


Coping strategies and health-related quality of life after stroke

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Abstract

Cerebral stroke causes a significant worsening of health-related quality of life. This review was conducted on studies investigating whether the levels of quality of life were influenced by the coping strategies used by stroke patients. We searched on PubMed and Web of Science databases and screening references of included studies and review articles for additional citations. From initial 389 publications, we included only 6 studies that met search criteria and described the association between coping and quality of life. Results showed that patients who prefer accommodative or active coping strategies had a better quality of life after stroke when compared with patients who adopted assimilative coping.

Keywords

coping, disability, quality of life, stroke

Introduction

Stroke is the third leading cause of death in the Western countries. The rate of stroke occurrence is estimated around 75 percent in patients aged 65 years (Truelsen et al., 2000). Stroke patients have high risk of death during the first weeks after the event, and between 20 and 50 percent die within the first month depending on type and severity, age, comorbidity, and severity of complications (Truelsen et al., 2003). The pathological background for stroke may be due to either ischemic or hemorrhagic disturbances of the cerebral blood circulation (Truelsen et al., 2000), with consequences that cause changes in people's life, for both the long-term disability and the emotional aspects (World Health Organization, 2006). A stroke event can leave an individual with residual

impairment of physical, psychological, and social function, compromising the capacity to carry out activities of daily living (McGrath et al., 2009; Martin et al., 2002). Physical limitations include deficit of movement, sensory disturbance, vision, swallowing, and communicative disorders (Perry and McLaren, 2003). Psychological problems include depression and

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anxiety, in some cases post-traumatic stress disorder, which negatively affects the social function and post-stroke recovery (Sinyor et al., 1986). Other categories of social consequences of stroke included negative impact on family relationships as divorce or separation and the inability to maintain one's own social role (Thompson and Ryan, 2009). Physical, social, and cognitive impairment following a stroke may constitute a serious problem to the quality of life (QoL). About 25 percent of patients, indeed, reported a decrease in QoL in the first 3 months after stroke associated with a decrease in the general state of health and a reduction of vitality (Kauhanen, 2000; Leach et al., 2011). The concept of QoL is related to the person's physical health, psychological state, level of independence, social relationship, person beliefs, and relationship with the environment (World Health Organization, 1997). Health-related quality of life (HRQoL) evaluates how the individual's well-being might get affected over time by disease, disability, or disorder (Centers for Disease Control and Prevention, 2000). HRQoL is, therefore, the study of QoL related to health disease that is defined by complicated subjective indicators, related to the perceived well-being. An important psychosocial factor that influences QoL after stroke is coping style, used by individuals to deal with disease state. Coping strategies are cognitive and behavioral modalities employed to manage the negative impact of stressful situations (Lazarus and Folkman, 1984). Depending on the success or failure of this process, coping may be defined as functional (adaptation) or dysfunctional (increased stress). Coping is a dynamic process, constituted by a series of reciprocal responses, through which individual and environment influence each other reciprocally. There are different definitions of coping strategies in the literature. Several coping styles can be distinguished such as (a) emotional-focused coping, which refers to the ability to regulate negative emotions; (b) problem-focused coping, which includes strategies and actions to reduce the negative impact of the situation through an external change; (c) active coping, which is

direct to the source of stress; (d) avoidant coping, which represents an escape of emotional and cognitive events; (e) accommodative coping, which is direct to a change in the personal goal standards in accordance with perceived deficits; and (f) assimilative coping, which involves active attempts to alter unsatisfactory life circumstances and situational constraints in accordance with personal preferences (Aspinwall and Taylor, 1992; Brandtstädter and Renner, 1990; Donnellan et al., 2006; Lazarus and Folkman, 1987; Suls and Flechter, 1985). The predominance of one type of strategy is determined by personal style and cognitive appraisal of the stressful event (Ferguson, 2001). Coping strategies are determinant on the HRQoL after stroke since they affect both recovery and adaptation to disability, even if the research on QoL and coping is still lacking. Only in recent years, the studies on stroke are beginning to focus attention on psychological outcomes such as QoL and subjective well-being in survival, in addition to functional outcomes. This descriptive review focused on the studies that investigated which coping strategies were adopted by patients after stroke and how these influenced their QoL.

