

# The effect of perceived forgetfulness on quality of life in older adults: a qualitative review

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# The effect of perceived forgetfulness on quality of life in older adults; a qualitative review

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## SUMMARY

**Background** Approximately 50% of older individuals perceive themselves as being forgetful.

**Objective** The objective of this review is to get an overview of previous research on the relation between perceived forgetfulness (in the absence of objective memory deficit) and quality of life in older individuals. Findings in previous research might be a starting point for further research and possible future interventions.

**Methods** Scientific papers that investigated the relation between subjective memory complaints and quality of life were searched. Two independent raters scored the articles on their methodology. The methodological quality was taken into account when conclusions were drawn.

**Results** The literature search resulted in 682 articles, of which five studies met the inclusion criteria. Although the five studies differed in their methodology, the findings of the methodologically adequate studies show a relation between memory complaints and a diminished quality of life in the elderly.

**Conclusions** The negative impact that subjective memory complaints can have on quality of life makes it important to acknowledge forgetfulness as a serious issue in the life of older individuals. However, more research is needed to explore the relationship between subjective memory complaints and quality of life, also with regard to the influence of depression and objective memory performance. Copyright © 2006 John Wiley & Sons, Ltd.

**KEY WORDS**—memory complaints; well-being; quality of life; forgetfulness; literature search; review

## INTRODUCTION

Complaints about forgetfulness and diminishing memory function are very common among older people (Blazer *et al.*, 1997; Ponds *et al.*, 1997). The prevalence of memory complaints in community-based samples of older people varies from approximately 25% to over 50% (Jonker *et al.*, 2000). In the Maastricht Aging Study the prevalence of forgetfulness in the 55–65 age group was 41%, and in the 70–85 age group the prevalence was 52% (Ponds *et al.*, 1997). Approximately 60% of the middle-aged individuals perceive much hindrance from their forgetfulness, and approximately 70% are very

worried about it (Commissaris *et al.*, 1998). However, not much attention is given to the impact that memory complaints, even when only subjective, can have on someone's quality of life, although complaints about forgetfulness and diminishing memory function are very common among older people. An overview of previous research is needed to get insight into the relation between perceived forgetfulness and a person's quality of life. Findings in previous research might be a starting point for further research and possible future interventions.

In order to get an overview of the results of previous studies on the relation between being forgetful and quality of life in older people, we performed a search in the relevant literature. The identified studies were scored on their methodological quality, which was taken into account when conclusions were drawn. Forgetfulness and subjective memory complaints were used interchangeably in this review. Being forgetful in

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this paper was regarded as having subjective memory complaints in the absence of an objective deficit. Furthermore, the focus of quality of life in this review was to look at a broad span of quality of life, including life satisfaction and well-being. Symptoms of depression and anxiety were included when it was part of the quality of life or well-being scale.

## METHODS

### *Literature search*

The publications involved in this study were retrieved by computerized searches of PubMed (1966 to February 2006), PsycINFO (1966 to February 2006) and Embase (1986 to February 2006). The following search strategy and key words were used: ['age' or 'elderly' or 'aging'] and ['quality of life' or 'well-being'] and ['memory' or 'subjective memory complaints' or 'memory complaints' or 'forgetfulness']. The databases were also searched with different spelling forms of these words. After obtaining all relevant papers, the references of these studies were hand searched to find additional potentially relevant papers.

To be selected for this review, studies had to meet all of the following criteria: (a) the participants examined in the study were healthy older people with subjective memory complaints, but with no objective cognitive disorder such as dementia; (b) the study measured the relation between subjective memory complaints and the participants' quality of life or well-being; (c) the study was not an intervention study, to prevent that the intervention would confound the relation between subjective memory complaints and quality of life. However, articles that examined a cross-sectional relation on baseline-date were included; (d) the article was a full report of the study; (e) the paper was published in English. The studies that were expected to meet all the inclusion criteria on the basis of the title or, if available, the abstract, were obtained.

### *Quality assessment of selected studies*

The methodological quality was assessed according to standardized methodological criteria (De Vet *et al.*, 1997). A list of 13 criteria divided into four methodological items of an observational study was constructed, including research population and study design, measurement instruments, and data analyses and presentation (Appendix 1). Maximum scores were

determined beforehand, with more important criteria receiving relatively higher scores. A maximum score of 43 could be obtained per study.

