

# **SENSE OF COHERENCE AMONG OLDER PEOPLE:**

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## **Systematic Review**

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**Keywords:** Aged, elder, old people, aging and sense of coherence.

**Background:** The population demographic dynamics in many countries are changing with the older people becoming the majority in many societies. It is expected that in western countries especially, aging population will continue to increase. As the average life expectancy continuously increases, we may be faced with spending more years in poor health. Another challenge facing health professionals is to effectively highlight the determinants for healthy aging, that is, to identify the conditions that maintain and/or improve quality of life in old age.

**Objective:** The aim of this study was to find out the connection between sense of coherence (SOC) and health among the older people and how it differs between men and women. Another aim was to understand the major factors associated in attaining healthy aging and to establish if there is evidence which shows that high score of sense of coherence (SOC) will translate into good quality of life (QoL) in the older people.

**Method:** Relevant literatures for this study were obtained through electronic search from CINAHL, PUBMED, and PsychINFO.

**Results:** In all the sixteen studies reviewed, there was one way or the other some kind of association between SOC, health and QoL among the older people. Overall nine studies showed direct relation on SOC and health whiles hinting on some factors to SOC and QoL. Six gave major factors relating SOC and QoL. Women scored lower on the SOC as compared to their male counterpart. A higher QoL score corresponded with a stronger SOC score.

**Conclusion:** Evidence from this review is showed strong connection between SOC and health. Promoting health and wellbeing requires adaptation of different strategies to manage effectively the problems of the older people. This will help make the life of the older people enjoyable. Findings from this study revealed gender differences. It would be important to embark on further research into this issue.

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## **LIST OF ABBREVIATIONS**

Sense of Coherence (SOC)

Quality of Life (QoL)

World Health Organisation (WHO)

Gross Domestic Product (GDP)

Activities of Daily Living (ADL)

Institute of Medicine (IOM)

Centre for Health Promotion (CHP)

Generalized Resistance Resources (GRRs)

Health Related Quality of Life (HRQoL)

Resilience Scale (RS)

Life Quality Gerontological Centre scales (LGC)

Purpose in Life Test (PIL)

Self-Transcendence Scale (STS)

Spiritual Transcendence Scale (STS)

Perceived Stress Scale (PSS)

Quality of Life Index – Pulmonary Version III (QLI-PV)

World Health Organization Quality of Life Instrument (WHOQOL-BREF)

HRQOL (SF-36 Health Survey)

Social Provision Scale (SPS)

Symptom Checklist-90-Revised (SCL-90-R)

Physical health limitation (PHL)

Illness appraisal (IA)

Short Form Health Survey (SF-36)

Self-care Ability Scale for the Elderly (SASE)

Nutritional Form for the Elderly (NUFFE)

Philadelphia Geriatric Centre Morale Scale (PGCMS)

Geriatric Depression Scale-15 (GDS-15)

Mini-Mental State Examination (MMSE)

Eysenck Personality Questionnaire- Revised, Short Form (EPQ-R)

Multidimensional Health Locus of Control Scale (MHLC)

Life Orientation Test (LOT)

General Health Questionnaire (GHQ)

# 1 INTRODUCTION

Providing good quality nursing care to older people requires understanding level of disability (i.e. total prevalent morbidity, functional limitations, and cognitive impairment), environmental and socioeconomic circumstances, and understanding of perceived quality of life of the older person. The population demographic dynamics in many countries are changing with the older people becoming the majority in many societies. It is expected that in western countries especially, aging population will continue to increase.

For instance in 2005, Finnish population at the age of 65 and above was about 837 thousand (16%) of the total population. It is forecasted to change to 1,411 thousand (25.9%) by 2050. Furthermore, Germany in 2005 recorded 15,544 thousand (18.9%) and, it is expected to rise by 22,902 thousand (32.5%) in 2050 (UNDP 2008). In the United States of America (USA), older people are expected to represent approximately 13% of the population by the year 2030 while in Ireland, it is estimated that the number of people over 65 years of age will increase to around 14% by 2021 (Murphy et al. 2009).

Developments of this kind create huge challenges for health professionals and policy makers to draw up policies to ensure that good quality nursing care is assured and delivered to this population group. The word “quality” is constantly being used in all dimensions of our lives. It is being used across different fields of professions. Now, with the increased awareness of aging issues across societies and countries, more attention is also being shifted towards aging spectrum as well.