Methods

Search strategy

A descriptive review was conducted on the measures of coping and QoL used by the stroke patients. Studies were identified by searching on PubMed (1982, year of the first-related published article–July 2014) and Web of Science databases (1988–August 2014). The search combined the following terms: “stroke AND coping AND quality of life” (“stroke”[MeSH Terms] OR “stroke”[All Fields]) AND (“adaptation, psychological” [MeSH Terms] OR (“adaptation” [All Fields] AND “psychological”[All Fields]) OR “psychological adaptation”[All Fields] OR “coping”[All Fields]) AND (“quality of life” [MeSH Terms] OR (“quality”[All Fields] AND “life”[All Fields]) OR “quality of life”[All Fields]).

The search terms were identified as title and abstract. We selected only English texts. After duplicates had been removed, all articles were evaluated based on title, abstract, and text. Studies that examined the relationship between coping strategies and QoL after stroke were included, after they fulfilled the following criteria:

1. Published peer-reviewed research;
2. The sample population included stroke patients (ischemic or intracerebral hemorrhagic lesion) in rehabilitative phase or at home;
3. Studies specifically assessed the relationship between coping strategies and QoL after a stroke event;
4. Data from an instrument quantifying coping strategies used of the stroke patients and QoL were reported;
5. We excluded case studies.

Results

Of the 389 studies identified, 6 studies met the inclusion criteria (Figure 1). All studies conducted research on 506 stroke survivors and examined the association between QoL and coping strategies (Table 1).

Eight different measures of QoL and three coping measures were identified; one study used an individual report to identify preferred coping strategies of patients (Tables 2 and 3); two studies included stroke patients and their partners.

The quality assessment of studies was performed with the National Institute for Health and Care Excellence (NICE, 2010) guidelines.

Measures coping strategies and HRQoL in stroke survivors

Many data in the literature have focused on cognitive and physical disability resulting from stroke. However, only very few studies have investigated whether the way in which the patient deals with the post-stroke period affects the overall well-being.

Darlington et al. (2007) conducted a longitudinal study on 80 patients with a first-event stroke caused by cerebral infarction or intracerebral hematoma to examine the prognostic value of coping strategies and QoL after stroke. The patients were evaluated at four different time points: 1 week before discharge and 2, 5, and 12 months after discharge and approximately 1 year later. QoL was assessed by five-dimensional EuroQoL (EQ-5D) self-report (The EuroQoL Group, 1990), and coping strategies were measured through the Assimilative–Accommodative Coping Scale (AACCS; Brandtstädter and Renner, 1990), a self-report questionnaire composed by two subscales: Tenacious Goal Pursuit (TGP) and Flexible Goal Adjustment (FGA). The results showed that the variance in coping after stroke was related to long-term QoL. In particular, a positive relationship between FGA and HRQoL was found. The coping style, however, was not predictive for the QoL 2 months after the stroke. The importance of the relationship between FGA and QoL, indeed, has been proven already at 5 months after a stroke (Clarke and Black, 2005). Immediately after the stroke event, subjective well-being was mainly due to the general functioning. It seems that assimilative coping was dominant in the acute phase after stroke, while accommodative coping gradually increased over time.

A similar study with 213 patients after chronic stroke investigated the influence of coping strategies and depression on HRQoL (Visser et al., 2014). Coping strategies were measured using AACCS, and depression was assessed with the Center for Epidemiologic Studies–Depression (CES-D; Radloff, 1977) Scale and QoL through World Health Organization Quality of Life–BREF (WHOQOL-BREF; WHOQOL Group, 1998). The results showed that coping strategies and depression were independently related to psychological health on the domain of flexibility and tenacity in the chronic phase. Patients who used accommodative coping showed higher HRQoL scores and fewer depressive symptoms. The data confirmed that accommodative coping correlated with a high QoL in chronic phase.

