a value of 0.2 is small, 0.5 is moderate, and 0.8 or greater is large [28].

Then, to test the associations of "patients' satisfaction" and "goal setting and action" with HQOL, we calculated the least mean square of the change after training of each SF-36 subscale score in 2 sets of 2 subgroups defined by their respective changes in "patients' satisfaction" and "goal setting and action" and adjusted for age. These subgroups were the "improvement" group, which included patients who exhibited numerically positive changes after training, and the "no-improvement" group, which included patients who exhibited no change or numerically negative changes after training.

The data were analyzed using SPSS version 15.0 for Windows (SPSS Inc., Chicago).

Results

Characteristics of the participants

Of the 34 clinicians enrolled in the study, 31 attended the training.

	Mean, SD or Frequency (%)	Range
Clinicians (n = 23)		
Age (years)	42.0, 8.2	27–57
Length of career (years)	15.6, 7.3	3–33
Gender, male, n (%)	17 (73.9%)	
Patients (n = 73)		
Age (years)	63.5, 10.2	36–85
Barthel index	85.1, 17.8	40–100
Time since onset (months)	60.4, 51.5	6–271
Gender, male, n (%)	57 (78.1%)	

Table 1: Characteristics of the participants.

Question items	Factor			
	Attitude	Active listening	Acknowledgement	Suggestion
Being able to assess an individual patient's type	0.832	0.028	-0.129	0.271
Practicing communication skills tailored to individual patients	0.828	-0.048	-0.049	0.409
Being mindful of my external appearance as a clinician (gaze, tone of voice, posture, distance from a patient, etc.)	0.572	0.371	0.245	0.058
Receiving feedback from patients	0.419	0.403	0.221	0.105
Attaching importance to communication with patients	0.123	0.699	0.291	0.163
Asking questions of patients in a way that encourages them to answer freely and in a relaxed manner instead of demanding answers	0.374	0.692	0.357	0.200
Speaking and behaving in a manner that makes it easier for the patients to talk	0.118	0.650	-0.123	-0.009
Listening well to patients	-0.361	0.644	0.047	0.059
Respecting and admitting the patient's thoughts	0.140	0.018	0.809	-0.235
Informing patients in a way that makes it easy for them to accept	-0.190	0.197	0.520	0.251
Encouraging patients to become more independent and better able to receive treatment	0.204	0.121	0.094	0.720
Making requests and proposals in a that makes it easier for patients to accept	0.205	0.063	-0.091	0.552
Contribution ratio (%)	19.3	18.0	10.8	10.6

Table 2: Factor analysis of "clinicians' self-assessments of their communication skills".

The reasons for the inability of the remaining 3 clinicians to attend the training were change in the place of employment after registration and inability to recruit any suitable patients satisfying the inclusion criteria. Twenty-three clinicians completed the questionnaire before and after the training (collection rate, 74.2%). A total of 107 patients consented to participate, of who 105 participated in the study; the remaining 2 were unable to participate because of physical problems. Seventy-three patients completed the questionnaire before and after the training (collection rate, 69.5%). Table 1 summarizes the characteristics of the clinicians and the patients enrolled in the study.

Factorial validity and reliability of the new scales

Factor analysis of the 4 items measuring "goal setting and action" found the contribution of the primary factor to be 62.3% and the factor loading of each item on the primary factor to be 0.75-0.81, indicating that these 4 items were highly uni-dimensional and confirming their factorial validity. The Cronbach's alpha coefficient was 0.87.

Factor analysis of the 12 items measuring the clinicians' self-assessments of their communication skills resulted in the extraction of 4 factors (Table 2). The cumulative contribution of these 4 factors was 58.8%. The factors were designated "attitude" (4 items, range of score 4-20), "active listening" (4 items, 4-20), "acknowledgment" (2 items, 2-10) and "suggestion" (2 items, 2-10). The Cronbach's alpha coefficients were 0.79 for "attitude," 0.76 for "active listening," 0.49 for "acknowledgment," and 0.66 for "suggestion."

