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Purpose in life among very old people

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ABSTRACT

The aim of this thesis is to explore purpose in life among very old people. The proportion of elderly is increasing in Sweden, especially among the group of very old aged over 85 years. Ageing has been associated from some perspectives with health, wisdom, maturity, and inner strength. Ageing can also, however, lead to reduced physical function, cognitive impairments, and loss of purpose in life. A loss of purpose in life can lead to mental health problems such as depression. This thesis is part of the Umeå 85 + study/GERDA begun in 2000. Half of all 85-year-olds, all 90-year-olds, and all those 95 years of age or older living in the municipality of Umeå were invited to the larger study, which was expanded in 2002 to include five rural municipalities in Västerbotten County with the same inclusion criteria. The Umeå 85 + study/GERDA is a collaborative project between several departments at Umeå University.

Selection criteria for participants in the thesis were the ability to answer Likert-type questionnaires and the ability to participate in interviews. A follow-up study was conducted in Umeå in 2005 and in Västerbotten County in 2007. Paper I is a cross-sectional study with 189 participants (120 women and 69 men) who had responded to several questionnaires including the Purpose in Life test (PIL). In the results women scored significantly lower on the PIL test than men; attitudes towards one's own aging were associated with purpose in life for both men and women; and musculoskeletal disorders were associated with lower purpose in life in women. Paper II includes the 189 participants from study I. In results at baseline the 40 who were diagnosed with depression had significantly lower purpose in life, and women were diagnosed with depression more often than men (32/120 women and 8/69 men). The 40 participants with a diagnosis of depression were excluded five years later, when 78 of 149 participants were available for the follow-up, 21 of whom (26.9%) had developed depression. There was no difference in the mean scores on the PIL test between those who had developed depression and those who had not. Purpose in life does not seem to protect very old people from developing depression.

Paper III includes 51 people who responded to the PIL test on two occasions five years apart, and its results show that purpose in life decreased after five years. There was no difference in mean PIL scores at baseline between those with a diagnosis of depression and those without depression, but purpose in life declined significantly over the five years in those with diagnosed depression. In study IV, to gain a deeper understanding of purpose in life, content analysis was conducted on interviews from 30 women. To obtain

variety and breadth in the stories we selected 10 women with low estimated purpose in life, 10 women with undecided estimated purpose, and 10 women with high estimated purpose in life. The results show that despite the fact that women estimated their purpose in life lower than men, their stories were positive. The women experienced purpose in their daily life where social relations was important and on a spiritual level. However, there were also expressions of experiencing life as simply existing. In Study V we included 23 men who had responded to a question about purpose in life. Their answers were subjected to content analysis and the results show that for men work is an important part of purpose in life. All men except one had a positive outlook on life, and the men found purpose in life most strongly in memories of when they were younger.

Lack of purpose in life can result in mental disorders like depression. Stereotypes of older people can affect their views of their own ageing, which in turn can weaken their purpose in life. To prevent mental illness it is important to experience purpose in life throughout life. Society at large and the health care system must consider purpose in life integral to mental health and work to combat ageist stereotypes to support purpose in life through the entire lifespan.

Key words: Purpose in life, very old, depression, gender, ageism.

SAMMANFATTNING/SWEDISH SUMMARY

Det övergripandet syftet med avhandlingen är att utforska livsmening hos de allra äldsta. Andelen äldre ökar i Sverige, och de allra äldsta över 85 år har under åren 1990-2007 ökat med 40 %. Att åldras har beskrivits från olika perspektiv som att ha hälsa, mogna till visdom samt att ha inre styrka. Att åldras kan också innebära en försämrad rörelse förmåga, kognitiva nedsättningar samt förlust av livsmening. En förlust av livsmening kan leda till psykisk ohälsa vilket kan leda till depression. Avhandlingen är en del av Umeå 85+ studien/GERDA vilken utgår från Umeå och startade år 2000. Hälften av alla 85 åringar, alla 90 åringar samt alla som var 95 år och äldre boende i Umeå kommun inbjöds till studien. Studien utvidgades år 2002 med att innefatta fem inlandskommuner i Västerbottens län med samma urvalskriterier. Umeå 85+ studien är ett samarbets projekt mellan ett flertal institutioner vid Umeå Universitet. Urvalskriterierna för deltagarna i avhandlingen var att de skulle kunna svara på frågeformulär av Likert karaktär samt att de skulle orka delta i intervjuer. En uppföljning genomfördes år 2005 i Umeå kommun samt år 2007 i Västerbottens inland.

Delarbete I är en tvärsnitt studie och innefattar 189 personer fördelat på 120 kvinnor och 69 män, alla deltagarna hade svarat på ett flertal frågeformulär varav ett av formulären var test för livsmening. Resultatet visar att kvinnor skattar livsmeningen signifikant lägre än män. Egna attityder mot åldrande var starkast associerat med livsmening för både kvinnor och män, för kvinnor var även muskelosketal besvär associerat med lägre livsmening. Delarbete II innefattar vid baslinjen de 189 personerna från studie I. Resultatet vid baslinjen visar att de 40 deltagarna av de 189 deltagarna som var diagnostiserade som deprimerade hade signifikant lägre livsmeningen. Kvinnor var diagnostiserade som deprimerade i högre utsträckning än män (32 kvinnor och 8 män). De 40 deltagarna med en depressions diagnos uteslöts och ingick inte i analysen 5 år senare. Efter 5 år fanns 78 personer av 149 deltagare tillgängliga, av dem hade 21 personer (26.9%) utvecklat depression, det var ingen skillnad mellan män och kvinnor i andelen som utvecklade depression. Det var ingen skillnad i medelvärde på test för livsmening bland de som hade utvecklat depression efter 5 år jämfört med de som inte utvecklat depression. Det förefaller som att livsmening inte skyddar riktigt gamla människor från att utveckla depression. Delarbete III innefattar 51 personer vilka svarat på test för livsmening vid två tillfällen med 5 års mellanrum. Resultatet visar att livsmeningen minskar efter 5 år i högre grad bland kvinnorna jämfört med

männen. Det var ingen skillnad i medelvärde i livsmening vid baslinjen mellan de som hade en depression diagnos och de som inte hade en, men bland de med en depressions diagnos hade livsmeningen minskat signifikant efter 5 år. För att fördjupa kunskapen om livsmening analyserades intervjuer från 30 kvinnor med hjälp av innehållsanalys i delarbete IV. För att få en variation i berättelserna valdes 10 kvinnor som skattat livsmeningen som låg, 10 kvinnor som skattat livsmeningen som medel samt 10 kvinnor som skattat livsmeningen som hög. Kvinnornas berättelser om att åldras och vara gamla var positiva. De upplevde livsmening i både vardagen där sociala relationer var viktiga samt i kontakt på ett andligt plan. Det uttrycktes även i berättelserna att det inte fanns någon livsmening.

I delarbete V ingår 23 män vilka alla hade svarat på en fråga om livsmening, svaren analyserades med hjälp av innehålls analys och resultatet visar att för männen var arbete en viktig del för livsmening. Alla utom en man hade en positiv syn på livet, männen berättade om livsmening främst i relation till minnen från när de var yngre. Sammanfattningsvis visar studierna att inte uppleva livsmening kan resultera i psykisk ohälsa vilket kan leda till depression. Livsmening måste beaktas både i samhället och i sjukvården för att förebygga psykisk ohälsa. Det är av stor betydelse att uppleva livsmening under hela livet samt att samhällets syn på äldre människor är sannolikt en viktig aspekt för att de allra äldsta ska uppleva livsmening.

ABBREVIATIONS

ADL	Activities of Daily Living
CI	Confidence Interval
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th . Edition
GDS- 15	Geriatric Depression Scale-15
GEE	Generalized Estimating Equations
GERDA	GErontological Regional Database
GQL	Göteborg Quality of Life Instrument
m	mean value
MADRS	Montgomery-Åsberg Depression Rating Scale
MMSE	Mini Mental State Examination,
MNA	Minimal Nutritional Assessment
OBS	Organic Brain Syndrome Scale
OR	Odds Ratio
PGCM	Philadelphia Geriatric Center Morale Scale
PIL	Purpose in Life test
SD	Standard Deviation
SF-36	Short-Form Health Survey
SPSS	Statistical Package for Social Sciences®
WHO	World Health Organization

ORIGINAL PAPERS

This dissertation is based on the following papers, which will be referred to in text by their Roman numerals (I-V).

I. Hedberg, P., Gustafson, Y., & Brulin, C. (2010). Purpose in life among men and women aged 85 years and older. *International Journal of Aging and Human Development*, 70 (3), 213-229.

II. Hedberg, P., Gustafson, Y., Al  x, L., & Brulin, C. (2010). Depression in relation to purpose in life among a very old population. A five-year follow-up study. *Aging & Mental Health*. 14 (6), 757-763.

III. Hedberg, P., Brulin, C., Al  x, L., & Gustafson, Y. (2010). Purpose in life over a five- year period: a longitudinal study among a very old population. *International Psychogeriatrics*. Accepted.

IV. Hedberg, P., Brulin, C., & Al  x, L. (2009). Experiences of purpose in life when becoming and being a very old women. *Journal of Women and Aging*, 21 (2), 125  137.

V. Hedberg, P., Y. Gustafson., Brulin, C., & Al  x, L. Purpose in life among very old men. Manuscript.

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INTRODUCTION

Very old people aged 85 years and older are a growing age group in society. The older we become the more individual differences occur. Some of the very old have high functional and cognitive capacity while some are impaired. In some part of the world, becoming very old is view as a natural part of life and the old person's experiences is seen as a resource for the society. However older persons in western countries are mostly seen as a burden which can negatively influence purpose in life. Probably, to have purpose in life is of importance in order to improve the old person's possibility to deal with difficult life circumstances. Therefore, it is very important to investigate and get a deeper understanding of purpose in life in respect to different life events and in and to be a woman or a man. In addition, such knowledge is valuable in order to promote purpose in life and decrease the risk of depression among very old. Very old people are common in the health care system and as a nurse in anesthetic care I often have met very old people in the operation ward. My experiences are that older persons are treated as a homogenous group and the individual is often forgotten. One example of how old people are stigmatized is taking from a book used as a course literature in the education for becoming an anesthetic nurse. In the chapter of the book dealing with anesthesia in geriatric this quotation is found *"They are slow and precautions in their movement, some movement can also be painful for them. Their vision and hearing is impaired, which they try to compensate by guessing. Their thoughts are slower and they express themselves slower. None of this must be mixed up with dementia or mental disorder. All personal in the care process must regard and take this in consideration"* (Halldin, 2000; pp. 475). I hope this thesis will increase the knowledge of the importance of experience purpose in life in very old age in order to prevent psychological ill-health.

BACKGROUND

Ageing

Sweden has one of the world's oldest populations, as regards to the proportion of persons aged 80 years and older and the average life expectancy at birth is 79.5 years for men and 83.4 years for women. The general population is increasing, particularly the very old for example the population of those aged 85 years and older has increased by 40% from 1990

to 2007, and in 2050 the very old population is predicted to increase by another 50% compared with the year 2007 (SCB, 2010).

There are different perspectives on ageing for example Antonovsky (1979) coined the concept salutogenesis in contrast to the term pathogenesis. A salutogenic perspective focuses on health rather than ill-health and on the individual's inner resources such as resilience (Wagnhild & Young, 1990; Al  x, 2010), inner-strength (Nygren, 2007), sense of coherence (Antonovsky, 1979) and purpose in life (Frankl, 1959). In contrast pathogenetic thinking focuses on the causes of diseases and their treatment and prevention. It is important in nursing research to focus on both the gains and losses of ageing. In the field of nursing Coward (1996) has used self-transcendence in order to understand different ways of coping with health or illness. Tornstam (1997) developed the theory of gerotranscendence among old people, of which self-transcendence is one component. Gerotranscendence is regarded as the final stage in a possible natural progression towards wisdom and maturation. Gerotranscendence is a shift from a materialistic and rational view of the world to one that is more cosmic and transcendental, normally accompanied by an increase in life satisfaction. In contrast to the salutogenic perspective the pathogenetic perspective focuses on decline in physical and psychological health that usually occurs in old age. However the variation in ill health is widespread among individuals and the variation is more obvious in older age (Baltes & Mayer, 1999; Lenze et al., 2001). Several studies on functioning among older adults report a higher disability among women compared to men in the same age (Cambell et al, 1994; Guralnik et al, 1997; Nybo et al, 2001; von Strauss et al, 2003). A majority of very old people have impaired hearing and vision (Bergman & Rosenthal, 2001) and heart failure, diabetes, cerebrovascular diseases and dementia are common (Skoog et al, 1998; Launer et al, 1999; von Strauss et al, 2000).

