

Associations between social support and stroke survivors' health-related quality of life : a systematic review

Citation for published version (APA):

Kruithof, W. J., van Mierlo, M. L., Visser-Meily, J. M., van Heugten, C. M., & Post, M. W. (2013). Associations between social support and stroke survivors' health-related quality of life : a systematic review. *Patient Education and Counseling*, 93(2), 169-176. <https://doi.org/10.1016/j.pec.2013.06.003>

Document status and date:

Published: 01/11/2013

DOI:

[10.1016/j.pec.2013.06.003](https://doi.org/10.1016/j.pec.2013.06.003)

Document Version:

Publisher's PDF, also known as Version of record

Document license:

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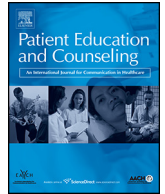
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Review

Associations between social support and stroke survivors' health-related quality of life—A systematic review



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ARTICLE INFO

Article history:

Received 11 January 2013

Received in revised form 5 June 2013

Accepted 7 June 2013

Keywords:

Stroke

Quality of life

Social support

Review

ABSTRACT

Objective: Social support to stroke survivors has been recognized as an important determinant of their health-related quality of life (HRQoL), but this relationship is not clarified to date. More insight in the relationships between various types (i.e. emotional, instrumental, or informational support) and sources (i.e. partner, children) of social support and HRQoL might target post-stroke educational and counseling interventions to strengthen patient's social networks and supportive relationships.

Methods: Systematic review.

Results: 11 original articles could be included. Most of these articles studied the overall perceived social support without further specification of type or source. They show a positive relation between perceived social support and stroke survivors' HRQoL. Relations between perceived social support and HRQoL seems to be more often significant and were stronger than relationships between specific social support types or sources and HRQoL.

Conclusion: Due to the small number of studies and the heterogeneity in methods of assessing social support, a clear statement about the specific influence of social support source or type could not be made.

Practice implications: Attention should be paid to promoting social support on the short and long term. Further research is needed to clarify the influence of social support type and source.

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1. Introduction

Stroke survivors often experience physical or cognitive disabilities [1] which may have a negative impact on their health-related quality of life (HRQoL) [2–4]. HRQoL is a broad concept, which focuses on the aspects of quality of life directly related to patients' post-stroke health. The concept of health-related quality of life is multidimensional, including different domains of one's life, such as physical, functional, mental, psychosocial and social health [2]. Demographic factors, stroke-related factors and physical impairments have been found consistent determinants of HRQoL of stroke patients [4,5]. However, these factors only explain a small part of the variance of HRQoL, and, consequently, other factors gained more attention as possible determinants of HRQoL. Social support is among these factors [2,3,6,7]. Social support can help to deal with the consequences of stroke and promote functional independence and quality of life [8]. For example, emotional support can help a person with stroke to overcome grief over, for example, the loss of mobility as a result of paralysis or the loss of communication as a result of aphasia, or may enhance self-confidence and self-efficacy by encouraging the stroke survivor [8].

Social support can be defined as any support given outside formal settings, i.e. not by health professionals or social services [6]. Langford et al. divided social support in four types: (1) emotional support, involving the provision of caring, empathy, love and trust, (2) instrumental support, including the provision of tangible goods and services (e.g. getting help to get to and from the hospital), (3) informational support, providing information (e.g. receiving advice), (4) appraisal support (e.g. involving information in the form of affirmation, feedback and social comparison) [9]. Social support can be described from a qualitative (i.e. satisfaction with social support) and a quantitative (i.e. the amount of social support, or network size) view. Another perspective is the source of social support, i.e. the partner, children, other relatives or friends. Furthermore social support can be distinguished in the received (i.e. objective) or the perceived (i.e. subjective) social support that have been offered.

In the stroke literature, only two reviews on social support are available [2,10]. The first is a narrative review describing social support as an important determinant on HRQoL, but the authors did not quantify associations between social support and HRQoL reported in the literature and did not specify social support by type or source. The second review reported the generally disappointing effectiveness of 10 social support interventions for post-stroke depression and did not investigate the effects on HRQoL [10]. These trials varied widely with regard to the types and sources of social support provided, which may have contributed to this counter-intuitive result but which could not be explored due to lack of data.