Effects of training in communication skills

Training significantly increased the patients' satisfaction with their

clinicians' communication, overall satisfaction, and goal setting and action scores, but the effect sizes were small (Table 3). The subscale scores for the "bodily pain," "general health," and "social functioning" domains of the SF-36 increased significantly, but the effect sizes of these changes were also small. Furthermore, no part of the clinicians' self-assessments of their communication skills changed significantly after training.

The group whose "satisfaction with clinician's communication" improved after training (improvement group) exhibited significantly greater improvement in the physical functioning score and tended to exhibit greater improvements in the bodily pain and vitality score than the no-improvement group. The improvement group for "goal setting and action" tended to exhibit greater improvements in the physical functioning, role physical, and mental health scores than the no-improvement group (Table 4).

Discussion

The results of this study suggest the possibility that clinicians' intentional and structured use of communication skills during their treatment of patients with chronic stroke could increase the patients' satisfaction, levels of motivation for goal setting and action, and HQOL. Additionally, our study showed that increasing the patient's satisfaction and motivation to set goals and take action toward them might be able to improve HQOL in patients with stroke. In particular, the improvement in patients' goal setting and action was a new finding not previously reported by any investigator. In addition, it is meaningful that chronically disabled patients, such as stroke survivors, whose conditions had largely stabilized in the long span of time since the onset

Outcome	n	Before training		After training		Paired t-test p value	Effect size
		Mean	SD	Mean	SD		
Patients							
Satisfaction with the clinicians' communication	73	46.8	7.1	48.6	6.3	0.001	0.25
Overall satisfaction	71	16.8	2.6	17.4	2.3	0.001	0.23
Goal setting and action	69	14.6	2.3	15.2	3.1	0.034	0.26
HQOL(SF-36)							
Physical functioning	71	45.1	31.0	46.9	28.7	0.447	0.06
Role physical	70	46.1	35.1	47.8	31.9	0.650	0.05
Bodily pain	71	56.6	27.0	65.0	24.0	0.004	0.31
General health	70	49.8	22.4	54.1	18.4	0.018	0.19
Vitality	72	56.9	23.6	59.8	21.1	0.192	0.12
Social functioning	71	61.1	29.5	69.9	26.9	0.011	0.30
Role emotional	69	53.7	36.5	55.9	33.9	0.657	0.06
Mental health	72	63.3	22.3	63.0	19.3	0.904	-0.01
Clinicians							
Self-assessments of their communication skills							
Total score	23	43.4	4.3	44.7	5.8	0.165	0.09
Attitude	23	13.4	2.2	13.5	2.6	0.862	0.05
Active listening	23	15.5	2.1	16.0	1.9	0.260	0.24
Acknowledgement	23	7.7	0.9	8.0	1.1	0.259	0.33
Suggestion	23	6.8	1.2	7.4	1.3	0.069	0.50

Table 3: The outcomes of the patients and clinicians before and after the training.

	Satisfaction with clinician's communication					Goal setting and action				
	No improvement (N=40)		Improvement (N=25)		p-value	No improvement (N=39)		Improvement (N=26)		p-value
	mean	SE	mean	SE		mean	SE	mean	SE	
PF	-1.3	3.2	9.2	3.9	0.041	-0.7	3.5	8.7	3.7	0.073
RP					n.s.	-2.8	5.7	11.6	6.2	0.099
BP	3.3	4.0	15.5	4.9	0.060					n.s.
GH					n.s.					n.s.
VT	-1.8	3.3	7.6	3.9	0.071					n.s.
SF					n.s.					n.s.
RE					n.s.					n.s.
MH					n.s.	-3.9	3.4	6.0	3.7	0.056

SE: standard error of the mean, PF: physical functioning, RE: role physical, BP: bodily pain, GH: general health, VT: vitality, SF: social functioning, RE: role emotional, MH: mental health, n.s.: not significant
The least mean square and standard error of the change after adjustment for age are shown. The SF-36 subscale score fields for which the differences between the 2 groups gave p values of <0.1 were left blank.