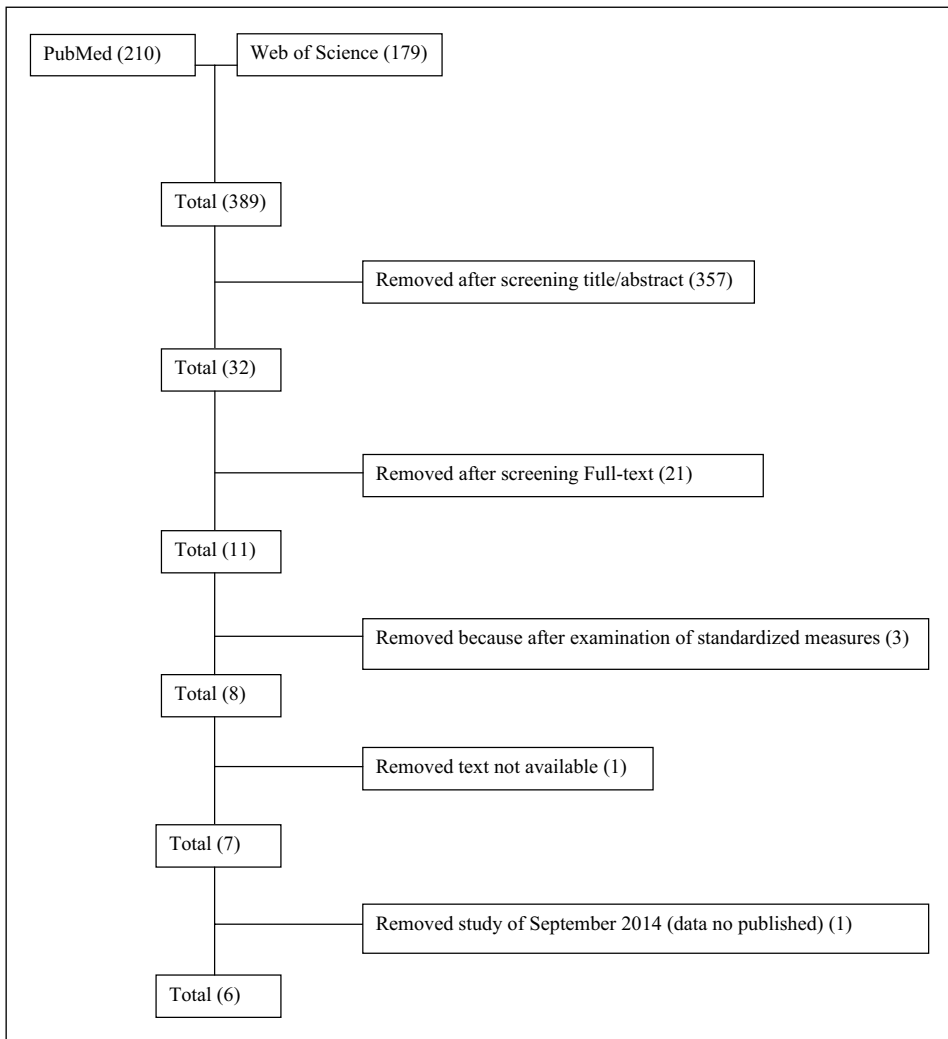


Figure 1. Search and selection of eligible articles.

Another study focused on eight young stroke patients (mean age: 47.6 years) and their partners (mean age: 44.5 years; Smout et al., 2001). Patients and partners completed the Impact of Event Scale (IES) questionnaire (Horowitz et al., 1979), and they were interviewed to obtain information about stroke impact and coping. QoL was measured by the Schedule for Evaluation of Individual Quality of Life (SEIQoL; McGee et al., 1991), and stroke impact was quantified using the Visual Analog Scales (VASs; Price et al., 1983). QoL was

deteriorated in 20.1 percent of the patients but not in their partners. Moreover, patients who used accommodative coping had a better QoL.