Despite the fact that physical deterioration is rather common among the very old, also decline in psychological health are reported (Alexopoulos, 2005; Blazer 2000, 2003). Blazer (2000, 2003) stresses that reduced physical functioning in daily life could be one reason for the high prevalence of depression that has been noted during the last decades. On the other hand depression and physical disability seem to have a reciprocal relationship which means that disability could affect depression but in contrary, depression could affect disability (Bruce, 1999; Lenze et al, 2001).

Ageism in the society

Ageism in the Western society is deeply embedded in many areas (Butler, 2005). Negative attitudes towards ageing take several forms, as for instance

that old people are regarded to be lonely and depressed. Older adults are also treated as similar, sick, frail and dependent as well as lacking close friends and relatives (Kite & Johnson, 1988). Butler`s definition of ageism as “*a process of stereotyping and discrimination against people because they are old*” (Butler, 1995, pp. 38-39) is present even in 2010. Ageism has been described as the third great “ism”, following racism and sexism (Butler, 1995). In our society ageism can be found at the individual level, the institutional level, and the social level. At the individual level ageism is visible in the avoidance of making contact with older people, denying one`s own ageing, ageist humour and having negative attitudes towards and stereotypes of older adults (Palmore et al, 2005). Old people are also considered less intelligent and less responsible than younger people, and are viewed among others as irritable, boring, weak and most importantly cognitively impaired (Scholl & Sabat, 2008). These negative stereotypes may be endorsed by the elderly themselves in “negative self-stereotyping” (Kruse & Schmitt, 2006). On an institutional level ageism can involve discrimination in employment, public policy and inappropriate care in institutional settings (Palmore et al, 2005). Social aspects of ageism include age norms, patronizing ageist language and age segregation (Butler, 2009). In a study by Tornstam (2007) almost 90 % of Swedes believed that old people were lonely, bored and dissatisfied pensioners. If society`s view of old people is based on negative stereotypes it may affect very old people`s to experiences of purpose in life. Calasanti and King (2005) maintain that becoming very old should be accompanied by an acceptance of individual inactivity or activity, an acceptance of the right to age in whatever way that best suits the individual. Being very old should be seen as to have possibilities and not be defined mainly in terms of disease, disability, or mortality (Calasanti & King, 2005).

Belonging to the group of very old women and men

To live in the north of Sweden in the first half of the 20th century was characterized by poverty but also optimism about the future. Women in Sweden did not have the right to vote until 1921 when universal women`s suffrage was implemented. For people living in the “poor care” the right for general suffrage was not a fact until 1945. In the beginning of 1930 a political ambition was introduced, one household should be able to live on one salary. If occasionally women had work outside the home their salary was lower than men`s. Women were not seen as family providers and were considered in less need of money compared to men (Hirdman, 1994). A large proportion of the Swedes lived in the country side with quite poor living conditions and marked by hard labour even for children (Esping-Andersen & Korpi, 1987). To be a women and backed up from a growing biomedical outlook as well as

having an intellectual occupation was seen in a negative and suspicious light, since intellectual work for women was considered to have a negative impact on childbirth (Hirdman, 1994). Moreover Hirdman (1994) describes how women were considered as patient and careful, and seen as more suited to simpler and more repetitive occupational work, which was often low paid. These circumstances are probably one of the underlying causes for differences in pension between old women and men with disadvantages for women (Connell, 1995; Stark & Regn r, 2002).

Even as early as the 1970s feminists were trying to explain why women appeared to be in worse health than men although they lived longer (Annandale & Hunt, 2000). Earlier research among old people in Sweden reveals a similar pattern. Women live longer than men but suffer to a greater extent from e.g. arthritis, various types of fractures etc. and they are more limited in their daily life than to men (von Strauss et al, 2003). Brattberg et al (1996) found that self reported musculoskeletal symptoms are increasing among older men but decreasing among old women. Research among very old people is often focused on inequalities that disadvantage women. It is frequently implied that older women are universally more vulnerable to social, economic and health disadvantages than older men. Krekula (2007) noted that older women are studied predominantly from a misery perspective describing old age as a problem, which does not correspond to older women's views of their own ageing. There are few studies recognizing older men's special needs (Knodel & Ofstedal, 2003). Al x et al (2006) describe different masculinities and femininities among very old people in a study from the Ume  85+ study. Among men 3 differences of masculinities were found, "being in the male centre", "striving to maintain the male fa ade" and "being related". Further they found four different ways of how the very old women construct their femininities "being connected", "being a actor", "living in the shadows of others" and "being alienated". The different femininities were interpreted as meaning that no femininity was being in the center related to all the others. (Al x et al, 2006). Among several instrument measuring inner strength within the Ume  85+ study only the Purpose in life test (PIL) had a significant difference where women scored lower than men (Nygren et al, 2005)

Purpose in life

Purpose in life is essential in human and has been discussed from several perspectives since millenaries. Sokrates and his apprentice Platon are seen as founders for the western philosophy concerning purpose in life (National Encyclopaedic, 2010). Fromm (1949) describes purpose in life as realizing the individual possibilities with which each human being endowed. From an

existentialistic perspective Kirkegaard (1964) describes purpose in life in relation to people's freedom and responsibility for their lives. He also stressed the importance for each individual to realize their own existence and not lose themselves in the crowd (Kirkegaard, 1964). According to Kirkegaard (1964) every human has an obligation to accomplish the opportunities. More recently Ventegod (2003) defined purpose in life as the core of human existence that have to be sought in order to meet. In order to find purpose in life a connection between our inner depths and the outer world have to be created (Ventegod, 2003; Ventegod et al, 2003).

Purpose in life and the meaning of life are defined as two related concepts and are sometimes used synonymously. Purpose in life is described as an intention or a goal to be fulfilled or achieved, while meaning refers to the sense or coherence that one makes out of one's existence (White, 2004; Wong & Fry, 1998; Yalom, 1980). Reker and Wong (1988, p.221) define meaning as "*the cognizance of order, coherence, and purpose in one's existence, the pursuit and attainment of worthwhile goals, and a accompanying sense of fulfillment*". Ryff (1989, p.1071) defines purpose in life as "*a sense of directedness and feeling that there is meaning both in present and past time*". Some years later Ryff and Keys (1995, p.720) added the definition of purpose in life as "*the belief that one's life is purposeful and meaningful*". Ryff's and Singer's (1998, p.213) definition of purpose in life is "*a sense of one's life having a purpose or investing time and energy into the attainment of cherished goal*". Frankl (1905-1997) a concentration camp survivor formed his theory about "man's will to find meaning" prior to World War II. Frankl observed in the concentration camp that life has meaning under all conditions and that people have both the capacity and ability to find meaning in their lives. Everything can be taken from a human except the freedom to choose one's attitude in every situation. It is how a person transforms the situation from tragedy into achievement that matters (Frankl, 1959). Meaning can be attained through creative, experimental and attitudinal values. Creative values inspire individuals to create, produce and achieve purpose in life through some form of work. Experimental values of importance for purpose in life include positive experiences such as love. Attitudinal values include how a person chooses her/his stance towards unavoidable, negative conditions.

If a person is obstructed in the finding of meaning feelings of meaninglessness can occur. Frankl (1962) defines such feelings as an "existential vacuum", described as a state of emptiness manifested in boredom, which can lead to anxiety and depression. Frankl makes clear that "*such widespread phenomena as depression, aggression and addiction are not understandable unless we recognize the existential vacuum underlying*

them” (Frankl, 2004, p. 112). Frankl (1955, 1958, 1966) developed a method of psychotherapeutic named logotherapy, which is an application of the principles of existential philosophy in clinical practice. Logotherapy was developed after a new type of neurosis had been observed which could not be treated in a usual manner. Frankl terms this new neurosis *noogenic* neurosis. To quote Frankl (1962, pp. 94) “*The psychiatrist then, frequently finds himself in an embarrassing situation, for he now is confronted with human problems rather than with specific clinical symptoms. Man’s search for meaning is not pathological, but rather the surest sign of being truly human*”. *Noogenic* neurosis is a response to a complete lack of purpose in life and cannot be cured with a drug (Frankl, 1962). Logotherapy could be used in order to prevent a person ending up in an existential vacuum and depression.

In order to operationalise Frankl’s theoretical approach Crumbaugh and Maholick, (1964) developed the Purpose in Life Test (PIL). The questionnaire measures from a person’s will to meaning and risk for existential vacuum. The aim of the PIL test was to detect existential vacuum. Several earlier studies have used the PIL test in order to measure purpose in life (Yalom, 1980) in respect to different health and/or demographic circumstances. However, the studies are cross-sectional which complicate determination of causality. The majority of the studies are also conducted among a population below 70 years of age.

In a meta-analysis Pinquart (2002) synthesized 70 cross-sectional studies on purpose in life in middle and old age. The result shows that high purpose in life was associated with good physical health, social integration and the quality of personal relationships. The study found that married responders had higher levels of purpose in life than the unmarried. High socioeconomic status and high levels of everyday competence were also positively related to purpose in life (Ebersole, 1988; Reker & Wong, 1988).

Verduin et al (2008) found in a study among patients with rheumatoid arthritis that lower age, better mental health status, optimistic coping style and participations in social activities were significantly associated with more sense of purpose in life. In a study among cancer patients Pinquart et al (2009) found that a high importance of social, psychological, and health-related goals was related to higher purpose in life. Among patients recovering from knee surgery purpose in life was related to a less anxiety, less depression, less functional disability and less stiffness (Smith & Zatura, 2004). Social activities which engaged college students within the campus community are positively related to their development of purpose in life (Molasso, 2006). Rhoades and McFarland (2000) describe a high degree of

purpose in life among agency supported caregivers which was interpreted that care giving give meaning to life. Religiosity is positively associated with purpose in life (Dufton & Perlman, 1986). Klaas (1998) describes a positive relationship between purpose in life and self-transcendence. Zika and Chamberlin (1992) found a substantial and consistent relation between purpose in life and psychological well-being. Purpose in life have been found positively correlated among very old with activity in daily life, objective health and family network (Sarvimäki & Stenbock-Hult, 2000). Meier & Edwards (1974) found a positive relationship between age and purpose in life. In that study those over 65 years rated PIL higher than younger age groups.

Low PIL scores have been found in relation to various diseases e.g. first episode psychosis (Turner et al, 2007), people living with AIDS (Bechtel, 1994; Lyon and Younger, 2001; Lewis, 2006) and living with spinal cord injury (Krause et al, 2004). Ishida and Okada (2006) found negative correlations between PIL and anxiety among healthy young persons. Klaas (1998) reported significant negative relationships between purpose in life and depression. Similar findings were reported by Robak & Griffin (2000) that the less purpose in life the responders reported the more death-related depression was recognized. Purpose in life is also negative correlated with the death anxiety scale (Rappaport et al, 1993). Among very old low PIL scores was found among those living in institutions compared with those that lived in the community (Bondevik & Skogstad, 2000). Out of these results purpose in life seems to be related to depressed mood and risk for depression. However, as far as I know no study with a prospective design has been preformed.

Depressed mood and depression

The World Health Organization (2010) defines depression as “*a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities*”. Depression can be viewed from a variety of angles such as medical, biological or as social construction. The underlying cause of depression is probably a combination of factors and needs to be further investigated. In older age, the prevalence of depression is high (Doraiswamy et al, 2002)) and in addition, depression have been found to cause emotional suffering and decrease in quality of life (Blazer, 2000; 2003; Alexopoulos, 2005) as well as decrease in meaning in life (Osgood, 1991; Reed, 1991) among very old people.