In conclusion, although HRQoL and social support have been recognized as important factors in stroke research, their inter-relationship is not clarified to date. More insight in the

relationships between various types and sources of social support and HRQoL might target post-stroke educational and counseling interventions to strengthen patient's social networks and supportive relationships [11]. The present study aims to supplement the literature by systematically reviewing the literature on relationships between social support and stroke survivors' HRQoL.

2. Methods

2.1. Search strategy

Electronic searches of the literature published up to the 8th November 2011 were performed in Pubmed, Embase, Psycinfo and CINAHL. The following search term keywords were combined: stroke (and synonyms), social support (and synonyms) and health-related quality of life (and synonyms). Details of the search are available on request. An update of the search up to March 2013 did not reveal new articles.

2.2. Selection criteria and process

Articles were included if they met the following criteria:

- (1) More than 50% of the investigated patients suffered from stroke (ischemic or hemorrhagic lesion).
- (2) The patients were ≥ 18 years at the time of stroke.
- (3) The study measured HRQoL with one or more standardized questionnaires.
- (4) The study reported quantitative relationships between social support and patients' HRQoL.
- (5) The study was an original empirical study (e.g. not an abstract, review, proceeding or letter) published in English.
- (6) The study was published in a peer-reviewed journal.

After removing duplicates, two authors (WJK and MM) independently checked the abstracts on the inclusion criteria, and compared their results. The level of agreement between the two raters was calculated using Cohen's kappa. After that and in case of disagreement, both authors reassessed and discussed that abstract until consensus was reached. The same procedure was followed for final in- or exclusion after reading the full text articles. The references of the included articles were studied to trace relevant studies not identified by the primary search.

2.3. Quality assessment

The assessment of methodological quality of the individual studies was conducted using a brief 8-point checklist [12]. The scores ranged from 0 (lowest quality) to 8 (highest quality). The assessment was conducted independently by the same authors (WJK en MM) and the level of agreement between these authors was established using the Intraclass Correlation Coefficient. After

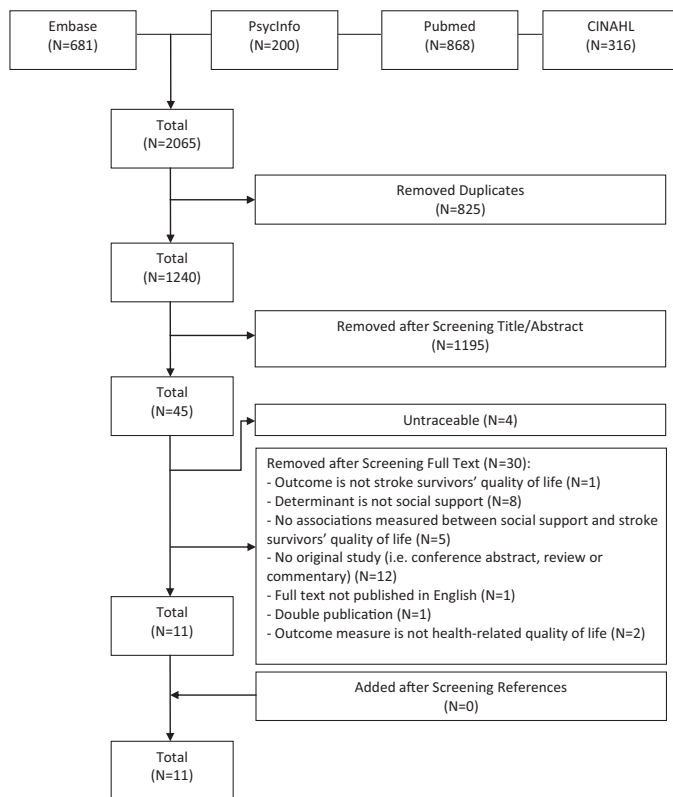


Fig. 1. Search flowchart.

calculating the ICC, consensus on a final rating was reached between both raters (WJK and MM).