Two raters, who were not involved in the development of the methodological criteria list, independently applied the criteria to all selected articles. The raters received a brief instruction to prevent misinterpretation of the criteria. Such an instruction increases the consistency between the raters, which might increase the reliability of this qualitative review (Lipsey and Wilson, 2001). To prevent bias, all reviewed articles had the author(s), journal, year of publishing, name and location of institute, and acknowledgements removed. Inconsistencies in the assessments of both raters were identified and discussed during a consensus meeting. The final scores for the papers were then summed. The studies were ranked according to these total scores, resulting in a hierarchical list in which a higher score means a higher considered methodological quality of the study. Methodological ratings were based solely on material presented in the article. Some studies may therefore have been under-rated if authors failed to mention important details of the study.

## RESULTS

### *Literature search*

The search resulted in 682 articles (292 in Pubmed, 188 in PsychINFO, and 202 in Embase). These 682 articles were searched to establish whether they met the inclusion criteria on the basis of their title and abstract. This resulted in the identification of 15 articles (Capi and Elder, 1986; Steen *et al.*, 1987; Derouesné *et al.*, 1989; Deeg *et al.*, 1992; McDougall, 1994; Neri *et al.*, 1995; Wolters *et al.*, 1996; Bazargan and Bazargan, 1997; Kim and Mueller, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000; McDougall *et al.*, 2003; Starr *et al.*, 2003; Bryan and Calvaresi, 2004). Subsequently, these 15 articles were obtained and nine of these 15 articles were found not to meet our inclusion criteria. Three articles did not assess the impact of subjective memory complaints on the participants' quality of life (Neri *et al.*, 1995; Wolters *et al.*, 1996; Bryan and Calvaresi, 2004). Four articles measured objective memory, but did not measure subjective memory complaints (Capi and Elder, 1986; Steen *et al.*, 1987; Deeg *et al.*, 1992; Starr *et al.*, 2003). Two articles did not measure quality of life (McDougall, 1994; McDougall *et al.*, 2003).

Six articles met the inclusion criteria. One of these studies (Kim and Mueller, 1997) was a case report. Four cases were selected from a sample of 107 Korean American older adults, with the specific intent of providing a more comprehensive understanding of the relationship between memory self-efficacy and well-being. Each case showed a unique pattern of interplay of these cognitive and affective variables. Two cases support the relationship between memory complaints and quality of life, while the other two contradicted the relationship. However, the number of cases studied is too small and the selection method is too prejudiced to generalize the findings of this study. We therefore chose to exclude the article from this review. Ultimately, five articles were included in this review (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000) (see also Table 1).

#### *Methodological quality*

The raters' scores were similar on 35 of the 65 aspects (13 aspects and five articles; 54%). The results of the methodological assessment can be found in Table 2. All five papers presented here scored above 60%; (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000). The mean methodological quality score was 31 (72% of the total score of 43). The scores ranged between 26 (60%) and 34 (79%), showing that the studies were of moderate to high methodological quality. The most common shortcomings were the description of the study population and design. Descriptions of the instruments used to measure subjective memory and quality of life were adequate, as were the descriptions of the statistical analysis and the presentation of the data.

#### *Relation between subjective memory and quality of life*

Table 1 presents the study characteristics of the five included studies. There was a wide variety in study design and instruments used to measure the participants' subjective memory complaints and well-being. One study used life satisfaction scales to measure quality of life (Commissaris *et al.*, 1998), three studies used well-being questionnaires (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Derouesné *et al.*, 1999) and one study used a life satisfaction scale in

combination with a depression scale as a measure of well-being (Verhaeghen *et al.*, 2000). Subjective memory function was measured with subjective memory scales (Derouesné *et al.*, 1989; Derouesné *et al.*, 1999), memory functioning questionnaires (Bazargan and Bazargan, 1997), meta-memory scales (Verhaeghen *et al.*, 2000) and a single item question (Commissaris *et al.*, 1998).