Depression among very old people differs from depression among those who are younger. In very old age degenerative organic brain disorders are common. The occurrence of these disorders may be one explanation for why depressive symptoms often affect people with chronic illness, cognitive impairment or disability (Alexopoulos et al, 2002). Fujikawa et al (1993) found that silent cerebral infarctions are common among those with depression. Depression in late life is reported to be under recognized particularly in primary health care, general hospitals and nursing homes (Musulant & Ganguli, 1999).

In the western world depression is approximately twice as prevalent in women as in men (Piccinelli & Wilkinsson, 2000). This is also true in old age, old women are more often diagnosed as depressed compared to old men (Blazer, 2000; Bergdahl et al, 2007a). Explanations for why women are diagnosed as depressed twice as much as men during their life span (Piccinelli & Wilkinson, 2000), often address social roles and social positions. The female role seems to be subject to limitations associated with lack of choice and there is a tendency for women to be undervalued in the society (Piccinelli & Wilkinson, 2000; Stoppard, 2000). Differences in the diagnosis of depression could also be explained by a higher proportion of under-diagnosed depression among men (Courtenay, 2000). In the Courtenay study it was found that men and women expressed feelings and depressive symptoms differently. The authors reported that women expressed depressive symptoms verbally, while men tend to retreat into silence, aggression, or drug abuse (Courtenay, 2000), this findings are supported by other studies (Danielsson & Johansson, 2005; Danielsson et al, 2009). Bergdahl et al (2007a) found that loss of an adult child was the most prominent factor associated with depression among very old men while feelings of loneliness and not going outside independently were associated with depression among women. Kockler and Heun (2002) pointed out that men expressed depression in terms of mental ill-health, while women described depression by using other symptoms such as back pain, pain in legs, difficult to walk and joint pain.

A review concerning assessment and management of psychiatric disorders among very old people highlighted that the literature in geriatric psychiatry ignores the very old and are mostly focused on treatment of specific psychiatric disorders among those under 85 years (Blazer, 2000). It is noteworthy that depression is more often under diagnosed among elderly than younger persons. In addition, there are also differences in the treatment used, drugs are more common among older persons, while psychotherapeutic treatment is more common among younger people (Hooyman & Kiyak, 2002). Treatment for depression with anti depressant

drugs among the very old seems to be inefficient. A study reveals that almost 60 % of the very old people that were on treatment with anti-depressant drugs did not respond to the treatment (Bergdahl et al, 2005). The diagnosis depression is often based on DSM IV criteria for depression, those criteria have been questioned for not being suitable for very old people (Hybels et al, 2001; Anderson et al, 2009)

In an essay by Johannisson (2009) the risk to put etiquette on normal state of mood shifts and labelled them as diseased was discussed. In the modern western society mood shifts tend to be medicated treated as pathological instead of a normal part of life. The author argues that modern psychiatry restrict the criteria for and explanations to different psychiatric conditions. Unfortunately, the darkness in the ego has become a disease that more or less is treated in the same extent as diabetes or eczema. Obviously, it has been a problem to determine the borders between health and disease, during the process of mood shifts.

Tiredness is common in very old age, and in addition sadness and loneliness are often described (Aavlund et al, 2004; Dykstra, 2009; Sundtröm et al, 2009; Moreh et al, 2010). However and in accordance to Johannisson (2009) these moods can occur without a depression diagnosis and tiredness could be a normal part of becoming very old. This could be one explanation for lack of response on antidepressant medication among elderly which is rather common in clinical practice. On the other side, since the symptoms of depression differ between very old and younger persons, the diagnosis depression could be under diagnose among elderly. Therefore, further research is needed to explore underlying causes of depression among very old people. The relation between depression and purpose in life are rarely investigate therefore it is of great importance to explore the relationship between purpose in life and depression.

RATIONALE FOR THIS THESIS

Purpose in life is a central part of the human existence and could be a resource for good ageing. Earlier studies have shown that absence of purpose in life can lead to psychological ill- health. When becoming very old negative life events can occur. Previous research concerning purpose in life has to a large extent been implemented on persons below 85 years and little is known about purpose in life among the very old. Since very old people are an increasing group in the Western society it is of importance to include those over 85 years in research concerning purpose in life. Since a previous study with in the Umeå 85+ study has shown that very old women scores lower on the PIL test compared to men, it is of great matter to increase the knowledge of factors associated with purpose in life among very old women and very old men. It is of substantial importance to investigate purpose in life in relation to social as well as psychological and physiological circumstances among the very old people. Most of the studies on purpose in life in relation to social factors or various diseases as well as psychological and physiological factors is of cross-sectional design. As far as I know no study using a prospective approach when studying purpose in life has been found.

According to Frankl (1955; 1958; 1959) lack of purpose in life can result in existential vacuum which can lead to depression. In fact during the last decade depression among the very old is reported as rather high and depression may be the most frequent cause of emotional suffering in very old age. However, treatment for depression among the very old seems to be insufficient. In addition Frankl (2004) proposed that depression is difficult to treat if existential vacuum is not recognized among the affected. Thus, it is essential to take purpose in life in consideration when examine a possible diagnose of depression. It seems logical to assume that the diagnostic criterion is probably not suitably among the very old.

In order to understand mental wellbeing or ill health among the very old it is of importance to get a deeper understanding of purpose in life and further to find out the relation between purpose in life and mental ill health or health. To determine the relation between outcome and exposure it is essential to use a prospective design however insufficient attention has been paid to purpose in life in relation to for example wellbeing or ill health. Therefore, it is of importance to study purpose in life with a prospective design in order to determine if purpose in life can serve as a protection from developing mental ill health.

AIM

The overall aim of this thesis was to explore purpose in life among a very old population.

Specific aims for the papers

- | | |
|-----------|--|
| Paper I | To explore purpose in life in relation to psychological well-being and social relations, as well as physical and psychological symptoms among very old men and women. |
| Paper II | (1) to investigate the relationship between purpose in life and depression in a cross-sectional study, and (2) in a 5 – year follow-up prospective study, to investigate if purpose in life, when adjusted for different background characteristics, can prevent the development of depression among very old men and women. |
| Paper III | to examine changes in purpose in life over a five-year period among very old men and women living in the northern part of Sweden, and furthermore to investigate whether depressed mood, malnutrition, inactivity in daily life, and cognitive impairment were associated with an increased risk to develop low purpose in life. |
| Paper IV | to illuminate how old women describe their experiences of purpose in life in narratives about becoming and being very old. |
| Paper V | to illuminate very old men's experiences and reflections of purpose in life |

PARTICIPANTS AND METHODS

The Umeå 85+ study/The GERDA study

The Umeå 85+study is a multi-professional collaboration between the Department of Community Medicine and Rehabilitation, Geriatric Medicine, Physiotherapy and Occupational Therapy units and the Department of Nursing at Umeå University in order to study the ageing process among very old people. The intention with the study is to shed light upon factors for a good ageing and threats against a good ageing. Moreover, our intention was to get a deeper understanding for factors of importance of why some very old people seems to have more strength and are more prepared to manage and compensate for losses and impairment which is common in very old age. The Umeå 85+ study started up in year 2000 by randomly selecting half the population born 1915 (85-years-old) and the total population born in 1910 (90-years-old) and 1905 or earlier (95-103 years) living in an urban and rural town in the north of Sweden. The selection of every second 85-year-old participant was made by choosing every second person from the lists received from the National Tax Board. In the years 2005 and 2007 an expanded follow-up data collection of participants from the 2000 and 2002 collection were carried out. The participants were informed about the study and invited to take part by letter and by telephone. The data collection was carried out by questionnaires, interviews, and clinical examinations. Results from this project have been presented in 12 dissertations (e.g., Von Heideken-Wågert , 2006; Nygren, 2006; Alèx, 2007; Bergdahl, 2007b) and about 45 original papers.

The GERDA (GErontological Regional Database) was a continuation of the Umeå 85 + and started up in 2005 in Ostrobothnia, Finland. The GERDA study focuses on the same age group as the Umeå 85+ study and has the same inclusion criteria. In order to clarify the involved participants in the overall Umeå 85+ study a flowchart are presented in Figure.1.

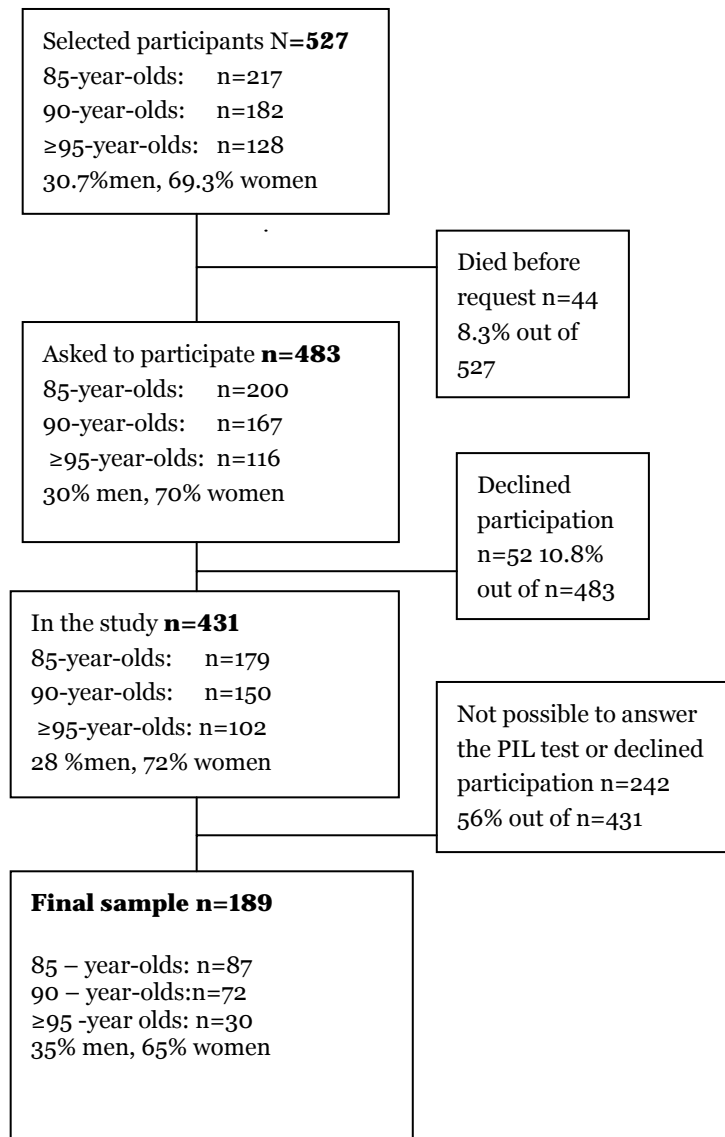


Figure 1. Flow chart of the total sample for the Umeå 85+ study from baseline in year 2000-2002. The final sample n=189 are included in this thesis.

Study design

This thesis includes five studies with different approaches.

In **paper I** a cross-sectional design was used with the Purpose in Life test (PIL) as the dependent variable and the Philadelphia Geriatric Center Morale Scale (PGCM) , the Göteborg Quality of Life Instrument (GQL) and backgrounds characteristics such as social factors as independent variables.

In **paper II** a cross-sectional design as well as a prospective design was used. In the prospective part the diagnosis depression according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria based on the questionnaires the Geriatric Depression Scale-15 (GDS-15), the Organic Brain syndrome scale (OBS), the Montgomery-Åsberg Depression Rating Scale (MADRS) was used as dependent variable and the PIL test, the Minimal Nutritional Assessment test (MNA), the Mini Mental State Examination (MMSE) , the Katz ADL Staircase including the Katz ADL Index (Katz ADL) and backgrounds characteristics such as social factors was used as the independent variable.

In **paper III** a prospective design was used with the PIL-test as the dependent variable. Depression was diagnosed according to DSM-IV criteria based on the GDS-15 and the Organic Brain Syndrome (OBS) scale, and further validated by the Montgomery-Åsberg Depression Rating Scale (MADRS) and documentation in medical records and were used as independent variables, as well as the Barthel-Index, the MMSE test, the MNA test, and backgrounds characteristics such as social factors.

Papers IV – V have a qualitative design analyzing thematic interviews focused on various aspects of positive and negative life events, experiences of loneliness, experiences of comfort and experiences of purpose in life.