2.4. Data extraction and analysis

Information on author, country, study population, sample size, follow up period, study design, assessment of HRQoL, assessment of social support, and associations between HRQoL and social support were extracted. Social support variables were classified as consistent determinants if more than one study investigated the variable, all bivariate associations reported were statistically significant and if most of these associations were higher than 0.30 (moderate) [13]. Variables were classified as inconsistent determinants if only some of the associations were statistically significant or if most significant associations were weak. Variables were classified as unrelated to health-related quality of life if all, or nearly all, associations were non-significant [12]. Due to the low number of studies retrieved and the wide range of assessment of HRQoL and social support measures used, a meta-analysis was not possible.

3. Results

3.1. Search

The search strategy yielded 2065 articles (Fig. 1). After filtering 825 duplicates, a further 1195 articles were removed after screening title and abstract. Agreement on selection of titles and abstracts between both raters was high (Cohen's kappa 0.88). Four articles that appeared eligible could not be retrieved in full text, even after contacting the authors. Of the 41 full text articles available, 11 met all inclusion criteria [3,14–23]. Screening of the reference lists did not reveal additional relevant articles. The characteristics of the 11 included studies are shown in Table 1. The

same cohort data were used in two different publications, but the statistical analysis of the data was different [15,16]. It respectively investigated the bivariate and the multivariate associations. Most studies were recently published, had a cross-sectional design, and concerned stroke in the chronic phase. Only, two studies used longitudinal data [20,23]. The various social support instruments used are displayed in Table 2. In the 11 articles ten different social support instruments were used.

Interrater agreement on methodological assessment of the individual studies was moderate (ICC 0.58). Most studies had a score between 4 and 7 out of maximum 8 points, with a moderate average score of 5.5 (Table 3).

Bivariate relationships between social support and HRQoL are shown in Table 4. In Table 4 on the left the bivariate associations and on the right the multivariate associations are reported. Most studies focused on perceived social support without further specification of type or source. Three studies [15,17,18] specified social support by type and two studies [15,20] by source. Most studies investigated amount of experienced support, one study investigated satisfaction with social support, and two studies investigated network size or (change in) contact frequency.

All included studies showed one or more significant associations between social support and HRQoL. In total, 45 bivariate correlations were tested, of which 21 were significant and 14 were >0.30 . Further, three *F*-tests were performed of which 2 were significant. Studies performing both bivariate correlations and regression analyses showed little differences between bivariate and multivariate associations. An overview of the bivariate associations by HRQoL domain, by social support domain, and finally the multivariate results is now presented.

3.2. HRQoL domains

Four articles presented associations between social support and physical and psychosocial HRQoL. These associations were similar to those between social support and overall HRQoL [3,14,17,22].

3.3. Social support domains

3.3.1. Perceived social support

Fifteen bivariate correlations between perceived social support and HRQoL were tested, of which 11 were significant and 9 were >0.30 , indicating social support as an inconsistent determinant of HRQoL. Two studies tested a subscale Socioeconomic HRQoL and reported significant correlations of 0.45 and 0.51 (not shown in Table 4) [3,22].

3.3.2. Satisfaction with social support

One study tested the correlation between satisfaction with social support and HRQoL [20]. It resulted in 4 bivariate correlations, of which 2 were significant and 1 was >0.30 . Social support satisfaction at two-weeks and three-months post-stroke was associated with better HRQoL at three months post-stroke.

3.4. Type of social support

The different types of social support were emphasized to five main categories (emotional, informational, instrumental and appraisal support and social companionship).

3.4.1. Emotional support

Six bivariate correlations between emotional support and HRQoL were tested [15,17,18]. All showed a relationship between more emotional support and better HRQoL, but only one was significant and also >0.30 [18].

Table 1
Study characteristics.