Table 4: Associations of improvements in "satisfaction with clinician's communication" and "goal setting and action" with improvement in health-related QOL.

of disease could be motivated to implement goal-oriented behaviors. Training the clinicians in communication skills was sufficient to produce these impressive changes.

Several previous reports have suggested that clinicians' communication skills can affect patients' satisfaction. Shilling et al. [29] reported that communication training improved "patient's satisfaction." Stewart [30] listed "improvement in patient satisfaction," "elevation in patient's motivation for treatment and increase in patient's knowledge and understanding," "improvement in adherence," "decrease in undesirable behaviors," and "improvement in clinician's satisfaction with patient management" as favorable effects of better communication with patients in clinical practice.

The improvements observed not only in the patients' satisfaction but also in their goal setting and action and HQOL were probably related to the basis of the communication skills practiced in coaching theory. Coaching aims to stimulate the client to alter his/her behaviors for achieving his or her goals. The clinicians who learned coaching theory not only conducted their conversations more carefully but

also structured their use of the communication skills while remaining mindful of the need to assist patients to take action towards their goals. Furthermore, coaching is based on interactive communication. The conventional clinician-patient relationship is usually a 1-way dialogue in which the clinician "teaches" something to the patient. After learning coaching theory, our clinicians began to listen to their patients more carefully and practiced interactive communication, allowing the patient to feel free to ask questions. This approach likely modified the clinician-patient relationship to stimulate spontaneous behaviors and assist in self-made decisions.

Despite these promising results, the effect sizes for patients' satisfaction and HQOL in this study were small, indicating that the effect of this intervention was not large and was greatly variable overall. However, it is imperative to focus on the finding that HQOL was higher in the improvement group than in the no-improvement group. This suggests that a patient's satisfaction his or her clinicians' communication might actually improve his or her physical functioning, bodily pain, and vitality scores. Furthermore, patients who set goals

and act to achieve them may experience improvements in their physical functioning, role physical, and mental health scores.

Although the patients' satisfaction with their communications with their clinicians increased, the clinicians' self-assessments of their communication skills did not change significantly. This result could be interpreted as indicating a lack of improvement in the clinicians' communication skills following the training. However, the changes in the patients' outcomes make it unlikely that the clinicians' communication skills did not change. Instead, the finding of no change is more likely to reflect the influence of "response shift" (changes in the internal standards for self-assessment following intervention) [31]. The clinicians in the present study had been confident in their communications skills and gave high self-assessment scores before the training. It seems likely that these clinicians became aware of the inadequacy of their previous communication skills only after the training, resulting in a lack of any significant change in the assessment scores because of response shift.

Evaluation of the practice of communication skills by means of self-assessment is restricted by various factors, including response shift. The aforementioned study by Stewart et al. [30] adopted an objective method of evaluation in which clinical scenarios were video-recorded for subsequent assessment of the use of communication skills. This and similar methods are considered the best way to facilitate awareness of nonverbal communication [32]. Future analysis of the relationship between self-assessment and objective evaluation would be desirable.

One of the limitations of this study is that we did not use any quantitative variables to assess the extent to which the skills learned by the clinicians were actually utilized during clinical practice. Therefore, we did not analyze the relationships between the patient outcomes and the quantitative and qualitative aspects of the clinicians' uses of communication skills. However, the clinicians' reports on the statuses of their practice of the skills suggest that the clinicians consciously practiced coaching theory-based communication. For example, the clinicians reported, "When I attempted to talk to the family from my side, it was difficult to maintain a smooth dialogue, possibly because the family members did not have adequate time to think. When I attempted to talk to the family members so as to encourage them to think by themselves, the dialogue was smoother" and, "What I did first was to listen to what the patient/family had to say in order to create an atmosphere encouraging frank communication and express my sympathy. I was thus able to organize and confirm my knowledge about the feelings and expectations of individual patients and their family members. I experienced no trouble with the patient/family thereafter."

