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ORIGINAL RESEARCH

Coping, Problem Solving, Depression, and Health-Related Quality of Life in Patients Receiving Outpatient Stroke Rehabilitation

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Abstract

Objectives: To investigate whether patients with high and low depression scores after stroke use different coping strategies and problem-solving skills and whether these variables are related to psychosocial health-related quality of life (HRQOL) independent of depression.

Design: Cross-sectional study.

Setting: Two rehabilitation centers.

Participants: Patients participating in outpatient stroke rehabilitation (N = 166; mean age, 53.06±10.19y; 53% men; median time poststroke, 7.29mo).

Interventions: Not applicable.

Main Outcome Measures: Coping strategy was measured using the Coping Inventory for Stressful Situations; problem-solving skills were measured using the Social Problem Solving Inventory—Revised: Short Form; depression was assessed using the Center for Epidemiologic Studies Depression Scale; and HRQOL was measured using the five-level EuroQol five-dimensional questionnaire and the Stroke-Specific Quality of Life Scale. Independent samples *t* tests and multivariable regression analyses, adjusted for patient characteristics, were performed.

Results: Compared with patients with low depression scores, patients with high depression scores used less positive problem orientation ($P = .002$) and emotion-oriented coping ($P < .001$) and more negative problem orientation ($P < .001$) and avoidance style ($P < .001$). Depression score was related to all domains of both general HRQOL (visual analog scale: $\beta = -.679$; $P < .001$; utility: $\beta = -.009$; $P < .001$) and stroke-specific HRQOL (physical HRQOL: $\beta = -.020$; $P = .001$; psychosocial HRQOL: $\beta = -.054$, $P < .001$; total HRQOL: $\beta = -.037$; $P < .001$). Positive problem orientation was independently related to psychosocial HRQOL ($\beta = .086$; $P = .018$) and total HRQOL ($\beta = .058$; $P = .031$).

Conclusions: Patients with high depression scores use different coping strategies and problem-solving skills than do patients with low depression scores. Independent of depression, positive problem-solving skills appear to be most significantly related to better HRQOL.

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Living with the consequences of stroke can enormously impact daily life, resulting in diminished health-related quality of life (HRQOL) in most patients. Utility scores, which range from 0 (death) to 1 (full health), are frequently used to assign value to the level of HRQOL[1] and are in the range of .47 to .68 after stroke.[1,2] HRQOL after stroke is predicted by several factors including functional constraints, age, sex, socioeconomic status, depression, and coping strategies.[2-6] Particularly, problem-oriented coping strategies are positively associated with HRQOL.[7,8] However, patients with stroke may use fewer active, problem-oriented coping strategies.[9]

Depression after stroke has an estimated prevalence of 33%.[10] Depression is also related to other factors such as age, functional limitations, stroke severity, family support, and socioeconomic status.[11,12] An inverse relation between depression and HRQOL has

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been reported.[13-15] Furthermore, depression is a known effect modifier of the relation between coping strategy and HRQOL.[16] In a previous study, coping strategy and depression were independently associated with psychological health in patients in the chronic phase after stroke.[17] However, coping strategies may change during rehabilitation.[18,19] Therefore, we wondered whether the relations between depression, coping, and HRQOL are also present in patients receiving outpatient rehabilitation treatment.[18,19]

HRQOL may also change over time after stroke.[14,20] Discharge from rehabilitation is a particularly challenging time with respect to HRQOL. Treatment is completed, and patients are faced with the consequences of stroke in their home environment. This can cause psychological distress and reduced HRQOL. The ability to use active behavioral coping strategies, such as problem solving, is often helpful during this phase of recovery.[8]

Problem solving and coping are different concepts. Coping is defined as the cognitive and behavioral efforts used to manage specific stressful situations and the emotions they generate,[21,22] whereas problem solving is defined as "the process of finding solutions to specific problems."[22(p410)] Problem solving is a coping process, but not all coping processes can be considered problem solving. Problem solving cannot be directly compared with or distinguished from other coping activities because it can serve a variety of coping functions.[22] Problem solving is also related to depression and HRQOL in both population with a disease and healthy population.[23,24]

Whether coping strategy, problem-solving skills, and depression are independently related to HRQOL in patients receiving outpatient rehabilitation treatment is unknown. The present study investigated these relations in patients participating in an outpatient stroke rehabilitation program. On the basis of the findings in a population with chronic stroke,[17] we expected that patients with high depression scores use different coping strategies and problem-solving skills than those with low depression scores and that coping strategies and problem-solving skills are independently related to psychosocial HRQOL.