Author (date)	Study population: (a) number of participants (male) (b) mean age (SD) ^a (c) country of research	Time post-stroke	Outcome: Health-related quality of life	Determinant: Social support
Dayapoglu (2010) [14]	(a) 70 (42) (b) 50–60 year: 26 patients 61–71 year: 28 patients + 71 year: 16 patients (c) Turkey	>3 months	SF-36 – mental health subscale	Perceived Social Support from the Family Scale
Hilari (2011) [15]	(a) 83 (52) (b) 61.7 (SD 15.5) (c) United Kingdom	3.5 years (SD 3.09, range 1–20 years)	Stroke and aphasia quality of life scale -39	Medical Outcomes Studies Social Support Survey Social network (size and frequency of contacts)
Hilari (2011) [16]	(a) 83 (52) (b) 61.7 (SD 15.5) (c) United Kingdom	3.5 years (SD 3.09, range 1–20 years)	Stroke and aphasia quality of life scale -39	Medical Outcomes Studies Social Support Survey
Huang (2010) [17]	(a) 102 (58) (b) 64.9 (SD 11.8) (c) Taiwan	29.8 months (SD 73.4)	Quality of Life Index-Stroke Version	Social Support Inventory
Jaracz (2003) [18]	(a) 72 (26) (b) 65.1 (range 33–85) (c) Poland	6 months	Quality of Life Index-Stroke Version	Satisfaction with emotional support (=item 16 from the Quality of Life Index-Stroke Version)
Kim (1999) [19]	(a) 50 (58%) (b) 75 (SD 6.08) (c) Canada	12–36 months after discharge from the rehabilitation	Quality of Life Index-Stroke Version	Social Support Inventory for Stroke Survivors
King (1996) [3]	(a) 86 (45%) (b) 69 (SD 13.2) (c) United States of America	12–33 months (SD 5.5)	Quality of Life Index-Stroke Version	Social Support in the Elderly Scale
Mackenzie (2002) [20]	(a) 215 (52%) (b) 70.47 (SD 8.34) (c) China	t1: 2 weeks t2: 3 months	Sickness Impact Profile	Social Support Questionnaire short form
Manders (2010) [21]	(a) 43 (25) (b) 61.9 (SD 12.4) (c) Belgium	4 months (SD 3)	Stroke and aphasia quality of life scale -39 item version	Combination of the 'General health inquiry-Belgium' and the 'Medical Outcomes Studies Social Support Survey'
Owolabi (2010) [22]	(a) 100 (43) (b) 58.9 (SD 10.7) (c) Nigeria	>1 month	HRQoL in stroke patients questionnaire SF-36- mental health subscale	Self developed questionnaire (5-item Likert response scale)
Teoh (2009) [23]	(a) 135 (92) (b) 67.5 (SD 14.3) (c) Australia	11.7 months (SD 4.9), and ±14 months and 18 months post-stroke	Assessment of Quality of Life Stroke Impact Scale Version 3.0	Medical Outcomes Studies Social Support Survey

Only two studies used longitudinal data [20,23], the other studies used cross-sectional data.

SF-36: Medical outcomes study 36-item short form health survey.

^a Mean age combined with standard deviation was considered as preferable. If this is not reported than respectively the median or range is given.

3.4.2. Informational support

Two studies associated informational support and HRQoL [15,17], of whom one showed an significant association between more informational support and better HRQoL (<0.30) [15].

3.4.3. Instrumental support

Associations between instrumental support and overall HRQoL were reported in two studies. Inconsistent results were found: one study found a non-significant association between more instrumental support and worse HRQoL [15], whereas the other study found a significant association between more instrumental support and better HRQoL (>0.30) [17]. One study reported also a mediating effect of instrumental support between the psychosocial and physical subscale of HRQoL (not shown in Table 4) [17].

3.4.4. Appraisal support

Three bivariate correlations were tested between appraisal support and HRQoL, none of which was significant [17].

3.4.5. Social companionship

Hilari et al. [15] found a significant association between more social companionship and better HRQoL (<0.30).

3.5. Source

3.5.1. Network size

A larger network size (calculated by adding the presence of spouse/partner, number of children, number of relatives, number of friends, number of group members) was associated with a higher HRQoL (<0.20) in one study [15]. Four bivariate correlations were tested between the number of supporting persons at different moments post-stroke and HRQoL, of which 1 was significant (<0.21) [20].