All five identified studies reported a relation between subjective memory problems and lower quality of life in older adults (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000). The first study (Derouesné *et al.*, 1999) found a correlation of  $r = -0.33$  ( $p < 0.001$ ) in the young (20–49 years) and  $r = -0.28$  ( $p < 0.001$ ) in the older (49–85 years) age group between subjective memory complaints and well-being. They conducted a multivariate stepwise regression and found that well-being ( $F_{2,180} = 14.7$ ) together with anxiety ( $F_{1,181} = 22.6$ ) were related to subjective memory complaints ( $p < 0.001$ ). The second study (Commissaris *et al.*, 1998) compared participants who considered themselves forgetful with participants who had no complaints about their memory. The average score of the forgetful participants on the questionnaire to measure satisfaction with life was 38.9 and that of the non-forgetful participants was 40.4 (range 15–45). After performing a *t*-test, it appeared that participants who were forgetful were less satisfied with life ( $t = 5.5$ ,  $p < 0.001$ ). In the third study, an earlier study from Derouesné *et al.* (1989), they also found that memory complaints were strongly related with low scores in the well-being questionnaire. However, depression and not well-being was the unique variable related to severity of memory complaints. The mean score of participants with minor memory complaints on the questionnaire to measure well-being was 74.5 ( $\pm 13.4$ ) and of participants with major memory complaints was 68.8 ( $\pm 16.2$ ) (range 0–110). No values of the analysis were reported in the paper. The fourth study (Bazargan and Bazargan, 1997) found a correlation of  $r = 0.43$  ( $p < 0.001$ ) between self-reported memory functioning and well-being. They also analysed the predictive value of subjective memory complaints on measures of well-being and found that self-reported memory function was the strongest predictor of psychological well-being ( $\beta = 0.25$ ,  $p < 0.001$ ) after conducting multiple regression analysis. Finally, the fifth study (Verhaeghen *et al.*, 2000) reported a path analysis performed with LISREL 8. In the final model, well-being received a total effect of 0.20 of the coping variable,

Table 1. Characteristics of included studies

Study	Sample	Instruments measuring memory complaints	Instruments measuring quality of life	Outcome	Relation
1. Derouesné <i>et al.</i> , 1999	<i>N</i> = 260 Age range; 20–49 and 49–85 Self-referrals EC: GCS $\leq$ 90	SMS	WBQ	In the oldest age group, a significant negative correlation was found between subjective memory complaints and WBQ (Pearson correlation = $-0.28$ , $p < 0.01$ ). Well-being as well as anxiety were related to subjective memory complaints ( $F_{2,180} = 14.7$ and $F_{1,181} = 22.6$ respectively)	+
2. Commissaris <i>et al.</i> , 1998	<i>N</i> = 1971 Age range; 25–85 Community based EC: Dementia, overt cerebrovascular disease	Single-item question	SWLS	Participants who were forgetful were less satisfied with life ( $t = 5.5$ ; $p < 0.01$ )	+
3. Derouesné <i>et al.</i> , 1989	<i>N</i> = 367 Age range; 50–80 Self-referrals EC: Organic cerebral disorder	SMS	WBQ	Severity of memory complaints was strongly related to low scores in the WBQ. However, depression and not well-being was the unique variable related to severity of memory complaints	+
4. Bazargan and Bazargan, 1997	<i>N</i> = 998 Age range; 62–99 Community based	MFQ	PGC Morale Scale	Memory functioning is significantly related to psychological well-being ( $r = 0.43$ , $p < 0.001$ ). Memory functioning was the best predictor of psychological well-being ( $\beta = .25$ , $p < 0.001$ )	+
5. Verhaeghen <i>et al.</i> , 2000	<i>N</i> = 179 Age range; 49–97 Community based	MIA	Combination of LSI and CES-D	Coping with memory complaints and experiencing low frequency of complaints (high memory capacity) is related to a better well-being (relation in model 0.20 and 0.18 respectively)	+

CES-D = Center for Epidemiologic Studies-Depression-Scale; EC = Exclusion Criteria; GCS = Global Cognitive Score; LSI = Life Satisfaction Index; MCI = Memory Controllability Inventory; MFQ = Memory Functioning Questionnaire; MIA = Meta-memory in Adulthood; PGC = Philadelphia Geriatric Centre; SMS = Subjective Memory Scale; SWLS = Satisfaction with Life Scale; WBQ = Well-being Questionnaire; + = Relation found between forgetfulness and memory complaints.

0.14 of the locus of control variable, 0.12 of the capacity variable, 0.10 of the change variable, 0.06 of the seriousness variable and 0.03 of the anxiety variable. The total effect of each of these variables on well-being is the sum of all direct and indirect effects from the variable to well-being through all possible paths linking the two.

In summary, all studies reported a relation between subjective memory complaints and lower quality of

life. In addition, one study reported that depression and not well-being was the unique variable related with severity of memory complaints.