Coping strategies and QoL are very important outcome measures in rehabilitative phase. Tramonti et al. (2014) examined the association between functional status and QoL in 29 stroke survivors, who were treated with neurorehabilitation and included an evaluation of coping strategies and social support. Test for functional status, HRQoL, individualized QoL, psychological distress, coping strategies, and social support

Table 1. Studies ($n = 6$) assessing coping strategies and quality of life after stroke.

References	Aim of the study	Coping measures	QoL measures	Socio-demographic characteristics	Patient group	Outcomes
Darlington et al. (2007)	To examine the prognostic value of coping strategies of stroke patients at the time of discharge on QoL (approximately 1 year later)	Assimilative–Accommodative Coping Scale (AACCS): self-report questionnaire	Five-dimensional EuroQoL (EQ-5D) self-report QoL questionnaire	80 stroke patients (41 women and 39 men). Mean age: 60.9 years. Diagnosis: 63 ischemic stroke, 16 intracerebral hematoma, and 1 venus sinus thrombosis	Time point: discharge from hospital. Rehabilitation center: nursing home or their home	Positive relationship between flexible and adaptive coping and QoL
Visser et al. (2014)	To investigate the relative associations of coping strategy and depression on health-related QoL in patients in the chronic phase after stroke	AACS: self-report questionnaire	The World Health Organization Quality of Life–BREF (WHOQOL-BREF), generic HRQoL questionnaire	213 patients (119 men and 94 women) after stroke (>18 months post-onset); mean age: 59 years	Home	Positive association between accommodative coping and high QoL in chronic phase
Smout et al. (2001)	To evaluate stroke impact and coping strategies in QoL in younger patients and in their spouses	Semistructured interviews that classified the coping strategies in two categories: assimilation and accommodation coping	Schedule for Evaluation of Individual Quality of Life (SEIQoL), semistructured interview	8 stroke patients and their partners. Mean age: 47.6 years in patients and 44.5 years in partners	Rehabilitation	Accommodative coping positively to correlate with QoL in patients and their partners
Tramonti et al. (2014)	To examine the association among functional status and measures of QoL in patients undergoing rehabilitative programs and to consider the role of psychological distress coping strategies and social support	COPE questionnaire	Schedule for Evaluation of Individual Quality of Life–Direct Weighting (SEIQoL-DW); Short-Form Health Survey 36 (SF-36)	29 stroke patients (17 men and 12 women), mean age: 63 years. Diagnosis: 18 ischemic stroke and 11 hemorrhagic stroke. Patients were in rehabilitation phase	Hospital neurorehabilitation unit	Positive correlations COPE subscales and health-related QoL measures

(Continued)

Table 1. (Continued)

References	Aim of the study	Coping measures	QoL measures	Socio-demographic characteristics	Patient group	Outcomes
Elmståhl et al. (1996)	To explore relationship between personality characteristics and functional recovery after stroke	Individual reports	Life satisfaction and QoL were measured by Lund Gerontology Center's Life Quality Questionnaire (LGC)	66 stroke patients: 25 men, mean age: 75.6 ± 7.4 years, and 41 women, mean age 81.1 ± 8.3 years. They were examined 3 years after a primary stroke	Rehabilitation	Active coping strategies are related with an improvement activity life and QoL (at 1 and 3 years after stroke)
Tielemans et al. (2014)	To investigate the capacity of self-management intervention based on the proactive coping to increase social participation and HRQoL	Proactive Competence Inventory (PCI): self-report measure	Stroke-Specific Quality-of-Life (SSQoL) Scale for physical and psychosocial domains; six-dimensional EuroQoL (EQ-6D)	106 stroke patients and their partners. Aged 18 years or over. Patients were recruited by rehabilitation physicians and nurse practitioners in 10 Dutch hospitals and rehabilitation centers	Home	Proactive coping to influence HRQoL in stroke patients

QoL: quality of life.

Table 2. Coping measures.