3.5.2. Change of frequency

Change of frequency of contacts with children, relatives and friends was investigated in one study [15]. A change of frequency of

Table 2
Social support variables and questionnaires.

Questionnaire	Number of items	Discription	Possible answers and scoring system
Perceived social support from the Family Scale [24]	20	Statements refer to feelings and experiences which occur to most people at one time or another in their relationships with their families. No subcategories.	Yes/no/don't know. Summary score from "no perceived social support" (0) to "maximum perceived social support" (20).
Medical Outcomes Studies Social Support Survey [25]	19	Four subcategories: <i>Emotional</i> : the expression of positive affect, empathic understanding and the encouragement of expressions of feelings <i>Informational</i> : the offering of advice, information guidance or feedback <i>Instrumental</i> : the provision of material aid or behavioral assistance <i>Social companionship</i> : positive social interaction, the availability of other persons to do fun things with you <i>Affectionate support</i> : involving expressions of love and affection ^a	5-point scale going from "none of the time" (1) to "all of the time" (5). The developing authors recommend combining emotional and informational support as one category.
Social Support Inventory [17]	19	Four subcategories: <i>Emotional</i> : focusing on the individual qualities or behavior of a supporting person, including empathy, caring, love and trust <i>Appraisal</i> : affirm's one's actions or statements <i>Informational</i> : involves the provision of advice, suggestions and information that a person can use to address problems <i>Instrumental</i> : providing support in a physical way that assists and individual in meeting their role responsibilities	4-point scale going from "never" (1) to "always" (4), subscales were summed.
Satisfaction with emotional support [18]	1	Single item from the Quality of Life Index-Stroke: "How satisfied are you with the emotional support you get from others".	6-point scale from "very unsatisfied" (1) to "very satisfied" (6).
Social Support Inventory for Stroke Survivors [19]	75	Five subcategories: personal ties, family/friends, community, group and professional ties. Each subcategory includes questions that correspond to dimensions of quality, quantity and satisfaction with both quality and quantity	Total scores are generated by summing the three informational support categories (personal, family and close friends, and community individuals).
Social Support in the Elderly Scale [26]	18	Two subcategories: <i>Satisfaction</i> with various aspects of social support (9 items) <i>Importance</i> of each aspect to the subjects (9 items)	6-point scale from "very dissatisfied" (1) to "very satisfied" (6) and "very unimportant" (1) to "very important" (6). An index score is obtained by multiplying each satisfaction item with the corresponding importance item.
Social Support Questionnaire short form [27]	6	Two subcategories per item: <i>The perceived amount of social support</i> : the number of persons who the patient can count on for help or support with a maximum of nine people <i>The satisfaction</i> with the overall support the patient has.	<i>Perceived amount</i> : add all items for all persons (max 54). <i>Satisfaction</i> : 6-point scale from "very dissatisfied" (1) to "very satisfied" (6), Total score 6–36.
Combination of the 'General health inquiry-Belgium' and the 'Medical Outcomes Studies Social Support Survey' [21]	Unknown	<i>General health inquiry- Belgium</i> – not available <i>Medical Outcomes Studies Social Support Survey</i> – see above	
Self developed questionnaire [28]	Unknown	Questions on perceived support from relations and friends, access to social support, and satisfaction with support from friends.	5-item Likert response scale, an average score was calculated (not further specified by author).
Social network size and frequency of contacts [15]	2	<i>Social network size</i> : consisting of the spouse/partner, number of children, number of relatives, number of friends, number of group memberships <i>Frequency of contacts</i> : patients were asked how often they saw their children, relatives and friends compared to before the stroke	<i>Social network size</i> : adding number of persons together. <i>Frequency of contacts</i> : much less, less, the same, more, much more.

^a In our analysis affectionate support was considered as part of emotional support, because of the similarity in definitions.

Table 3
Methodological quality assessment.