Characteristics of the designs in respective paper are shown in Table 1.

Table 1. Overview of the papers comprising this thesis.

Paper	Participants	Design	Data	Analysis
I	Total n=189 Men n=69 Women n=120	Cross- sectional	PIL PGCM GQL SF-36 Social factors	Descriptive statistics Multiple linear regression analysis
II	Total n=189 ¹ Men n=69 Women n=120 Total n=78 ² Men n=23 Women n=55	Cross- sectional ¹ Prospective ²	Depression diagnosis (DSM-IV) GDS-15 OBS MADRS PIL Katz ADL Social factors.	Descriptive statistics Multiple logistic regression analysis
III	Total n=51 Men n=9 Women n=42	Prospective	PIL GDS -15 Barthel-Index MMSE MNA Depression diagnosis (DSM-IV). Social factors	Descriptive statistics Multiple linear regression analysis with repeated observations estimated by GEE
IV	Women n=30		Thematic interviews	Content analysis
V	Men n=23		Thematic interviews	Content analysis

Participants

In this thesis the selection of participants was performed in several steps the selection of the participants in the different papers are presented in Figure. 2.

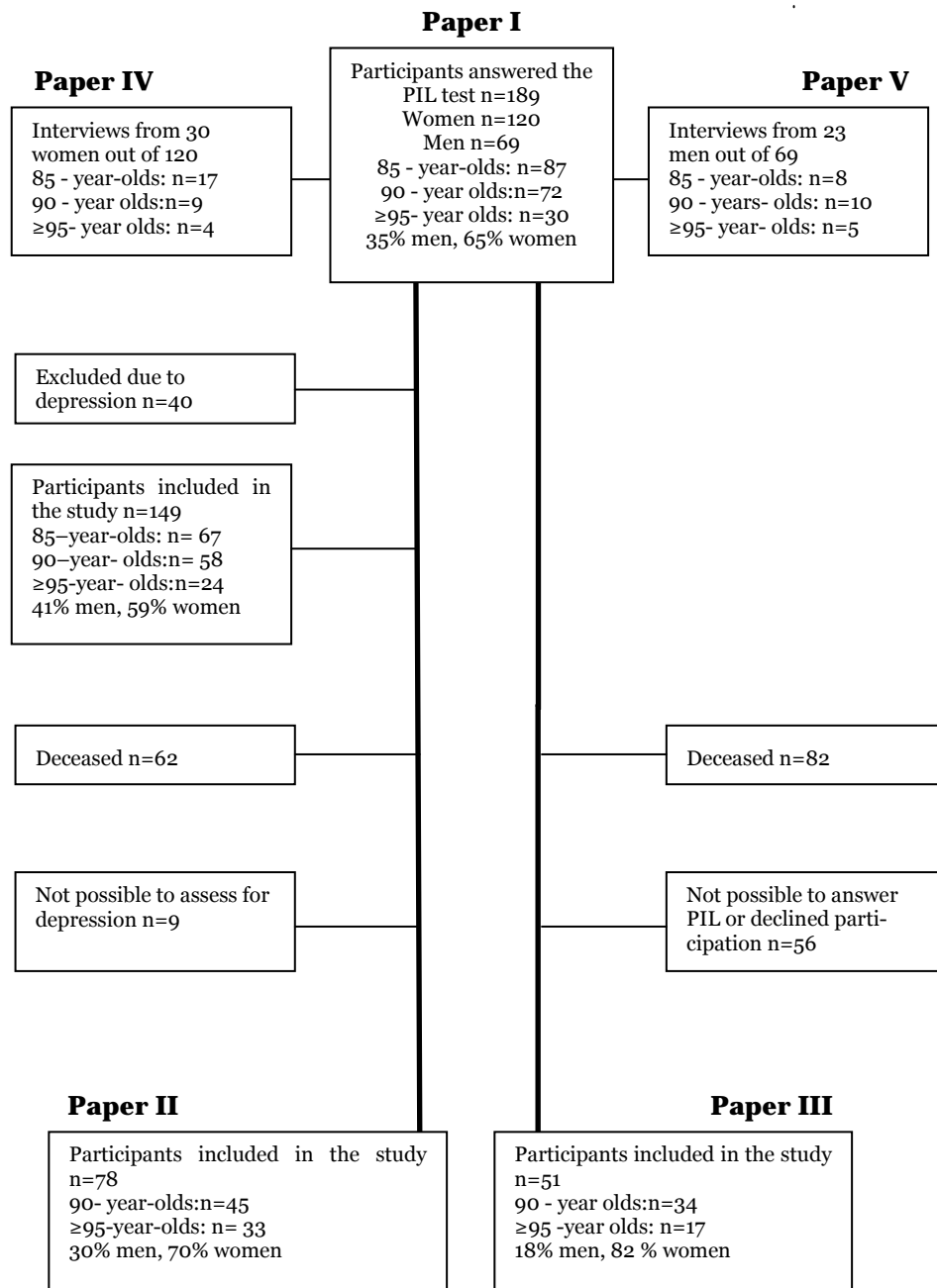


Figure 2. Flow chart of the population included in the thesis (Papers I, II, III, IV, V).

In **paper I** the total sample consisted of 189 participants, living in a county in northern Sweden, 65% (n=120) women and 35% men (n=69). The age of the participants ranged from 85 to 103 years and the age distribution did not differ between men and women. Both elderly people from a medium-sized town and people living in rural areas were included. Other inclusion criteria were being able to answer Likert-type questionnaires and having the strength to participate in interviews. All of the participants in all papers included in this thesis had answered the Purpose in Life (PIL) test. There were 40 participants with a depression diagnosis 32 women and eight men.

In the cross-sectional part in **paper II** includes 189 participants that had answered the PIL test 65% (n=120) women and 35% men (n=69). In the prospective part 40 participants was excluded due to their depression diagnosis resulting in 149 participants. Out of these 149 persons, 62 died and 9 could not be evaluated for depression after five years. In total, 78 very old people participated in the prospective part of the study in year 2005-2007. None of the included participants had a diagnosis of depression at baseline in their assessment year 2000– 2002.

Paper III includes 51 participants (42 women and 9 men) who had answered the PIL test both at baseline and after five years. The first data collection was performed during the years 2000 to 2002, and followed up during the years 2005 to 2007.

Paper IV includes interviews from 30 women out of 120 women who had answered the PIL scale and been interviewed about their experiences of being very old. In order to obtain variations in the narratives, the 10 women who scored lowest on the PIL test, the 10 who scored in the mid-range, and the 10 who scored highest were included. Four of the women were 95 years old, nine were 90 years old, and the remaining seventeen were 85 years old.

Paper V includes men who had answered the Purpose in Life (PIL) test. Out of the 69 men that answered the PIL scale 51 was interviewed about their experiences of becoming and being very old. Of these 51 men, 23 men had been asked and answered to a specified question about purpose in life and all the answers (n=23) were included in this study. Eight of the participants were 85 years old, ten were 90 years old and five were 95 years of age. Characteristics of the participants in respective paper are shown in Table 2.

Table 2. Characteristics of the participants in respective paper.

	Paper I n=189	Paper II n=149	Paper III n=51	Paper IV n=30	Paper V n=23
Women n (%)	120 (65)	88 (59)	42 (82)	30 (100)	-
age m (sd)	88.6 (4.0)	89 (3.9)	86.6 (2.3)	88.4 (3.7)	
Men n (%)	69 (35)	61 (41)	9 (18)	-	23 (100)
age m (sd)	88.8 (4.2)	89 (4.3)	87.2 (2.6)		88.9 (3.4)
Age 85 n (%)	87 (46)	67 (45)	34(67)	14 (47)	8 (35)
90 n (%)	72 (38)	58 (39)	17 (33)	12 (40)	10 (48)
95 n (%)	30 (16)	24 (16)		4 (13)	5 (13)
Years of education m(sd)	6.25 (2.1)	6.4 (2.1)	6.5 (2.0)	6.9 (2.1)	6.7 (1.1)
PIL m(sd)	105 (15.8)	107 (15.7)	108 (15.6)	104 (20.7)	109 (14)
GDS m(sd)	3.3 (2.3)	2.6 (1.6)	2.8 (1.8)	3.3 (1.5)	2.9 (1.8)
MMSE m(sd)	25.8 (3.4)	26.0 (3.3)	26.9 (2.6)	26.3 (3.3)	25.7 (5.9)
Living alone (yes%)	156 (83)	121 (81)	44 (86)	29 (97)	18 (78)
Living in a institution (yes%)	42 (22)	28 (19)	6 (12)	3 (10)	5 (28)
Independent in ADL (yes%)	65 (34)	57 (38)	25 (49)	5 (17)	10 (44)
Previous stroke (yes%)	35 (19)	28 (19)	9 (18)	8 (27)	7 (30)
Heart failure (yes%)	41 (21)	25 (17) ¹	3 (6)	6 (20)	5 (22)
Paresis (yes%)	5 (3)	4 (3)	1 (2)	1 (3)	0 (0)
Impaired vision (yes%)	16(9)	11 (7)	2 (4)	2 (7)	2 (9)
Impaired hearing (yes%)	59 (31)	44 (30)	16 (31)	7 (23)	10(44)
Depressed (yes%)	40 (21)	0 (0)	6 (45)	7 (23)	0 (0)
Antidepressants (yes%)	19 (10)	0 (0)	6 (12)	3 (10)	0 (0)
Medications (no%)	15 (8)	11 (7)	4 (8)	0 (0)	3 (13)

¹Internal missing

Data collection

In this thesis questionnaires and clinical examinations as well as interviews was used in order to collect data. In the first step the participants were sent a letter with information about the study. About two weeks, by a telephone call, they were informed about the home visit procedure. At this occasion the participants gave informed consent. Assessments were performed during at least two or three home visits by one of the different professions geriatrician, physician, medical student, nurse and physiotherapist. All assessments and questionnaires were interviewer administered and conducted in the same order for all visits. The first visit was conducted from the Department of Geriatric Medicine, clinical examinations as well as scales of Likert character was used, the researcher estimated if the participant was able to answer questionnaires and participate in interviews, if the participant had that ability the Department of Nursing was notified. In the first visit from the Department of Nursing the participants answered a number of questionnaires, including the PIL test.

On a second occasion, about a week later, narrative interviews were performed at the participants' homes. The narratives included various aspects of their lives, such as experiences of ageing, difficult and positive life events, and experiences of loneliness, comfort, spirituality, and purpose in life. In this study, we focus on the specific text concerning purpose in life and the question asked about purpose in life. The interviews lasted 30-90 minutes each; they were tape-recorded and transcribed verbatim including non-verbal expressions such as silence and laughter. The interviews were performed by two men and five women, all nurse researchers belonging to the same research team. A similar procedure was used five years later except for the interviews.

The scales and the clinical examinations used are presented in the following section.

The Purpose in Life test (PIL) was developed by Crumbaugh and Maholick (1964; 1968; 1981), in order to operationalize Frankl's (1962) theory that a lack of purpose in life could lead to an existential vacuum. The scale consists of 20 items on a 1–7 Likert scale, additionally the sum scores ranged from 20 to 140. According to Crumbaugh and Maholick (1981) scores of 113 and above suggest a definite purpose in life, scores of 92–112 represent feelings of indecision about purpose in life, and low scores of 91 and below indicate a clear lack of purpose in life (Crumbaugh & Maholick, 1981). The PIL scale has been translated into Swedish by Åkerberg (1987). The internal consistency, measured by Cronbach's alpha, ranged from 0.70 to 0.86

(Burgess-Wells et al, 2002; Sarvimäki & Stenbock-Hult, 2000) and test-retest values ranged from 0.68 to 0.83 (Meier & Edwards, 1974; Reker, 1977). In this study, Cronbach's alpha was 0.84.

The Geriatric Depression Scale- 15 (GDS-15) was developed to screen for depression in the elderly. In this study a shorter form (15 items) of the original 30-item scale was used. The possible range of scores is 0-15, where scores of between 5 and 9 indicate mild depression, and a score of 10 or more indicates moderate to severe depression (Sheik & Yesavage, 1986). GDS-15 has been evaluated in a very old population and has been found to have a high sensitivity and specificity for diagnosing depression (de Craen et al, 2003).