## DISCUSSION

Five papers on the relation between subjective memory complaints and quality of life fulfilled the



Table 2. Methodological quality of the five included studies

Criterion	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Total	%
Max score	6	6	2	6	2	3	2	3	2	3	2	2	4	43	100
Incl. studies:															
1. Derouesné <i>et al.</i> , 1999	6	3	1	4	0	3	2	3	2	3	2	1	4	34	79%
2. Commissaris <i>et al.</i> , 1998	6	2	1	6	0	2	2	3	2	3	0	2	4	33	77%
3. Derouesné <i>et al.</i> , 1989	6	3	2	4	0	3	2	0	2	3	1	2	4	32	74%
4. Bazargan and Bazargan, 1997	1	3	2	6	0	3	2	3	2	3	0	1	4	30	70%
5. Verhaeghen <i>et al.</i> , 2000	1	3	0	4	2	3	2	3	0	3	0	1	4	26	60%
Mean	4.0	2.8	1.2	4.8	0.4	2.8	2	2.4	1.6	3	0.6	1.4	4	31	72%
% of max. score	67%	47%	60%	80%	20%	93%	100%	80%	80%	100%	30%	70%	100%	72%	

A<sub>1</sub> = description of research population and selection criteria; A<sub>2</sub> = description of cases/controls; A<sub>3</sub> = participation rate; A<sub>4</sub> = study size; A<sub>5</sub> = measures against reactivity; B<sub>1</sub> = validity of memory measure instruments; B<sub>2</sub> = number of memory aspects measured; C<sub>1</sub> = validity of quality of life measure instruments; C<sub>2</sub> = number of quality of life aspects measured; D<sub>1</sub> = data presentation; D<sub>2</sub> = corrections for relevant confounders; D<sub>3</sub> = description of significant effects and effect sizes; D<sub>4</sub> = use of statistical methods.

inclusion criteria (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000). The methodological quality of the studies was moderate to high, considering the mean of 31 out of 43 points (72%). All identified studies confirmed the existence of a relation between forgetfulness and a lower level of well-being (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Commissaris *et al.*, 1998; Derouesné *et al.*, 1999; Verhaeghen *et al.*, 2000).

One of the five studies confirmed that memory complaints were strongly related to low well-being, but found that symptoms of depression, and not well-being, was the unique variable related to severity of memory complaints (Derouesné *et al.*, 1989). Additionally, Derouesné *et al.* (1999) found that symptoms of anxiety together with well-being was related to subjective memory complaints. The finding that depression and anxiety are related to subjective memory complaints is a plausible finding, because negative affect and mood are often seen as a part of well-being (Felce *et al.*, 1995; Diener *et al.*, 1998). Furthermore, previous research has shown that subjective memory complaints are associated with symptoms of depression (Ponds *et al.*, 1997) and anxiety (Comijs *et al.*, 2002). Thus, symptoms of depression seem to be related to both perceived forgetfulness and quality of life. The relation between forgetfulness and quality of life might therefore be mediated by symptoms of depression.

Another way to explain the relation between subjective memory complaints and diminished well-being might be the fear of dementia that is induced

by individuals with perceived forgetfulness. Many individuals are afraid that their subjective memory complaints are a sign of early dementia (Commissaris *et al.*, 1994). However, there is no conclusive support that subjective memory complaints are strong predictors of incipient dementia. Whereas several studies failed to find a relationship between subjective memory complaints and objective performances (Bolla *et al.*, 1991; Jorm *et al.*, 1997), others did report an association between subjective memory complaints and diminished cognitive performance (Jonker *et al.*, 2000; Jorm *et al.*, 2001). Therefore, it cannot be precluded that the relation between perceived forgetfulness and low well-being is actually resulting from an incipient neurodegenerative disorder such as Alzheimer's disease. Another explanation for the relation between forgetfulness and quality of life might be that a diminished quality of life is causing forgetfulness, and not that forgetfulness is causing the diminished quality of life. However, more research is needed to determine the causal relation between these two factors.

Overall, all five studies are in line with a possible relationship between memory complaints and a low quality of life. These findings appear to be robust because the five studies are characterized by a wide variety of instruments. One study used life satisfaction scales to measure participants' quality of life (Commissaris *et al.*, 1998), three other studies used well-being questionnaires (Derouesné *et al.*, 1989; Bazargan and Bazargan, 1997; Derouesné *et al.*, 1999) and one study used a life satisfaction scale in combination with a depression scale as a measure of

well-being (Verhaeghen *et al.*, 2000). Variation was also found in the measurement of subjective memory function, which was measured with subjective memory scales (Derouesné *et al.*, 1989, 1999), memory functioning questionnaires (Bazargan and Bazargan, 1997), and meta-memory scales (Verhaeghen *et al.*, 2000).