A randomized controlled trial (RCT) is required to reveal the effect of an intervention. However, the measurement of the effectiveness of an educational intervention is difficult because of the great differences among individuals. The effect sizes presented in this study will help to guide future RCTs in terms of the sample sizes required for this type of research protocol.

In this study, we selected patients with chronic stroke as our study participants. Stroke involves diverse disorders and the sequelae of stroke often persist for prolonged periods of time. When dealing with the rehabilitation of patients with diseases like stroke, it is essential to assist the patients in setting definite goals and motivate them to make proactive or voluntary attempts to minimize their disabilities. The coaching theory may be expected to be useful in the management of stroke with such features. However, we think that this training can be used on clinicians dealing with other kinds of patients with chronic disease. We expect that if clinicians learn the coaching theory and

practice communication with patients in an intentional and structured manner, it may be possible to provide adequate assistance to the rehabilitation efforts of patients with chronic disease.

In conclusion, clinicians managing post-stroke outpatients learned intentional and structured use of communication skills in keeping with the principles of coaching theory-based communication skills training and used these during their interviews with community-dwelling post-stroke patients. This training improved the levels of satisfaction, the goal setting and implementation of proactive actions towards achieving those goals, and the HQOL of patients in the chronic post-stroke phase.

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References

1. Ministry_of_Health_Labour_and_Welfare (2012) Vital statistics 2012.
2. Jönsson AC, Lindgren I, Hallström B, Norrving B, Lindgren A (2005) Determinants of quality of life in stroke survivors and their informal caregivers. *Stroke* 36: 803-808.
3. Schlöte A, Richter M, Frank B, Wallesch CW (2006) A longitudinal study of health-related quality of life of first stroke survivors' close relatives. *Cerebrovasc Dis* 22: 137-142.
4. Smith J, Forster A, Young J; Cochrane Group for information provision after stroke (2009) Cochrane review: information provision for stroke patients and their caregivers. *Clin Rehabil* 23: 195-206.
5. International_Coach_Federation (2013) Coaching FAQs.
6. Hayes E, Kalmakis KA (2007) From the sidelines: coaching as a nurse practitioner strategy for improving health outcomes. *J Am Acad Nurse Pract* 19: 555-562.
7. McMurray SD, Johnson G, Davis S, McDougall K (2002) Diabetes education and care management significantly improve patient outcomes in the dialysis unit. *Am J Kidney Dis* 40: 566-575.
8. Sacco WP, Morrison AD, Malone JI (2004) A brief, regular, proactive telephone "coaching" intervention for diabetes: rationale, description, and preliminary results. *J Diabetes Complications* 18: 113-118.
9. Whittemore R, Melkus GD, Sullivan A, Grey M (2004) A nurse-coaching intervention for women with type 2 diabetes. *Diabetes Educ* 30: 795-804.
10. Vale MJ, Jelinek MV, Best JD, Santamaria JD (2002) Coaching patients with coronary heart disease to achieve the target cholesterol: a method to bridge the gap between evidence-based medicine and the "real world"--randomized controlled trial. *J Clin Epidemiol* 55: 245-252.
11. Vale MJ, Jelinek MV, Best JD, Dart AM, Grigg LE, et al. (2003) Coaching patients On Achieving Cardiovascular Health (COACH): a multicenter randomized trial in patients with coronary heart disease. *Arch Intern Med* 163: 2775-2783.
12. Oliver JW, Kravitz RL, Kaplan SH, Meyers FJ (2001) Individualized patient education and coaching to improve pain control among cancer outpatients. *J Clin Oncol* 19: 2206-2212.
13. Smith SR, Jaffe DM, Fisher EB Jr, Trinkaus KM, Highstein G, et al. (2004) Improving follow-up for children with asthma after an acute Emergency Department visit. *J Pediatr* 145: 772-777.
14. Hovell MF, Sipan CL, Blumberg EJ, Hofstetter CR, Slymen D, et al. (2003) Increasing Latino adolescents' adherence to treatment for latent tuberculosis infection: a controlled trial. *Am J Public Health* 93: 1871-1877.
15. Shon KH, Park SS (2002) Medication and symptom management education program for the rehabilitation of psychiatric patients in Korea: the effects of promoting schedule on self-efficacy theory. *Yonsei Med J* 43: 579-589.
16. Brook OH, van Hout H, Stalman W, Nieuwenhuys H, Bakker B, et al. (2005) A pharmacy-based coaching program to improve adherence to antidepressant treatment among primary care patients. *Psychiatr Serv* 56: 487-489.
17. Izumi S, Ando K, Ono M, Suzukamo Y, Michimata A, et al. (2007) Effect of coaching on psychological adjustment in patients with spinocerebellar degeneration: a pilot study. *Clin Rehabil* 21: 987-996.