In order to diagnose depression according to the DSM-IV criteria the GDS-15, the OBS-scale and the MADRS-scale was used.

The Organic Brain Syndrome scale (OBS) (Jensen & Dehlin, 1993) was developed for clinical evaluation of various emotional and behavioural symptoms that appear in delirium, dementia, and other organic mental diseases, together with other signs of confusion in elderly patients. The OBS scale consists of two main parts, the disorientation subscale, a questionnaire of 15 items and the confusion subscale, an observation subscale containing 39 features. In this thesis the observation subscale was used. The internal consistency, measured by Cronbach's alpha, was 0.82 (Edberg et al, 1999). Several studies showed high identical scoring on OBS for inter-rater reliability: $r = 0.61-1.0$ (Gustafson et al, 1985) and $r = 0.93-0.98$ (Hallberg et al, 1990). The OBS scale is considered to be a sensitive and balanced rating scale that is easy to use among very old people (Björkelund et al, 2006).

The Montgomery-Åsberg Depression Rating Scale (MADRS) (Montgomery & Åsberg, 1979) was administered by a specialist in geriatric medicine in order to validate the depression diagnosis among those who scored 5 or more on GDS-15. The MADRS rating is based on a clinical interview that investigates 10 symptoms of depression. The inter-rater reliability of the depression scale is high. Scores on the scale correlated significantly with scores on a standard rating scale for depression, the Hamilton Rating Scale (HRS) (Hamilton, 1960), indicating its validity in providing a general estimate of severity. The MADRS's capacity to differentiate between responders and non-responders to antidepressant treatment was better than the HRS's, indicating the MADRS's greater sensitivity to change (Montgomery & Åsberg, 1979).

The Diagnostic and Statistical Manual of Mental Disorders, 4th. Edition (DSM-IV) was used in order to diagnose depression. DSM-IV is a manual published by the American Psychiatric Association and includes all known psychological medical conditions and disorders. The DSM-IV criteria's for depression include major depression, minor depression, dysthymic disorder and mood disorder due to a general medical condition. In order to be diagnosed as depressed several criteria have to be met. Depression, dementia and delirium were diagnosed according to the DSM-IV criteria by a specialist in geriatric medicine. The diagnosis was based on all assessments and interviews with cases and statistics as well as diagnose documented in the medical wards. For example the DSM-IV criteria for major depression are five or more of the following symptoms persisting over a 2- week period, causing clinically important distress or impairing work, social or personal functioning (with depressed mood or reduced interest or pleasure as one of the five):

- Depressed mood most of the day, occurring most days (subjective or observed)
- Markedly diminished interest or pleasure most of the day, nearly every day
- Significant change in weight or appetite.
- Insomnia or hypersomnia
- Psychomotor agitation or retardation (observable by others)
- Fatigue or loss of energy
- Feelings of worthlessness or inappropriate guilt
- Diminished ability to concentrate or make decisions
- Recurring thoughts of death or suicide plans

The Philadelphia Geriatric Center Morale Scale (PGCM) scale was used to measure psychological wellbeing and morale (Lawton, 1975). Morale comprises emotions of happiness and life satisfaction and an acceptance of becoming old (Lawton, 1975). Three factors represent the dimensions of psychological wellbeing: agitation, attitude towards own aging, and lonely dissatisfaction. The scale comprises 17 yes/no questions and the possible total sum scores varied from 0 to 17, with scores of 13–17 indicating high morale/good psychological wellbeing (Lawton, 1975). The range for the subscales was 0–6 for agitation, 0–5 for attitude towards own aging, and 0–6 for lonely dissatisfaction. The scale has been translated into Swedish by Löfgren et al (1999), and Cronbach's alpha for the three factors was 0.85, 0.81, and 0.85, respectively (Löfgren et al, 1999). In this study, Cronbach's alpha was 0.53, 0.56, and 0.65, respectively, for the subscales and 0.74 for the total scale.

The Göteborg Quality of Life Instrument (GQL instrument) was developed in the early 1970s and was used to gain information about symptoms experienced during the previous 3 months (Tibblin et al, 1990). The internal consistency of the scale was according to Cronbach's alpha, 0.72- 0.85. Construct validity is only partially supported by confirmatory factor analysis (Sullivan et al, 1993). In this study a part of the GQL instrument were used, the participants were asked about the 19 most common symptoms, according to a Swedish report from the Lund 80+ study (Svensson et al, 1993). The participants indicate the most common symptoms as "yes" or "no". The GQL instrument includes symptoms such as crying easily, easily irritated, gloomy, nervous, fatigued, finding it difficult to concentrate, having difficulties relaxing, experiencing joint pain, being overweight, coughing, having back pain, and experiencing pain in the legs, breathlessness, difficulty in walking, sensitivity to cold, headaches, impaired hearing, and eye problems. In order to reduce the number of items in the GQL a factor analysis with a varimax rotation and a three-factor solution was used. A factor loading of ≤ 0.5 was considered to be important for the internal relationship among the items. The items in the first factor were finding it difficult to concentrate, and having difficulties relaxing, as well as being nervous and gloomy, and were termed mental symptoms. The items in the second factor were back pain, pain in the legs, joint pain, difficulty in walking, and fatigue, and were labeled musculoskeletal symptoms. The items in the last factor were overweight, coughing and breathlessness, and were designated physical capacity. Each factor was dichotomized into "yes" (the participant had at least one symptom) or "no" (the participant had no symptoms).

The 36-item Short-Form Health Survey, the SF-36 is a health-related quality of life instrument that are used world wide (Ware & Sherbourne, 1992). The SF-36 is organized into two main dimensions of health, physical dimension and mental health dimension. The SF-36 is a 36 item questionnaire, in paper I one question from the SF-36 was used to rate the participants' general health. The participants were asked to rank their general health on a scale ranging from 1 ("excellent") to 5 ("poor") (Ware & Sherbourne, 1992).

The Minimal Nutritional Assessment (MNA) was used as a screening instrument for nutritional status among old people (Guigoz & Vellas, 1994). The maximum score on the MNA is 30. Scores ranging from 24 to 30 indicate good nutritional status, scores ranging from 17 to 23.5 indicate risk of malnutrition, and scores below 17 indicate the presence of malnutrition.

The Mini Mental State Examination (MMSE) (Folstein et al, 1975) was used to screen for cognition. The scale has a maximum score of 30, with scores below 24 indicating impaired cognition.

The Katz ADL Staircase including the Katz ADL Index was used to measure the participants' activities of daily living (Katz et al, 1963). The Katz ADL Index was dichotomized as independent in ADL (yes/no).

The Barthel-Index was used in order to measure Activities of Daily Living (ADL) the 10-item version (Collin, 1988) which is well-established and has been found to have a high validity and sensitivity. The Barthel Index measures what a person actually does rather than what they could do in daily life and has scores ranging from 0-20 with higher scores indicating greater independence.

Social relations were measured by means of a questionnaire that included questions about whether the participants had children, family to talk to, and/or a friend to talk to and, finally, whether they lived alone.

Diagnoses were collected from participants, caregivers, and medical records, but were also based on the assessments above.

Analysis

Statistical methods

In the analysis the Statistical Package for Social Sciences (SPSS) for Windows, (SPSS Inc., Chicago, IL, USA) version 14.0 (**Paper I**) and version 17.0 (**Papers II-III**) was used. The Chi square test and the Mann-Whitney U-test were used to assess differences in data at a nominal or ordinal level between men and women (**Papers I-II**). The paired McNemar test was employed (**Paper III**) to analyze differences within groups over time. Student's *t*-test was used when performing univariate analysis of differences in total PIL score between dichotomized independent variables (**Papers I-III**). Student's *t*-test was also used in order to find differences between groups regarding for example depressed versus none depressed in GDS, MNA, MMSE, Barthel-Index mean scores and age (**Paper II**). Pearson's correlation coefficient was used to find associations between the total PIL score and the scores on the PGCM subscales agitation, attitude towards own aging, and lonely dissatisfaction (**Paper I**) and in order to control for multicollinearity (**Papers II-III**). In **paper I** multicollinearity among the independent variables was checked using a variance inflation factor (VIF). As VIF between independent factors was not high ($VIF < 10$) none of the variables were excluded due to multicollinearity (cf. Myers, 1980).

In the univariate analysis, a *p*-value of < 0.1 was used as the criterion for entering the multiple regression model (cf. Hosmer & Lemeshow, 2000). To

determine which of the independent variables contributed most to purpose in life, a stepwise multiple linear regression (MLR) analysis was made. In the MLR analysis, a p -value of ≤ 0.05 was considered significant (**Paper I and III**). Multiple Logistic regression was used (**Paper II**) in order to predict depression among the participants. To determine which of the independent variables contributed most to PIL a multilevel approach was used for the multiple linear regression with repeated observations (**Paper III**) for the individuals on PIL, GDS, Barthel- Index, MNA, MMSE and if the participant were living alone. An exchangeable correlation structure was assumed and the parameters were estimated by Generalized Estimating Equations (GEE).

Qualitative content analysis

The thematic interviews in both paper IV and V were analyzed using qualitative content analysis inspired by Graneheim and Lundman (2004) and Krippendorff (2004). All interviews in both paper IV and paper V were read through by two of the authors to obtain an overall picture of the narratives. After this initial perusal, all the text concerning purpose in life was divided into meaning units.

In **paper IV** the condensed meaning units were coded and categorized and then interpreted into sub-themes and themes. The analysis was performed separately by the authors and the results were then compared and discussed to reach consensus, the outcome of which resulted in 4 themes and 15 sub-themes.

In **paper V** the narratives of the question of purpose in life were analyzed according to content analysis. The condensed meaning units were coded and categorized resulting into 2 content areas and 11 categories. In order to confirm the results, the categories and content areas were discussed and reflected on several times by all the authors, and in seminars. The categories and content areas form the presentation of the results, and are illustrated with quotations.

Ethics

The study was approved by the Ethics Committee of the Medical Faculty, Umeå University (Um dnr 99-326, 00-171, and § 05-063M).

RESULTS

Paper I. A cross-sectional study including 189 participants (120 women and 69 men) who had completed the PIL test. The results show that women had a significantly lower mean PIL value than men ($m=102$ vs. $m=108$, $p=0.013$). The total score for 71% of the female participants was lower than mean value 112 on the PIL scale, indicating indecision about their purpose in life, while the corresponding figure for men was 58% (Table 3a, 3b).

Table 3 a. Purpose in Life (PIL) scores presented for each dichotomous independent variable among the very old (n=189) in the total group, and separately for men and women.

Independent variables	Men			Women			Total		
	n (%)	PIL m (sd)	p	n (%)	PIL m (sd)	p	n (%)	PIL m (sd)	p
	69 (35)	108 (13.6)		120 (65)	102 (16.6)		179	105 (15.8)	0.013
Age			0.732			0.674			
85 yrs	31 (45)	108 (16.1)		56 (47)	105 (15.5)		87 (46)	106 (15.7)	0.390
90 yrs	27 (40)	109 (11.3)		45 (37)	100 (17.2)		72 (38)	103 (15.9)	
95+ yrs	11 (15)	107 (12.0)		19 (16)	102 (17.6)		30 (16)	104 (15.3)	
Urban living			0.487		103 (16.3)	0.641	114(61)	105 (15.7)	0.586
Yes	37 (53)	110 (13.1)		78 (65)	102 (17.2)		75 (39)	104 (16.0)	
No	32 (47)	106 (14.1)		42 (35)					
Living alone			0.849			0.178		104 (16.2)	0.064
Yes	45 (66)	108 (14.1)		111 (93)	102 (16.8)		156 (83)	109 (12.5)	
No	24 (34)	109 (22.7)		9 (7)	110 (12.5)		33 (17)		
Children	63 (91)	109 (13.8)	0.554	104 (87)	103 (15.5)	0.770	167(65)	105 (15.1)	0.964
Yes	6 (9)	103 (10.1)		16 (13)	100 (22.8)		22 (13)	101 (19.9)	
No									
Having family to talk to			0.011	105 (87)		0.009			<0.001
Yes	63 (91)	109 (13.3)		14 (11) ¹	104 (15.3)		169(89)	106 (14.8)	
No	6 (9)	95 (10.2)			91 (21.1)		20 (12)	92 (18.4)	
Having a friend to talk to			<0.001			<0.001			<0.001
Yes	55 (80)	109 (13.5)		97 (81)	104 (16.6)		152(80)	106 (15.8)	
No	13 (20)	103 (13.7)		20 (17) ¹	99 (17.0)		33 (18)	100 (15.7)	
SF-36 General health			0.448			0.335			0.030
Good	49 (70)	109 (12.3)		65 (54)	105 (16.8)		71 (61)	102 (15.9)	
Bad	19 (9) ¹	106 (14.1)		52 (43) ¹	100 (16.2)		114(39)	107 (15.4)	

¹Internal missing value

Table 3 b. Purpose in Life (PIL) scores presented for each dichotomous independent variable among the very old (n=189) in the total group, and separately for men and women.