Reference	Year	Internal validity	Control of drop out	External validity	Statistical validity	Proportion sample size: determinants	Multicollinearity	Confounding bias	Reporting	Total (max 8 points)
Dayapoglu [14]	2010	1	0	1	1	1	1	0	0	5
Hilari [15]	2011	1	0	1	1	1	1	0	1	6
Hilari [16]	2011	1	0	1	1	1	1	0	1	6
Huang [17]	2010	1	0	1	1	1	0	0	1	5
Jaracz [18]	2003	1	1	1	1	1	0	0	1	6
Kim [19]	1999	1	0	1	1	0	0	0	1	4
King [3]	1996	1	1	1	1	0	0	0	1	5
Mackenzie [20]	2002	1	1	0	1	1	1	0	1	6
Manders [21]	2010	1	0	0	1	1	1	0	1	5
Owolabi [22]	2010	1	0	1	1	1	1	0	1	6
Teoh [23]	2009	1	1	1	1	1	0	1	1	7

1 = Internal validity: use of validated and reliable measures, 2 = Control of patient drop out: including nonresponse analysis, 3 = external validity: specifying in/exclusion criteria and demographic characteristics, 4 = statistical validity: testing for statistical significance, 5 = adequate sample size in relation to the number of determinants (univariate ratio 20:1 en multivariate ratio 10:1), 6 = control for multilinearity, 7 = control for potential confounding variables, 8 = clearly description of main findings [12].

Table 4
Results of the bivariate and multivariate associations between social support and stroke survivors' health-related quality of life.

	Overall HRQoL			HRQoL subscale Psychosocial			HRQoL subscale Physical		
	Bivariate	Multivariate	Ref	Bivariate	Multivariate	Ref	Bivariate	Multivariate	Ref
Overall social support									
Perceived social support	0.60**		[14]						
	0.39**		[14]				0.57**	$F=2.378^{**}$	[22]
	0.17		[15]						[14]
	0.19 ^a	$\beta=0.06$	[16]						
	0.33 ^a	Unique $R^2=9\%$	[19]						
	0.48***	$\beta=0.33^{***}$	[3]	0.42 ^a	$\beta=0.24^a$	[3]	0.35 ^a	$\beta=0.23^a$	[3]
	Unique $R^2=9\%$	[21]		Unique $R^2=5\%$			Unique $R^2=4\%$		
	0.18 ^a	ns [§]	[23]						
Satisfaction with social support	0.11 ^a	Removed	[20]						
	0.09 ^b	Removed	[20]						
	0.26***,c	$\beta=-0.19^{**}$	[20]						
	0.41***,d	Removed	[20]						
Type									
Emotional	0.17		[15]						
	0.08		[17]	0.05		[17]	0.11		[17]
	0.60**	$\beta=0.36^{***}$	[18]						
		Unique $R^2=18\%$							
	0.05		[15]						
Informational	0.26 ^a		[15]						
	0.16		[17]	0.15		[17]	0.15		[17]
Instrumental	-0.06		[15]						
	0.33**		[17]	0.32**		[17]	0.30**		[17]
Appraisal	0.06		[17]	0.03		[17]	0.09		[17]
Social companionship	0.24 ^a		[15]						
Source									
Network size	0.20 ^a		[15]						
Number of supporting persons	0.13 ^a	Removed	[20]						
	0.04 ^b	Removed	[20]						
	0.12 ^c	Removed	[20]						
	0.21***,d	Removed	[20]						
Change of frequency of contacts									
	Children	$F=4.58^a$	[15]						
	Relatives	$F=3.257^a$	[15]						
Friends	$F=0.138$		[15]						

ns: not significant.

To make comparison more clear the minus sign from the Sickness Impact Profile [20] was removed. In this scale the higher the score the lower health-related quality of life. In all other scales a more positive (high) score indicates an higher quality of life and vice versa. Some subscales were more or less comparable. Therefore, the following subscales were combined: Mental [17] and Psychological [3]; Physical [17,22], Health and functioning [3] and Functional capacity [14]. Furthermore the subscale 'General Health' [14] was inserted in the Overall HRQoL. Affectionate support was considered as part of emotional support, because of the similarity in definitions.