Coping scale	Coping domains and strategies	Items	Scales	Focus
AACS (Brandtsstädter and Renner, 1990)	2 independent scales: Tenacious Goal Pursuit (TGP) and Flexible Goal Adjustment (FGA)	15 items	5-point Likert scale	Inclination to use assimilative and accommodative coping strategies
COPE questionnaire (Carver et al., 1989)	14 scales: Active Coping, Planning, Suppressing Competing Activities, Restraint Coping, Seeking Social Support for Instrumental Reasons, Seeking Social Support for Emotional Reasons, Positive Reinterpretation and Growth, Acceptance, Religion, Focusing on the Venting Emotion, Denial, Behavioral Disengagement, Mental Disengagement, and Alcohol-Drug Disengagement	53 items	4-Point scale	To assess which particular process of coping the patient will use in difficult or stressful situations
PCI (Greenglass et al., 1999)	7 scales: Proactive Coping Scale, Reflective Coping Scale, Strategic Planning, Preventive Coping, Instrumental Support Seeking, Emotional Support Seeking, and Avoidance Coping	55 items	4-Point self-report scale	Integration of processes of personal quality of life management with those of self-regulatory
Individual report	Questions: how individually chosen difficult life events have been handled			Identification of active, passive, emotional, and avoiding behaviors

AACS: Assimilative-Accommodative Coping Scale; PCI: Proactive Competence Inventory.

Table 3. Quality of life measures.

QoL scale	Domains and strategies	Items	Scales	Focus
EQ-5D (The EuroQoL Group, 1990)	5 dimensions: mobility, self-care, usual activities, pain or discomfort, and anxiety or depression	5 items	5-point scale	Generic measure widely used for the assessment of health status
WHOQOL-BREF (WHOQOL Group, 1998)	4 domains: physical health, psychological health, social relationships, and environment	26 items	5-Point Likert scale	Subjective perception of the individual's health status
SEIQoL (McGee et al., 1991)	3 elements of QoL: life considered by the individual to be crucial to his or her QoL are elicited by means of a structured interview; current functioning or satisfaction with each aspect is rated by the individual; the relative importance of each aspect of QoL is measured by deriving the weight the individual assigns to each in judging overall QoL	46 items	Visual Analog Scale, 0–100	To assess QoL from the individual's perspective
SEIQoL-DW (LeVasseur et al., 2005)	Brief measure of SEIQoL	15 items	Visual Analog Scale, 0–100	To assess QoL from the individual's perspective (derived from SEIQoL)
SF-36 (Ware and Sherbourne, 1992)	8 different subscores (physical and social functioning, physical and emotional role limitations, mental health, energy, pain, and general health perceptions)	36 questions	5- or 6-point or 2- or 3-point Likert scale	Subjective perception of the health-related QoL
LGC (Nordbeck, 1996)	10 dimensions: present QoL, psychological well-being, life span quality, satisfaction with living conditions, economy, relations to neighbors, social relations, close relations, activities, and view of life	51 items	4- or 5-point scale	Life satisfaction and life quality
EQ-6D (The EuroQoL Group, 1990)	6 dimensions: mobility, self-care, usual activities (work, study, household activities, and recreational activities), pain or other discomfort, anxiety or depression, and cognition (such as memory and concentration)	6 items	5-point scale	Generic measure widely used for the assessment of health status (derived from EQ-5D)
SSQoL (Post et al., 2011)	12 domains: mobility, energy, upper extremity function, work and productivity, mood, self-care, social roles, family roles, vision, language, thinking, and personality	49 items	5-point Guttman-type scale	Disease-specific quality-of-life measures

QoL: quality of life; EQ-5D: five-dimensional EuroQoL; WHOQOL-BREF: World Health Organization Quality of Life-BREF; SEIQoL: Schedule for Evaluation of Individual Quality of Life; SEIQoL-DW: Schedule for Evaluation of Individual Quality of Life-Direct Weighting; SF-36: Short-Form Health Survey 36; LGC: Lund Gerontology Center's Life Quality Questionnaire; EQ-6D: six-dimensional EuroQoL; SSQoL: Stroke-Specific Quality-of-Life.