Independent variables	Men			Women			Total		
	n (%)	PIL m (sd)	p	n (%)	PIL m (sd)	p	n (%)	PIL m (sd)	p
Independent in ADL			0.923			0.843			0.211
Yes	28 (40)	109 (14.1)		37 (31)	105 (16.4)		65 (27)	106 (15.8)	
No	40(59) ¹	108 (12.7)		82 (68) ¹	102 (16.5)		122(93)	103 (15.6)	
GQL – Mental symptoms			0.605			0.323			0.174
Bad	45 (65)	108 (14.1)		91 (76)	102 (16.7)		136(72)	104 (16.1)	
Good	24 (35)	110 (12.8)		29 (24)	106 (16.2)		53 (28)	107 (14.8)	
GQL – Musculoskeletal symptoms			0.061			0.005			<0.001
Yes	57 (83)	107 (14.1)		111 (93)	101 (15.7)		168(89)	103 (15.3)	
No	12 (17)	115 (8.6)		9 (7)	117 (21)		21 (11)	116 (14.8)	
GQL – Physical capacity			0.319			0.868			0.379
Impaired	37 (54)	107 (13.8)		75 (63)	102 (16.3)		112(59)	106 (16)	
Not impaired	32 (46)	110 (13.3)		45 (38)	103 (17.2)		77 (41)	104 (15.6)	

¹Internal missing value

The correlation between the total PIL score and all the PGCM subscales was significant, namely, $r = 0.25$ ($p < 0.001$) for agitation, $r = 0.51$ ($p < 0.001$) for attitude towards own aging, and $r = 0.27$ ($p < 0.001$) for lonely dissatisfaction. In the MLR analysis, the first step for the total sample included the PGCM subscales agitation, attitude towards own aging, and lonely dissatisfaction, the variables living alone, having family to talk to, having a friend to talk to, and musculoskeletal symptoms. In the last step, the PGCM subscale attitude towards own aging ($p < 0.001$), as well as having family to talk to ($p < 0.001$) and musculoskeletal symptoms ($p = 0.005$), was significantly associated with the total PIL score. These variables explained 33% of the total variation in the total PIL score.

For men, the last step in the MLR analyses showed that the PGCM subscale attitude towards own aging ($p < 0.001$) and having family to talk to ($p = 0.021$) were significantly associated with the total PIL score. These variables explained 38% of the total variation in the PIL score. For women, the PGCM subscale attitude towards own aging ($p < 0.001$) was significantly associated with PIL in the MLR analyses, as were having a family to talk to ($p < 0.001$) and musculoskeletal symptoms ($p = 0.044$). These variables explained 31% of the total variation in the PIL scores (Table 4).

Table 4. Multiple linear regression (MLR) model of factors associated with purpose in life among men and women in the oldest old group.

Variable	Men¹				Women¹				Total¹			
	B	SE B	β	<i>P</i>	B	SE B	β	<i>p</i>	B	SE B	β	<i>p</i>
Attitude towards own aging	5.42	.938	.540	<0.001	4.86	.906	.432	< 0.001	4.95	.676	.46	<0.001
Family to talk to	-11.2	4.72	-.23	0.021	-13.9	4.07	-.26	< 0.001	-12	3.13	.25	<0.001
Musculoskeletal symptoms	---	---	---	---	-14.5	3.15	-.16	0.044	-8.6	2.22	-.12	0.005

¹Adjusted for living alone

In the cross-sectional part in **Paper II**, 40 participants (21.2%) out of 189 were diagnosed as depressed and those with depression had significantly lower PIL mean scores compared to those without depression ($m = 107$, $SD = 15$ vs. $m = 99$, $SD = 15$, $p = 0.014$). Women had significantly lower PIL mean scores compared to men ($m = 103$, $SD = 16$ vs. $m = 109$, $SD = 13$, $p = 0.020$). Women were also diagnosed as depressed significantly more often than men (32 out of 120 women [26.6%] vs. 8 out of 69 men [12.0%], $p = 0.007$) (Table 5).

Table 5. Characteristics of the population according to depression in 2000/2002. Cross-sectional design including all participants assessed for depression and able to answer the PIL test in 2000-2002. $n = 189$.

Year	Not depressed	Depressed	p^1
	Total 2000/2002 n (%)	Total 2000/2002 n (%)	
	149 (79)	40 (21)	
Women	88 (59)	32 (27)	0.010
Men	61 (41)	8 (12)	
Living alone	121 (81)	35 (88)	0.248
Have children	128 (86)	39 (97)	0.029
Independent in ADL	57 (38)	8 (20)	0.019
Go outside independently	129 (86)	23 (58)	<0.001
Experience loneliness	72 (48)	27 (68)	0.023
Visit other people	86 (53)	11 (28)	0.002
No medications	14 (9)	1 (3)	0.231
	m (sd)	m (sd)	p^2
Purpose in Life PIL	107 (16)	99 (15)	0.014
Age	89 (4.1)	88 (3.9)	0.580
Mini Nutritional Assessment MNA	26 (2.2)	24 (3.1)	0.004
Mini Mental State Examination MMSE	26 (3.2)	24 (3.6)	0.009

p^1 Chi-square test

p^2 Student's *t*-test

In the prospective part of study I all of those diagnosed as depressed were excluded, 78 persons out of 149 persons without a depression diagnosis in 2000/2002 were available for examination for depression. In the follow up 5 years later, 21 (26.9%) out of 78 participants were diagnosed as depressed (15 women out of 40 [27%] vs. 6 men out of 17 [26%]). The mean PIL score at baseline did not differ between the group who were diagnosed as not

depressed (m = 108, SD=16) or depressed (m = 106, SD=17, $p = 0.750$) (Table 6) 5 years later.

Table 6. Characteristics of the population according to depression. Prospective design including those without depression in 2000-2002 and still available for the follow up study in 2005-2007. n = 78.

	Not depressed Total	Not Depressed Total	Depressed Total	p^1
Year	2000/2002	2005/2007	2005/2007	
	n (%)	n (%)	n (%)	
	78	57 (73)	21 (21)	
Women	55 (70)	40 (73)	15 (27)	0.575
Men	23 (30)	17 (74)	6 (26)	0.575
Live alone	63 (81)	45 (79)	17 (81)	0.524
Have children	66 (86)	46 (81)	18 (85)	0.823
Independent in ADL	37 (47)	6 (10)	2 (10)	0.495
Go outside independently	71 (91)	39 (68)	6 (29)	0.001
Experience loneliness	35 (45)	19 (33)	9 (43)	0.381
Visit other people	42 (54)	22 (39)	1 (5)	<0.000
No medications	8 (10)	0 (0)	0 (0)	
	m (sd)	m (sd)	m (sd)	p^2
Age	88 (3.4)			
MNA	26 (2.1)			
MMSE	26 (2.7)			
(PIL) Measured 2000- 2002	107 (16)	108 (16)	107 (17)	0.750

p^1 Chi- square test

p^2 Students t-test

In a logistic regression analysis using the diagnose depression (no/yes) from 2005/2007 as outcome no association between purpose in life and the risk of developing depression after 5 years (OR =1.0, 95% CI 0.97-1.03) among the very old were found. Potential confounders, such as social factors, having children, living alone, being independent in ADL, or being malnourished, did not affect the relationship between depression and purpose in life.

Paper III examined changes in purpose in life during a 5 year period among very old men and women, and investigates whether depressed mood, malnutrition, inactivity in daily life and cognitive impairment increased the risk to develop low purpose in life.

Among all the participants ($n=51$) the PIL mean value at baseline was 108 ($SD=16$) and after 5 years it had decreased to 103 ($SD=15$) ($p=0.002$). For women the 5 years decrease in PIL mean score (PIL $m=106$, $SD=16$; versus PIL $m=100$ $SD=15$) was significant ($p=0.007$). While, for men the decrease in PIL mean score (PIL $m=115$, $SD=12$ versus PIL $m=113$ $SD=8$) was not significant ($p=0.817$). For 3 men out of 9 (33%) the mean PIL value decreased over time and for women the corresponding decrease was 27 out of 42 (67%) ($p=0.013$). Mood (GDS), cognition (MMSE), and ADL (Barthel Index) also deteriorated significantly during the five-year period. The mean score for the GDS for the total group was 2.8 ($SD=1.8$) at baseline and 3.1 ($SD=2.2$) at follow-up ($p=0.020$). The corresponding value for the MMSE was 27 ($SD=2.6$) at baseline and 22 ($SD=4.2$) at follow-up ($p=0.001$). The mean score on the Barthel Index was 19.5 ($SD=0.9$) at baseline and 17 ($SD=4.7$) at follow-up ($p=0.001$). For the MNA, the mean score was 26 ($SD=2.3$) at baseline and 25 ($SD=3.4$) at follow-up ($p=0.229$).

Seven participants lived with someone, for those the PIL score at baseline ($m=110$, $SD=10$) was higher than those who lived alone ($m=102$, $SD=15$), however the differences was not significant ($p=0.087$). There were no significant differences in the mean PIL scores at baseline between those living at home ($m=108$, $SD=16$) and those living in an institution ($m=103$, $SD=11$) ($p=0.383$). However, at the follow-up mean PIL scores for those living at home ($m=107$, $SD=13$) were significantly higher than for those living in a institution ($m=93$, $SD=15$) ($p<0.001$) (Table 7).

Table 7. Mean value, (m) and standard deviation (sd) for total PIL score differences between years 2000-2002 and 2005-2007 and differences between men (n=9) and women (n=42).

	Total	p¹	Women	p¹	Men	p¹	p²
	m(sd)		m(sd)		m(sd)		
Age 2000-2002	86.6 (2)		86.5 (2.3)		87.2 (2.6)		0.089
Age 2005-2007	91.3 (2.4)		91.2 (2.4)		92 (2.6)		
PIL 2000-2002	108 (16)	0.002	106 (16)	0.007	115 (13)	0.817	0.004
PIL 2005-2007	103 (15)		100 (15)		113 (9)		0.753
GDS 2000-2002	2.8 (1.8)	0.020	2.9 (1.8)	0.060	2.7 (1.8)	0.077	0.335
GDS 2005-2007	3.1 (2.2)		3.3 (2.3)		2.6 (1.4)		0.191
Barthel-Index 2000-2002	19.5 (0.9)	0.001	19.5 (0.9)	0.004	19.9 (0.3)	0.598	0.135
Barthel-Index 2005-2007	17 (4.7)		16.6 (5.1)		19.2 (1.3)		0.329
MMSE 2000-2002	27 (2.6)	0.001	27.1 (2.7)	0.003	26.2(2.3)	0.089	0.863
MMSE 2005-2007	22 (4.2)		22.5 (4.9)		22.2 (3.9)		0.547
MNA 2000-2002	26 (2.3)	0.299	25.7 (2.3)	0.383	26.1 (2.1)	0.692	0.241
MNA 2005-2007	25 (3.4)		24.2 (3.5)		25.3 (2.1)		
	n (%)	p³	n (%)	p³	n (%)	p³	p³
Depressed 2000-2002	6 (12)	0.002	6 (14)	0.004	0 (0)		<0.001
Depressed 2005-2007	16 (31)		15 (36)		1 (11)	1.0	<0.001
Living alone 2000-2002	44(86)	1.0	37 (88)	1.0	7 (78)	-	0.359
Living alone 2005-2007	45 (88)		38 (91)		7 (78)		0.216
Living in a institution 2000-2002	6 (12)	0.012	5 (12)	0.002	1(11)	-	0.930
Living in a institution 2005-2007	14 (28)		15 (36)		1(11)		<0.001

p¹ value within groups, differences between years. Paired samples *t*-test

p² value between women and men. Student *t*-test.

p³ value, McNemar test.