^a Social support at 2 weeks and HRQoL at 2 weeks.

^b Social support at 3 months and HRQoL at 2 weeks.

^c Social support at 2 weeks and HRQoL at 3 months.

^d Social support at 3 months and HRQoL at 3 months.

B beta value (regression analysis), R^2 explained variance (regression analysis), F F value (analysis of variance).

* $p < 0.1$.

** $p < 0.01$.

*** $p < 0.001$.

[§] No significant relation between social support and HRQoL at 11.7 months, 14 months and 18 months post-stroke.

contact with their children and relatives was associated with a lower HRQoL.

3.6. Multivariate associations

Multivariate analyses were reported in seven publications. They were reported as adjusted and as non-adjusted explained variance and therefore, comparison was impossible. Four studies reported significant Beta values for overall perceived social support [3,19,22] or emotional support [18]. Two studies reported non-significant results [16,23] and one study reported only one significant associations out of 8 tested [20].

4. Discussion and conclusion

4.1. Discussion

This first systematic review on social support and HRQoL post-stroke shows positive, but not consistent, relations between social support and stroke survivors' HRQoL. Unfortunately, due to the small number of included studies and the heterogeneity in methods of assessing social support, a clear statement about the influence of social support source or type could not be made. It appears that the relation between social support and overall HRQoL was similar to the relation between social support and the Psychological or Physical HRQoL domains. Beside this, the relations between perceived social support and HRQoL seems to be more often significant and stronger than when social support was divided in source or type.

Approximately half of the bivariate associations were significant, indicating inconsistent results. The results of the multivariate analysis were also inconsistent. The explanation for these deviating results is unclear. Probably this is due to the large variation in study designs. Firstly, the sample size ranged from 43 to 215, which is acceptable. However, small sample size studies will show more often a non-significant result in comparison to a large sample size due to a lack of power. Secondly, the time post-stroke was variable, ranging from two-weeks to 3.5 years. Probably, the amount of social support changes over time and influences the significant associations between social support and stroke survivors' HRQoL. Thirdly, two studies included only chronic aphasia patients, which is a different population than stroke survivors in general [15,16]. Fourthly, the heterogeneous measurements used have influenced the associations. Fifthly, only one study mentioned controlling for confounders [23]. Future studies should include possible confounding variables in the statistical analyses. Possible confounding variables could be the work status of stroke survivors (employed stroke survivors might have a broader social network and a better quality of life) or educational level (highly educated stroke survivors might have better social skills and might have a better quality of life).

Nine studies were cross-sectional and only two studies used a longitudinal design. Therefore, a causal-effect direction could not be established. More longitudinal studies are needed to study the course of social support over time, changes in associations between social support and HRQoL over time, and causal connections.

The exact pathway through which social support influences HRQoL is still unclear, but several theoretical models have been proposed. Uchino theorized that social support and physical health (morbidity and mortality) are linked by two different pathways [29]. The first pathway involves behavioral processes, like health behaviors and adherence to medical regimens. Social support would be health-promoting by facilitating healthier behaviors like exercise, diet, not smoking etc. The second pathway involves psychological processes that are linked to appraisals, emotions or moods, and feelings of control [29].

Two other theoretical models that have been put forward to explain the effect of social support are the 'main effect model' and the 'stress-buffering model'. The main effect model suggests that, regardless of the level of stress, high levels of support promote general good health and therefore less risk of developing illness [6,7,30]. The stress-buffering model acts by an indirect way. Social support buffers or compensates the negative effect of stress, thereby lessening the risk of developing illness or speeds recovery after illness [6,7,30]. In this review, most studies implicitly used the direct effects model, although a mediating or buffering effect of instrumental support on HRQoL was found in one study [17]. This is consistent with literature of other diseases, like chronic pain [6] and heart diseases [31,32].