Considering the methodological issue of this review, there seems to be a lack of longitudinal studies on the effect of self-reported memory function on the well-being of older individuals. Future research should consist of properly designed studies that focus on the longitudinal effects of memory complaints on well-being. This might give more insight in the causal relation between memory complaints and quality of life. It might be that the memory complaints are not influencing someone's well-being but that poor well-being is causing the subjective complaints. Furthermore, the effect sizes of the results were not profoundly discussed in the studies. More research is needed to give insight in the clinical significance and importance of the relationship between quality of life and subjective memory complaints. Another topic of interest for further research could also be the different impact of a more serious cognitive impairment, such as MCI and dementia, on someone's quality of life. Previous research has shown that an objective cognitive disorder is not always associated with a diminished quality of life, as is reported in several studies (Ready *et al.*, 2004; Comijs *et al.*, 2005; Katsuno, 2005; Selwood *et al.*, 2005). This is contradictory to the expectations of healthy individuals without a cognitive dysfunction (Patrick *et al.*, 1994). The fear of developing dementia, which is often underlying the subjective memory complaints, might have a major impact on quality of life. However, more research is needed before conclusions can be drawn. The findings of the present study emphasize the impact that perceived forgetfulness can have on quality of life. Apparently, individuals with perceived forgetfulness are a population at risk to low well-being. It might, therefore, be important to design health educational activities and psycho-educational interventions for individuals with subjective memory complaints to reduce the memory complaints and improve quality of life.

It should be noted that this review included a relatively small number of articles because few studies were available on the relation between subjective memory function and well-being. However, to our knowledge all published articles on the relation between subjective memory complaints and

quality of life were included. We are reasonably confident that we did not miss relevant articles because we searched Pubmed, PsychINFO as well as Embase, made use of a combination of search terms covering a wide range of the field, and the selected articles were hand searched to find additional relevant papers. Because no other literature was available, this review provides a complete overview of the studies concerning forgetfulness and well-being. It should also be noted that two studies did not explicitly state that individuals with objective cognitive dysfunction were excluded from the study population (Bazargan and Bazargan, 1997; Verhaeghen *et al.*, 2000). However, it is not probable that participants with dementia or other cognitive dysfunction were present in these studies, because only healthy individuals were investigated in the studies.

In summary, the findings of the five methodologically adequate studies suggest a relation between memory complaints and a lower quality of life of older individuals, even though there is a substantial heterogeneity in the methodology of the studies. This finding emphasizes that memory complaints are related to a negative quality of life. It is therefore important to acknowledge subjective memory complaints as a serious issue. However, more research is needed to explore the relationship between subjective memory complaints and quality of life, especially with regard to the influence of depression and objective memory performance. In addition, further research should be conducted to investigate the longitudinal effect of memory complaints on someone's quality of life in more detail.

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## APPENDIX 1

List of criteria for the methodological assessment of observational research.

Criteria	Obtainable points	Score
A Research population and design	22	—
1. Have the research population and the applied inclusion and exclusion criteria been described?	6	
2. Have the differences and similarities between cases and controls been described? For example education, age, sex, social-economic background, self-referral/Are the differences between the groups described?	Only cases in the study (well described): 3 Cases and controls (well described): 6	
3. What is the participation rate of the study?/How many summoned people actually participate in the research?/Have measures to prevent selection bias been taken?	Participation rate 50–80%:1 Participation rate >80%:2	
4. Is the study size of the research sufficient?	Total $n > 56$ :2 Total $n > 128$ : 4 Total $n > 788$ : 6 Power analysis performed: 6	
5. Have measures to prevent reactivity been taken?	2	
B Measurement of memory complaints	5	—
1. Has the validity and reliability of the measurement instruments been determined (in an earlier or in the same article)?	3	
2. Are several aspects of memory complaints measured?	2	
C Measurement of quality of life	5	—
1. Has the validity and reliability of the measurement instruments been determined (in an earlier or in the same article)?	3	
2. Are several aspects of quality of life measured?	2	
D Analysis and data presentation	11	—
1. Are the data clearly and fully presented?	3	
2. Has the analysis been corrected for relevant 'confounders'?	2	
3. Has, besides the statistical significance, the clinical significance/effect size also been described?	2	
4. Have statistical methods been used in an appropriate manner?	4	
Total number of obtained points	43	