Further, in the multivariate analysis (MLR 1) GDS ($p = 0.001$) and to be a woman ($p < 0.001$) remained significantly associated with PIL (Table 8). In the MLR 2 depression and to be a woman remained significantly associated with PIL (Table 9)

Table 8. Multiple Linear regression with PIL as the dependent variable. Generalized equations were used to estimate the parameters.

PIL	B	SE	p-value
Follow up versus baseline	-3.1	3.2	0.331
Women versus men	-11.4	2.9	<0.001
“Age2” versus “Age 1”	- 6.3	3.3	0.057
Living alone	1.0	2.7	0.701
Living in an institution	1.4	2.8	0.605
GDS	-2.0	0.6	0.001
MMSE	0.3	0.4	0.347
Barthel- Index	0.1	0.5	0.891
MNA	-0.4	0.6	0.528

Table 9. Multiple Linear regression with PIL as the dependent variable. Generalized equations were used to estimate the parameters.

PIL	B	SE	p-value
Follow up versus baseline	-2.3	3.7	0.527
Women versus men	-9.7	3.2	0.002
“Age2” versus “Age 1”	- 7.5	3.3	0.022
Living alone	0.9	3.5	0.796
Living in an institution	2.2	2.9	0.439
Depression	-11.6	3.7	0.002
MMSE	0.3	0.4	0.533
Barthel- Index	0.01	0.6	0.999
MNA	0.01	0.6	0.992

There was no significant differences ($p=0.508$) in PIL I mean scores among those with a depression diagnosis at baseline ($m=104$, $SD=13.5$) compared to those without depression at baseline ($m=108$, $SD=15.9$). However, those with depression had decreased significantly ($p=0.001$) in PIL mean score after 5 years (PIL I; $m=104$, $SD=13.5$ vs. PIL II; $m=85$, $SD=20.5$). The mean PIL scores among those who had developed depression during a 5 year period ($n=10$) was at baseline 106 ($SD=19.8$) compared with 109 ($SD=14.9$) among those who did not develop depression ($n=35$). However among those

who had developed depression (n=10) the PIL mean value after 5 years decreased from 106 ($SD=19.8$) to 96 ($SD=9.8$, $p=.089$) (Table 10).

Table 10. Mean value for Purpose in life (PIL) and p -value among participants with depression and participants not depressed.

	Depressed 2000-2002		Not depressed 2000-2002		
	n=6	p	n=45	p	p
	m (sd)		m (sd)		
PIL I	104 (13.5)	0.003 ¹	108 (15.9)	0.234 ²	0.545 ³
PIL II	85 (20.5)		105 (12.3)		0.001 ³

	Depressed 2005-2007		Not depressed 2005-2007		
	n=16	p	n=35	p	p
	m (sd)		m (sd)		
PIL I	105 (17)	0.002 ¹	109 (19)	0.777 ²	0.508 ³
PIL II	92 (15)		108 (12)		<0.001 ³

p^1 p - value among those depressed.

p^2 p -value among those not depressed.

p^3 p - value between depressed and not depressed

The result in **Paper IV** contains 4 themes and 15 sub-themes. The themes are “having a positive view of life”, “living in relation to God”, “having meaningful activities”, and “simply existing”. The themes and subthemes are presented in Table 11.

Table 11. Themes and sub themes

Sub themes	Themes
Being grateful Being related Being satisfied Being independent	Having a positive view of life
Believing in God Feeling safe Dreading the end	Living in relation to God
Having enjoyable hobbies Managing the household Maintaining friendships	Having meaningful activities
Hanging on Feeling lonely Feeling uncertain	Simply existing

The theme **having a positive view of life** was developed from four underlying sub-themes: being grateful, being satisfied, being related, and being independent. The women expressed having positive view of life as being gratefulness both towards life and in terms of enjoying life. Having a positive view of life was also described in terms of just having a nice quiet time at home and being satisfied and feeling healthy and having a sharp memory *“My body is old but my mind is young”*. Keeping contact with their children and grandchildren and being concerned about their children’s health was one aspect of being related. Being related also involved contact with neighbors and friends the contact was important for not feeling lonely.

Positive feelings of being independent when growing old were seen in relation to earlier experiences of life *“I have been a maid all my life, but now I am independent and do what I want”*. Even though the women described having children and grandchildren as very important, they also pointed out that they did not want to be controlled by their children. Being debt-free and in a position of financial security was described in the narratives as a feeling of being independent.

The theme **living in relation to God** was developed from three sub-themes: believing in God, feeling safe, and dreading the end. The women felt that believing in God and knowing that God was with them gave meaning in life and helped the women through days when they found life miserable. Feeling safe meant having a faith upon the upcoming resurrection, and knowing that there is a life beyond death. Having faith in God helped the women to face their grief after losing a child, as they were convinced that they would meet again in heaven *“I believe in a life after this and then I will see my nearest and dearest”*. Even though the narratives included a positive view of living in relation to God, there were also statements about dreading the end of life. Feelings of fear about what would happen after death were expressed as a fear of going to hell *“Since I was young I have had a terrible fear of going to a burning hell”*.

The theme **having meaningful activities** was developed from two sub-themes: having enjoyable hobbies and managing the household. Having enjoyable hobbies was described as a mutual satisfaction, which could be interpreted as interdependence between the hobby and the woman. The mutuality involved working activities and the happiness when seeing the results of the work *“Today I planted flowers outside; that makes me happy”*.

Being able to maintain the home and keep it clean and tidy was also important for purpose in life. Even wiping dust off the table was seen as a meaningful activity.

Although the narratives included many positive views of purpose in life, they also contained a darker perspective. The theme **simply existing** was developed from three sub-themes hanging on, feeling lonely, and feeling uncertain. Just hanging on was described in the narratives as *“you just wake up, get dressed, and wait for the day to end, and there’s not much more to do”*. Loneliness was expressed as being tired and sad when thinking about friends who had passed away. Memories of a burdensome childhood, such as not being loved or cared for as a child, conveyed negative emotions *“It was a mistake that I was born, I have no purpose in life”*. The women described their feelings of uncertainty about death and how their lives would end. This uncertainty was influenced by not knowing what would happen after death *“you never know what happens when you leave the earth”*. Expressions of a fatalistic nature were also found in the narratives; as one woman stated *“I must be like a link in a chain, of course, I have to be there, and otherwise there is no chain afterwards”*.

PAPER V examined men’s experiences and reflections of purpose in life. The participants discussed purpose in life from various perspectives, which were classified into three content areas: **the purpose of one’s own life as a whole** (including the categories work, struggle, family-building, and confidence); **purpose in everyday life** (including happiness, adaptation, and future plans); and **reflections on purpose in life** (including limited meaning, health, an honorable life, and the ability to face death). The content areas and categories are presented in Table 12.

Table 12. Content areas and categories.

The purpose of one’s own life as a whole	The Purpose of own everyday life	Reflecting over Purpose in life
Work	Happiness	Limited meaning
Struggle	Adaptation	Health
Family-building	Future plans	An honourable life
Confidence		The ability to face death

The purpose of one’s own life as a whole

Work was stressed as an important source of purpose for the men. They had worked hard earlier in life, and they expressed how work had dominated

their lives in terms of being “*workaholics*.” Work on building their own homes was also important to their experiencing purpose in life. Feelings of self-respect and personal worth in relation to their previous work were also closely connected to experiencing purpose in life: “*Purpose in life is primarily work I had a fantastic job and I was keen to manage my job well.*”

Struggle was expressed in terms of the struggle for money, which the very old generation saw as a testimony to great strength and clear purpose. “*In my childhood there was never 25 cents left, and that was of course a hard time.*” While they were proud of their earlier struggles, the old men felt that younger people did not respect or appreciate how hard they worked to earn their pay.

Building a family was also expressed as a main purpose in life—both living with a loving wife and feeling that the marriage had been totally perfect without any dispute. One man said: “*I met my lovely wife, and we have stuck together and have very nice children and also grandchildren, so it has always been positive.*” Purpose in life as related to the family was expressed in terms of the joy the men felt when they got married, settled down, and “*created the family.*”

Confidence in relation to other people, society, and a higher power was stressed as an important part of feeling purpose in one’s life. Confidence in God was expressed as the ability to rely on God and know that everything is in God’s hands. “*When I read the newspaper and see all the obituaries, I feel confident that there is a higher power and that it is strength to have this faith.*”

Purpose in everyday life

Experiencing purpose in life was also described as being happy in everyday life and thinking positively in every situation. Making the most out of one’s day was expressed as a purposeful act: “*I see the positive in every day, and tomorrow is a new day.*”

Being able to adapt to bodily changes and to continue to feel satisfied in life despite functional decline was also mentioned as contributing to experiences of purpose in life. To be able to get up, get dressed, and have a cup of coffee was described as purposeful. “*For me, purpose in life is to be able to get up in the morning and get dressed. That is worth a great deal. If you can’t do that and you just lay in bed, there would be no purpose in life at all.*” One

man expressed relief of knowing that he would soon be able to move into an apartment in a block with services for the elderly. Once he moved in, he would not have to worry about his daily shopping anymore because he could rely on the staff to do the shopping.

Continuing with life, looking forward, and making plans for the future despite the very old age were expressed as important. One man's plans for the summer were especially ambitious: *"I have very clear goals and purpose; I have announced that I will plant 6 acres of forest."* Maintaining interest in life and what is happening in the world and looking ahead contributed to making life meaningful. Despite the fact that some of the men were prevented by disability from continuing to work outside the home, it was still important to feel that they had done their duty *"I have to fill in my income-tax return and do my duty."*

Reflection on purpose in life

Reflections on purpose in life included questioning whether there was a purpose in life at all, feelings of complete boredom, and the sense that every day was exactly the same as the day before. The view that the purpose in life is limited was expressed in terms of that all humans are being totally bound by heredity and environment and powerless to do or say anything to change that fact. *"Well, you see I have in fact given up on everything."*

Purpose in life was reflected on in relation to their physical abilities and in relation to treatment by other people who saw them as no longer physically capable. *"Since I retired, it is like I have to break in to get my voice heard in a conversation."* When reflecting over purpose in life they stressed the importance of being healthy, both for themselves and for their families.

Living an honorable life and being good to others was also reflected on. Some men said it was important to *"love your neighbor as you love yourself."* Living an exciting and challenging life was also seen as giving purpose in life. One man talked about his experiences of traveling around the world and seeing different things; however, he wondered whether traveling could be the purpose in life or if it was just something fun or nice to do. *"It was nice to travel but I'm not really sure if this is really the meaning, because before we had those opportunities to travel, there was meaning in life."* The narratives indicated that the men experienced more purpose in life when they were younger. *"When I was younger I wanted so much. I wanted to go forward, so I think purpose in life was greater then."* Why people are born and work all their life and then die was reflected on, as were thoughts of what might happen after death. The reflections upon death were told without any fear

and with acceptance that there was nothing they could do to avoid it. *“You have to face death when it comes.”*

DISCUSSION AND REFLECTION

This thesis showed that women experienced less purpose in life compared to men. In the cross-sectional study in paper I the PGCM subscale attitudes towards own aging were associated with purpose in life for both women and men. Purpose in life decreased over a five-year period among the participants in the study. The very old women were diagnosed as depressed to a greater extent than men at baseline, which is in accordance with the western world where depression is approximately twice as prevalent in women as it is in men (Piccinelli & Wilkinson, 2000). This thesis showed that very old men developed depression in the same proportion as very old women after five years. Earlier research has suggested that men may be underdiagnosed because of the way they express depressed mood and unhappiness (Cochran & Rabinowitz, 2000). Men tend to express unhappiness as a constellation of symptoms consisting of anger, irritability, anti-social behavior and increased substance use (Courtenay, 2000; Magovcevic & Addis, 2007). However, these studies are among younger men and very old men may express depressed mood differently than younger men. Men are less likely than women to utilize the mental health service for psychiatric disorders (Addis & Mahalik, 2003).