were administered. Barthel Index (BI) was used for functional status (Mahoney and Barthel, 1965), Short-Form Health Survey 36 (SF-36; Ware and Sherbourne, 1992) and the Schedule for Evaluation of Individual Quality of Life–Direct Weighting (SEIQoL-DW) were used to measure QoL (LeVasseur et al., 2005), Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983) was used to assess psychological distress, COPE questionnaire (Carver et al., 1989) was used for coping strategies, and Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) was used for evaluation of social support. The data from this study highlighted the positive impact of active coping strategies on the QoL and clinical implication on the relationships between coping and social support. In particular, the support received by family and relatives was related to adaptive and active coping strategies, while the support received by the primary caregiver was related to QoL. Coping strategies were strictly correlated with HRQoL and mood status. Especially, adaptive coping, such as the research of support social, was associated with lower levels of depressive mood and a better QoL.

Elmståhl et al. (1996) explored the relationship between personality characteristics, functional recovery, and coping strategies. They conducted an interview with 66 patients, 3 years after stroke, about the coping strategies used to manage difficult events. Personal and mental statuses were assessed by Eysenck Personality Inventory Scale (Eysenck, 1987) and the Comprehensive Psychopathological Rating Scale (CPRS; Asberg et al., 1978). Life satisfaction and QoL were measured using Lund Gerontology Center's Life Quality Questionnaire (LGC; Hagberg, 1995). Coping strategies, defined in more information seeking, participation in therapy, problem solving, and engagement in helpful activities, were identified with individual report of patients. Survivors who used active coping strategy and presented characteristics of extroversion and neurotic personality showed an improvement in activity daily life scores and in QoL 1 and 3 years after stroke event.

Tielemans et al. (2014) compared the effectiveness of a 10-week group self-management intervention with educational intervention in 106 stroke patients and their partners. The groups were focalized on the learning of proactive coping strategies. The BI was used to assess stroke severity in terms of basic activities of daily living, and the Checklist for Cognitive and Emotional Consequences was administered (Van Heugten et al., 2007). The proactive coping competencies were measured with the Proactive Competence Inventory (PCI; Thoolen et al., 2009), and participation restrictions were measured by the Utrecht Scale for Evaluation of Rehabilitation (USER)–Participation Restrictions Scale (Van der Zee et al., 2010). HRQoL was assessed with short version of the Stroke-Specific Quality-of-Life (SSQoL) Scale and six-dimensional EuroQoL (EQ-6D; Krabbe et al., 1999; Post et al., 2011). In this study, the authors considered proactive coping as a psychological variable influencing HRQoL of the stroke patients and social participation as a primary outcome of a self-management intervention.

Discussion

After stroke, many patients report a reduction in the QoL and consequently to physical, emotional, and cognitive disabilities (Clarke et al., 2002; Viitanen et al., 1988). Physical well-being seems to be the most affected component of HRQoL, and the psychological health tends to decrease after an acute episode (Sturm et al., 2004). Emotional consequences of stroke including sense of loss, disappointment of unmet recovery expectations, and difficulty in coping with dependency are associated with bad outcomes, including poorer QoL, increased risk of a second stroke, and death (Crowe et al., 2016). There is not always a direct correlation between functional disability and subjective QoL. Indeed, psychological factors may alter the perception of individual well-being regardless of disability degree. Previous studies on the stroke consequences confirmed the importance of psychological variables, highlighting the positive impact of active- and task-oriented

coping strategies on QoL. In particular, social support received and the acceptance of change of life seem to have a greater impact in the perception of individual well-being. In the reviewed studies, the variance in coping strategies after stroke was related to long-term HRQoL. Flexible or accommodative coping was associated with a higher QoL, and a better global well-being was registered after 5 months from the acute event. As described by Brandtstädter and Renner (1990), accommodative coping involves flexibly adjusting of one's goals in response to a persistent problem. The use of these strategies helped patients to adjust their goals to accommodate constraints and impairments by revising values and priorities, constructing a new meaning from the situation, and potentially transforming personal identity. In addition, active coping strategies, whether behavioral or emotional, could be good strategies to deal with stressful events. Indeed, positive association between responses designed to change the nature of the stressor and improvement of daily life activity was found after 1 year. Furthermore, both accommodative coping and active coping were related with a decrease in depressive symptoms.