Even if the exact pathway in which social support influences HRQoL is still unclear and no studies examined causal pathways, our review shows that 21 out of the 45 bivariate correlations that were tested were significant, of which 14 were >0.30 . Therefore, the results of this review show that it is reasonable to assume that promoting social support improves HRQoL. In a narrative study on the long-term needs of stroke survivors [33], emotional and practical support was a key facilitator of functioning, buffering the reported impact of disabilities and mediating perceived needs. Lack of support was mentioned as a barrier to maintain independence in activity of daily living and social participation.

Although maintaining an adequate social network is important, it can be a major challenge for stroke survivors. The consequences of stroke in many different health aspects, like cognitive or behavioral changes, chronic fatigue, communication and mobility problems make maintaining a social network more difficult. Supporting a stroke survivor can be burdensome [34] and social contacts seems to decline over time. Three years post-stroke, elderly stroke survivors maintained their contacts with their children, but they had fewer contact with friends and neighbors in comparison with a general population of similar age [35]. One study in our review investigated the changes in frequency of contacts post-stroke in comparison with the situation before stroke [15], and surprisingly showed that more frequent contacts with children or relatives was negatively associated with HRQoL. It is possible that this increase in contacts is elicited by dependence on others after a severe stroke. More social support could also be the result of overprotection (i.e. providing too much support), unintended support failures (i.e. when the intention is good, but the effect is not helpful at all) or when a support relationship is otherwise a source of conflict or tension [36]. Stroke survivors who saw their children or relatives in the same frequency had the highest HRQoL.

4.1.1. Limitations of this systematic review

Firstly, the search strategy used in this review was comprehensive, with a wide-ranging search of electronic databases, supplemented by hand-searches of the reference lists. However the review included only studies written in English. Relevant studies in other languages might have been neglected, although the included articles were produced worldwide and represented a diversity of populations.

Secondly, only few studies could be included. Consequently, it was impossible to classify all social support variables as either consistent, inconsistent or unrelated determinants of HRQoL [12]. A meta-analysis was not possible for the same reason.

Thirdly, the heterogeneity in methods of assessment and types of social support made between study comparisons and overall conclusions difficult.

Fourthly, this review focuses only on HRQoL and excluded depression or participation. In our view these subjects are different from HRQoL, so that they require an own systematic review.

4.2. Conclusion

Social support is significantly associated with stroke survivors' HRQoL. The subtype emotional support is most often investigated and shows the strongest relationships with HRQoL in contrast to the subtypes informational, instrumental and appraisal. Although, (a) the evidence is inconsistent due to the small number of studies and its heterogeneity in designs, (b) the specifications by type or sources are not well investigated, this has implications to clinical practice both in the subacute phase (rehabilitation phase) as in the chronic phase (community level).

4.3. Practice implications

Social support should be an substantial aspect of the acute and chronic rehabilitation program. Individual professionals in primary and secondary care should discuss social support with stroke survivors, like the different possibilities of social support (i.e. types and sources), the importance of gaining and maintaining an adequate social network, and how to maintain this network.

Furthermore, attention should be paid to promoting social support on the short and long term. Social support from family and friends can overcome fear and loss of self-esteem [37]. It can reduce the gap between functional abilities and task demands in order to improve HRQoL and participation [37]. One possible way to promote social support is by making interventions more targeted. These interventions should involve the social networks in a broad spectrum, for instance by promoting support networks through family or friends, a patient organization or voluntary bodies. Interventions should not focus on increasing the frequency of contacts, but on increasing the quality of it. Until nowadays, as Salter et al. showed in their review, most intervention programs focus on practical help and providing information [10], whereas our review shows that the subtype emotional support is most often investigated and shows the strongest relationships in comparison to the subtypes informational, instrumental and appraisal.

Further research should focus on larger study groups; and should gain in uniformity of the social support and health-related quality of life questionnaires. A social support questionnaire which subdivides social support by source and/or type would be preferable, such as the Medical Outcomes Social Support Survey [25]. Furthermore, possible confounding variables should be defined. Most of the studies insert all significant variables in their multivariate analysis without any hypothesis about which variables could be confounders. A longitudinal design is recommended to clarify the cause-effect relation. It would also be useful to measure the pre-stroke situation of social support to reveal changes over time.

Conflict of interest

None.

Acknowledgements

None.

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