Despite our findings in the quantitative studies and the research into depression as a major problem among the very old, the narratives reflected a positive view of life. The contradictory findings from the studies support the question whether the diagnosis criteria for depression are suitable for use among very old people. The literature also suggests that there is a problem in using the DSM-IV criteria among old people (McCabe et al, 2006; Mansfield et al, 2008). Radden (2003) argued that the presuppositions and the classification descriptive psychiatry are making, is an attempt to identify and describe mental disorders without reference to underlying causes. There is of importance to have a comprehensive view in the care for the very old people and not to focus only on the DSM-IV criteria. These assumptions are in accordance with Frankl (1962) who stated that depression can not be treated if we not understand the underlying causes such as existential vacuum. The participants in this thesis can be seen as the cognitive “healthiest” persons among the very old group. Despite that fact that the participants were the “elite” of very old people and that the participants in paper II did not have a depression diagnosis, 27 % of the women and 26 % of the men were diagnosed as depressed after 5 years, one wonders how it is for those with diagnosed cognitive impairment. Some authors have argued that exclusion of persons with dementia underestimates the true prevalence for depression

(Ambo et al, 2001). People with dementia report more depressive symptoms than those with no or minimal impairment (Li et al, 2001; Bergdahl, 2007b).

The hypothesis that strong purpose in life can serve as a protection against depression was disapproved. Earlier research described purpose in life as an inner resource important for dealing with negative life events (Frankl, 1958; Nygren et al, 2005; Lundman et al, 2010). However, our study shows that the participant's purpose in life scores did not protect for the development of depression five years later. Those who developed depression did not have lower purpose in life scores than those who did not. Among those with depression there was a significant decrease in purpose in life after a period of 5 years from baseline. The finding that purpose in life decreased in a higher extent among very old women compared to very old men could be explained by interpreting the result from the qualitative studies.

Despite women scoring lower on the purpose in life test they narrated positive thoughts and were pleased to take each day as it came. The importance of being independent both financially and managing on their own were stressed as important for purpose in life. The women in our study were born at the beginning of the 20th century when the dominated discourse about being a woman was being a house wife (Hirdman, 1994). For women in the north of Sweden life was characterized by hard work, taking care of the household including a husband and in most cases, children. It was not unusual for old parents to live in the same house and their care was also the women's duty. A majority of the participants lived on farms with cattle's which the women were also responsibility for. All that time there was no running water so doing the laundry especially during the winter was hard physical work. The women stressed that their life was easier nowadays compared to earlier time. Although the narratives were dominated by a positive view of life they also contained a darker perspective, and one women said that there was a mistake that she had been born.

The interviews with the men differed from those with the women, the men remembered and narrated previous time as important for purpose in life. In spite of physical losses the men focus on past time dominated of work which seem to contribute to purpose in life. This can be compared with the compensated part of the SOC model (Freund & Baltes, 1998). There was not only just paid employment that was important for experience purpose in life, to be able to go out in the wood or be able to go and fishing were stressed as important. To be able to create, to build own homes and to create a family were stressed as important for purpose in life. The only negative reflection of purpose in life came from the man who scored on the lower bound of the PIL test. By interpreting the results from the qualitative studies one possible

conclusion are that women experiences purpose in life in everyday living, having meaningful activities and associate with family and friends. If the women are disabled and can't create meaningful activities or participate in social activities, the society and health care ought to have strategies and help the women with such activities in order to maintain purpose in life. The men stressed former times when they where in the days of theirs strength as important for purpose in life, everyday living seems not to be particularly important for purpose in life among men. Theses findings may be one explanation why very old men despite physical decline are able to maintain purpose in life.

Previous research within the Umeå 85+study has shown that a majority of very old people diagnosed as depressed do not seem to respond to the treatment with anti-depressants (Bergdahl et al, 2005). Since the quality of treatment and follow-up for very old people with depression seems to be poor alternative treatments must be considered. Frankl (1966) developed the logotherapy technique grounded on the principle that having a reason to live (a purpose or meaning) is essential for living a worthwhile life. Meaning exists in all circumstances; however it is hidden and waiting to be discovered. The use of logotherapy as a method of treatment for depression could be one aspect to consider in the care of very old people.

The view in the society upon very old people must be taken into consideration. Several studies have found that attitudes towards old –old (75 and older) are more negative than attitudes toward the young old (Canetto et al, 1995; Hummert et al, 1997). People in the Western society seem to hold clear stereotypic beliefs that differentiate older and younger beliefs (Cuddy & Fiske, 2002). If very old people are seen as negative stereotypes there may be a difficulty to find meaning in late life (Tornstam, 1996). Therefore it is of great importance to see very old people as individuals with unique resources and wisdom instead as a homogenous very old group, in order to maintain purpose in life during life.

METHODOLOGICAL AND ETHICAL CONSIDERATIONS

The first collection of data in the years 2000 and 2002 had already been carried out before I began my research studies. I started my studies in the follow-up for the Umeå 85+ project in 2005. The Umeå 85+ study is a multi-professional collaboration between the Department of Community Medicine and Rehabilitation, Geriatric Medicine, Physiotherapy and Occupational Therapy units and the Department of Nursing at Umeå University. All of the participants were visited in their homes on several occasions. All assessments, questions and scales were interviewer administrated and conducted in the same order for all visits (cf. von Heideken-Wågert, 2005). Data collection and several assessments could be performed on people with low cognitive levels. In order to avoid the participants being subjected to unnecessary visits those who were unable to answer Likert-types questionnaires or lacked the strength to participate in interviews were not included in the studies underlying this thesis. There was no specific cut-off limit for the MMSE but it was agreed in the research group that the first visiting researchers should judge whether the participant could give reliable answers to Likert scales, and if they were able to participate in thematic interviews. Due to the number of questions, the participants were always visited more than once. During the whole process the researcher had the possibility of clarify any difficulties concerning the questions. Despite the participant's old age and the number of questions it seemed not to be difficult for them to understand and answer the questions.

The interviews were carried out in the participant's homes about 2 weeks after they had answered the questionnaires. Since the interviews already had been done before I entered the project none of the interviews analyzed in the qualitative studies had been preformed by me. In order to get a broader view of the narratives I have listen to several tape recorded interviews and also printed two of the interviews. It may be a disadvantage that I did not interview any of the participants, but in the follow-up I performed most of the questionnaire interviews. These questionnaires often opened up for narratives which often could be compared with narratives given in the thematic interviews.

During the thematic interviews the participants were asked and answered the specific question concerning purpose in life, which could raise thoughts of an existential character. The participants had answered the Purpose in Life test earlier and those questions can be seen as an introduction to the

narratives. During the thematic interview the participant could reflect upon questions that may have been raised when earlier answering the questionnaires. The interviews were performed by experienced nurses and the interpretation is that they met the interviewed old women and men with respect and empathy. Narrating one's life story could be one way of feeling that there is meaning in life and may help in confronting negative experiences. The participants could withdraw from the study at any point without giving any explanation.

The study population comprised mostly women, an equal proportion of women and men would have been desirable, and especially in study III a larger sample size would have been preferable. The inclusion criteria in study IV and V was not the same. In study IV 30 women was included and in study V 23 men was included, the inclusion criterion differs because of the sample size. There were a larger proportion of women that was interviewed and the women's PIL scores were more diverse. One must take into consideration that the participants were a selected group of very old people who had the strength to answered the PIL test at baseline and then again after 5 years. Since the participants are a selected group of the "strongest" cognitively and physically healthy persons the results, especially for men, should be interpreted with caution.

The PIL test is one of the oldest measures of purpose in life and has accumulated the largest body of research about purpose in life. The PIL test is most often used as a total scale, although its dimensionality is unclear. Reker and Cousins (1979) completed a factor analysis of the PIL test and found that PIL loaded onto six dimensions. Harlow et al (1986) presented a factor analysis including four factors. Chamberlin and Zika (1988a) also presented a four- factor solution. In contrast two studies using a Chinese version of the PIL (Shek et al, 1987; Shek, 1988) resulted in the extraction of five factors for both samples. A factor analysis of the Swedish version of the PIL scale was restricted to three factors (Jonsén et al, 2010). Dyck (1987) considered the PIL test to be an indirect measurement for depression since it loaded strongly onto a factor which was also loaded by several measures of depression. The Swedish version of the Purpose in Life test was translated literally in to Swedish and tested among Swedish upper secondary school pupils (Åkerberg, 1987), it would have been desirable if the Swedish version of the scale had been tested in a wider age context. There were few negatives perspectives on purpose in life in the interviews compared to the large proportion with low PIL scores. This could be a result of the question asked "what gives you purpose in life?" The respondent was not asked what makes them loose purpose in life.

CLINICAL IMPLICATIONS

The very old population is an important group in our society that is increasing. It is of importance to support very old women in order to maintain purpose in life in old age. Very old women seem to need caring and need to have meaningful activities in daily life. It is important that very old women feel independence in daily life. For old men, narrating about they lived life can be one way to experiences purpose in life. Very old people seem to need to participate in social activities and meet other people. There ought to be community centers in the society that can offer meaningful group activities for very old people in order to maintain purpose in life. For the very old people living in institutions, it ought to be obvious that the institution should offer activities for contributing to experiences of purpose in life. Psychological ill-health such as depression is common among older people. Depression is more common among very old women compared to very old men, but after 5 year the same proportion among very old men developed depression. Differences in depressive symptoms among men and women must be taken in consideration for the care of very old people. The PIL test can be useful in clinical settings in order to detect low purpose in life which is associated with depressed mood and depression. The PIL test may also be useful to evaluate the treatment of depression. It is of substantial importance to be aware that purpose in life is decreasing in very old age and especially among women. Since logotherapy can be seen as a foundation for cognitive behavior therapy one way to recreate purpose in life among very old people could be to use logotherapy among very old people in order to maintain purpose in life through life.

IMPLICATIONS FOR FURTHER RESEARCH

Further studies need to be done in order to explore purpose in life. Studies with a intervention design is of importance, as far as I know no study describing the result of logotherapy as a treatment for low purpose in life in very old people have been carried out. Research that use other cognitive behavior therapies for recreate purpose in life are of importance. Studies that strengthen purpose in life in order to prevent very old people from develop depression need to be done. Studies on important life events in relation to loss or gain of purpose in life are of great interest. Moreover, it can be questioned if asses of purpose in life can be used as a measure for evaluating the treatment of depression. In my studies we found sex differences with women scoring significantly lower on the PIL test compared to men, which lead to that more studies with focus on very old women and purpose in life need to be done. The qualitative studies indicate gender differences in relation to experienced purpose in life among very old women and men. Since the old women seem to be more vulnerable there are of importance to further analyze gender perspectives in relation to purpose in life and ageing. Interviews with very old people with a different angle for example ask very old people questions about life events that would make them loose purpose in life. Interviews with very old persons with low purpose in life in order to find out what life events had appear that have made them to lose purpose in life and interviews with people with high purpose in life to find out what makes them experience purpose in life. Further research has to be done to explore the psychometric construct of the purpose in life test and especially the sensitivity and specificity among very old populations.

CONCLUSION

Purpose in life is lower among women compared to men and purpose in life is decreasing during a five year period among very old people and especially for women. Very old people's attitudes toward one's own ageing appear to be associated with purpose in life. Social relations seem to be important for purpose in life and seem to be more important among very old women.

Depression were more common at baseline among very old women compared to men but the same proportion of men and women developed depression after five years. There were no differences in the participants PIL scores at baseline among those that developed depression compared to those that did not develop depression. Being diagnosed as depressed or having depressed mood according to the GDS at baseline was significantly associated with deterioration in purpose in life after five-years. Furthermore, among those who lived with depression during five years the PIL scores had decreased significantly, that could indicate that living with depression results in a loss of purpose in life. Our hypothesis that purpose in life could prevent very old people from develop depression failed.

The loss of purpose in life seems to be an important aspect of depression in very old people. Whether successful treatment of depression also improves purpose in life needs to be explored. Whether interventions to strengthen purpose in life in very old people with depression can reduce their mental suffering needs to be studied further.

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