18. Hayashi A, Kayama M, Ando K, Ono M, Suzukamo Y, et al. (2008) Analysis of subjective evaluations of the functions of tele-coaching intervention in patients with spinocerebellar degeneration. *NeuroRehabilitation* 23: 159-169.
19. Folstein MF, Folstein SE, McHugh PR (1975) "Mini-mental state" A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 12: 189-198.
20. Kato S, Shimogaki H, Onodera A, Oikawa K, Ikeda K, et al. (1991) Development of the revised version of Hasegawa's dementia scale. *Japanese Journal of Geriatric Psychiatry* 2: 1339-1347.
21. Swanson DB, Webster GD, Norcini JJ (1990) Precision of patient rating of resident's humanistic qualities: how many items and patients are enough? Groningen:Boekwerk Publications 424-431.
22. Matumura S, Oono M, Bitou S, Fukuhara S (2003) American Board of Internal Medicine, Patient Satisfaction Questionnaire (ABIM-PSQ) development of Japanese version. Scientific grant by Ministry of Health 2003.
23. Fukuhara S, Bito S, Green J, Hsiao A, Kurokawa K (1998) Translation, adaptation, and validation of the SF-36 Health Survey for use in Japan. *J Clin Epidemiol* 51: 1037-1044.
24. Fukuhara S, Ware JE Jr, Kosinski M, Wada S, Gandek B (1998) Psychometric and clinical tests of validity of the Japanese SF-36 Health Survey. *J Clin Epidemiol* 51: 1045-1053.
25. <http://www.coach.or.jp/cses/index.html>
26. <http://www.dsc-caster.info/coaching/index.html>
27. Morrison EF (1993) The measurement of aggression and violence in hospitalized psychiatric patients. *Int J Nurs Stud* 30: 51-64.
28. Cohen J (1998) *Statistical power analysis for the behavioral sciences*. (2nd Edn.), New Jersey: Lawrence Erlbaum Associates.
29. Shilling V, Jenkins V, Fallowfield L (2003) Factors affecting patient and clinician satisfaction with the clinical consultation: can communication skills training for clinicians improve satisfaction? *Psychooncology* 12: 599-611.
30. Stewart MA (1995) Effective physician-patient communication and health outcomes: a review. *CMAJ* 152: 1423-1433.
31. Postulart D, Adang EM (2000) Response shift and adaptation in chronically ill patients. *Med Decis Making* 20: 186-193.
32. Ishikawa H, Hashimoto H, Kinoshita M, Fujimori S, Shimizu T, et al. (2006) Evaluating medical students' non-verbal communication during the objective structured clinical examination. *Med Educ* 40: 1180-1187.