Active coping strategies were associated with social support and influenced emotional aspects. The support obtained from family members was a resource which helps the patient in the disease management.

Other factors influencing the coping strategies are the individual's personality traits. In particular, extraversion had a positive impact on some aspects of HRQoL and was correlated with active coping strategies. Patients may be trained to use coping strategies in order to improve HRQoL. This review showed, for example, the importance of the proactive coping that is implemented before any stressful events. Aspinwall and Taylor (1997) have emphasized the importance of this coping style since it minimizes the total amount of stress that the patient might encounter and increases the capacity to deal problematic situations. In stroke patients, proactive coping was a psychological variable influencing HRQoL.

Our conclusions suggest that subjective well-being is related to the ability to actively manage the consequences of the disease. This result has shown similar findings in other studies on different populations where emotion-oriented coping style has been positively linked, for both men and women, with negative health variables such as anxiety, depression, and poor recovery from illness (Endler et al., 1993).

Many patients report a long-term negative consequence of stroke on their HRQoL, but this relationship remains poorly investigated. Indeed, as already mentioned, only few works in the literature have investigated the connection between coping strategies and QoL after stroke. The data from the present review suggest that specific coping strategies help to improve the well-being and could influence the recovery. Several active or behavioral strategies were reported as extremely helpful during recovery: information seeking, participation in rehabilitation, problem solving, and engagement in activities (Ch'Ng et al., 2008).

This is a very interesting result since during rehabilitation, the patients should be trained to use active coping strategies. In fact, an appropriate psychological intervention could modify coping strategies in order to optimize HRQoL during hospitalization or rehabilitative phase (Van Mierlo et al., 2014). Thus, stroke patients trained to use effective coping strategies could enhance, for example, the process of accepting the consequences of stroke and improve HRQoL (Visser et al., 2014).

Final considerations and clinical implications

This review focused on the lack of studies that explore the relationship between QoL and coping strategies after stroke. A small number of works were included in this review since only six studies met the inclusion criteria. Furthermore, only two out of the six reviewed studies employed a longitudinal design, and this is a limitation related to cross-sectional design in this research area. A meta-analysis was unable to be performed because quantitative information was not reported

in the included studies. We observed a significant weakness in the definition of QoL and a methodological variability in the qualitative and quantitative measures of HRQoL. However, there is no consensus about which instrument should be used to measure coping after stroke (Donnellan et al., 2006). Another limitation is the simple size: only a total number of 508 patients were included in the review. It contrasts with the high incidence of stroke, and therefore, the generalization of the result is limited.

Despite of these limitations, this descriptive review underlines important implications in the preventive management in rehabilitation and recovery of functional activity after stroke. More attention should be directed to psychological factors as the type of reaction to disease and post-stroke recovery. Particularly, coping skills may be considered the psychological resources necessary to improve the lives of patients severely impaired by the residual deficits of stroke. Literature data reported that an intervention could change maladaptive coping strategies in patients during rehabilitation (Backhaus et al., 2010). Training programs may increase the process of accepting the consequences of stroke and help to optimize HRQoL after stroke, if performed in the acute phase (Visser et al., 2014).

In conclusion, the data from the present review highlight the complexity of factor that influences the well-being showing important implications for clinical and research practice and suggesting that coping strategy independently contributes to psychological health after stroke. Stroke is a devastating health problem affecting numerous people every year. Furthermore, the patients who survive from stroke and live with its consequences are increasing (Teng et al., 2001). It is very important to know the impact of stroke on HRQoL as a basis for planning and evaluating therapeutic and psychological rehabilitative interventions after stroke. Future long-term intervention studies with stroke patients should investigate whether modification of the maladaptive coping strategies could really improve HRQoL.

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