Methods

Study population

Between March 2011 and August 2013, patients in outpatient stroke rehabilitation treatment at Rijndam Rehabilitation Center (The Netherlands) and in Ghent University Hospital (Belgium) were asked to participate. Patients were included if they had been diagnosed with stroke (including subarachnoid hemorrhage) and were aged 18 to 75 years, receiving outpatient rehabilitation treatment of stroke, and able to participate in group therapy. Patients were excluded if they had progressive neurological disorders, life expectancy of ≤1 year, insufficient understanding of the Dutch language, subdural hematomas, or moderate or severe aphasia (ie, score ≤20 on the short version of the Token Test[25]), or partook in excessive drinking or drug abuse. Eligible patients were approached by their rehabilitation physician and invited to participate in an intervention study to evaluate the effectiveness of group training for patients with stroke in addition to the outpatient rehabilitation treatment.[26]

This was a cross-sectional study of the baseline measurement of a randomized controlled trial examining the effect of problem-solving therapy, in addition to standard treatment, in patients receiving outpatient stroke rehabilitation.[26] Outpatient stroke rehabilitation is provided during the postacute phase after stroke for most patients, but it may also be provided for delayed or recurrent stroke effects. The latter group was included in this study because these patients experience comparable problems and may benefit from a problem-solving intervention.

The study was approved by the medical ethics committee of the Erasmus University Medical Center and the ethics committee of the Ghent University Hospital. Before the study, written informed consent was obtained from all participants.

List of abbreviations:

CES-D	Center for Epidemiologic Studies Depression Scale
CISS	Coping Inventory for Stressful Situations
EQ-5D-5L	five-level EuroQol five-dimensional questionnaire
HRQOL	health-related quality of life
NPO	negative problem orientation
PPO	positive problem orientation
SPSI-R:SF	Social Problem Solving Inventory–Revised: Short Form
SS-QOL-12	Stroke-Specific Quality of Life Scale

Measurement instruments

Patients were assessed by trained research psychologists at the rehabilitation center or at home. HRQOL was measured using the five-level EuroQol five-dimensional questionnaire (EQ-5D-5L) and the Stroke-Specific Quality of Life Scale (SS-QOL-12). The EQ-5D-5L is a generic questionnaire consisting of 5 questions measured on a 5-point rating scale, which can be combined into 1 utility scale representing the societal perspective of the general public.[27] The EQ-5D-5L also includes a visual analog scale in which patients rate their health on a scale from 0 to 100. The SS-QOL-12 is a disease-specific questionnaire.[28] The short version of the questionnaire, which has been validated,[29] consists of 12 questions and provides a total score and 2 subscores: physical and psychosocial HRQOL. The total score and subscores are calculated as the mean scores of the items in the scale (score range, 1–5).

Coping strategy was measured using the Coping Inventory for Stressful Situations (CISS),[30] which consists of 48 questions and provides 3 scales, each including 16 items: task-oriented, emotion-oriented, and avoidant coping. Avoidant coping consists of 2 subscales: distraction (8 items) and social diversion (5 items); the remaining 3 items are not used in the subscales. Items are measured on a 5-point rating scale (range, 1–5). The scales and subscales are calculated as the sum of the items belonging to each (sub)scale. Higher scores indicate more use of the coping strategy. The questionnaire has been validated in the Dutch population.[31]

Problem-solving skills were measured using the Social Problem Solving Inventory–Revised: Short Form (SPSI-R:SF). The SPSI-R:SF consists of 10 questions on problem-solving skills in daily situations and contains 5 domains: positive problem orientation (PPO), rational problem solving, negative problem orientation (NPO), impulsivity/carelessness style, and avoidance style. Items are measured on a 5-point rating scale (range, 0–4). Domain scores are calculated as the sum score of the items. The total score is the sum of the items in the positive domains (PPO, rational problem solving) and the reverse score of the items in the negative domains (NPO), impulsivity/carelessness style, avoidance style. Higher domain scores indicate more use of that problem-solving skill, and a