Promoting health in recent times has become a modern scale project whereby different theories and strategies are being adopted to enhance people’s way of life to embrace good health. One of such theorist is Aaron Antonovsky, an American Israeli scholar who spent most of his time on sociological aspects of health and medicine and came up with the concept of salutogenesis and sense of coherence (SOC). Over the past 20 years, Antonovsky’s salutogenesis theory and sense of coherence (SOC) has become a very popular concept. It claims that the way people view their life has a positive influence on their health (Antonovsky 1996, Lindström & Eriksson 2006). SOC explains why people in stressful situations stay well and even are able to improve their health. Antonovsky postulated that



individuals with a strong SOC are more likely and more often to stay healthy than persons with a weak SOC (Antonovsky 1996, Lindström & Eriksson 2006 & Read et al 2005).

Regardless of its popularity in health promotion and many studies citing sense of coherence (SOC) as helping people cope better resulting in quality of life, relationships between these concepts are not clearly understood by health care professionals. One of such challenge facing health professionals is to effectively highlight the determinants for healthy aging, that is, to identify the conditions that maintain and/or improve quality of life in old age (Wiesman & Hannich 2008). It is also very important to note that many researches that have been conducted on the relationship between sense of coherence and health until now have mostly been done on people younger than 65 years olds.

However, to be able to provide good quality nursing care to the older people, perhaps, nursing care professionals are required to think salutogenically by asking questions such as: what are the forces that promote healthy aging and that lead to good adaptation to age dependent change? Nursing care professionals can also focus on health care services on the basis of salutogenesis as: how can we understand and facilitate older people movement to the health end of the continuum? Therefore, an in-depth understanding and knowledge of how older people perceive health and what constitute good health is paramount in order to tailor our caring process to suit the demand of this population group. This could help address some of the many challenges facing the nursing and health care professionals caring for the older people.

## **2 AIM AND RESEARCH QUESTIONS**

The aim of this study is to find out the connection between sense of coherence (SOC), health and QoL in the older people and how it differs between men and women. I want to understand the major factors associated in attaining healthy aging. I also want to see what literature is available and have been published on this age group (65 years or older) and to establish if there is evidence which shows that high score of sense of coherence (SOC) will translate into good quality of life (QoL) in the older people.

Specific objectives connected to the main purpose of the study are:

1. What is the connection between sense of coherence and health among older people?
2. Which factors are related to sense of coherence in older people?
3. How does gender relates to SOC?
4. What is the relationship between SOC and QoL?

### **3 BACKGROUND**

To understand these concepts relating to this population group, it is very important to effectively explore some key issues among older people bearing in mind the main goal and the objectives of this study. This will help provide some important information relevant to the topic under study.

#### ***3.1 The Changing Age Structure in Population***

The world population is increasing at an unprecedented rate with most of the growth unevenly distributed. The world population in the 1950s was around 2.5 billion (Population Reference Bureau 2009 & Bongaarts 2009). This figure has been rising steadily. In 1990 the world population stood at 5 billion, currently it is 6.8 billion with a fertility rate of 2.6. This shows an increase difference of 1.8 billion. It is however projected to be 9.2 billion by the year 2050 (Population Reference Bureau 2009 & Bongaarts 2009). In 1950s the less developed countries constituted around 68 percent of the world population but rose to 81 percent in 2003. Projections indicate that these countries will dominate about 90 percent of world population by 2050 (McFalls 2003). This change in population is posing a great challenge and debate for the societies around the world in terms of economic growth, resource distribution and service provision. The scarcity and waste of social resource, concentration of population in certain region of the world, social disturbances and quality of life are creating a lot of concerns among many societies of the world. There are many factors contributing to the growth and the unevenness of world population such as advancement in medical technology, decline in birth and also death rate (McFalls 2003 & Bongaarts 2009).

The population demographics worldwide are changing with people growing older than ever before. The balance between young and old is shifting in favour of the old throughout the world. In 1950s, the proportion of people 15 years of age was 34 percent, by 2009 it had declined to 27 percent and it is projected to decline further by 2050 (UNDP 2009). A projection shows that children numbers will decline for the first time in our history by one

fourth over the proportion of people age 60 and over. Furthermore, proportion of people aged 15 to 59 will changed from 62 percent in 2009 to 58 percent in 2050 (UNDP 2009).

Additionally, birth rate and death rate have impacted greatly on these changes in population dynamics. For about 40 years now life expectancy has risen by 4 months each year since 1970 with Infant mortality rates also falling from 80 per 1000 live births in 1980, to 54 per 1000 in 1998 (The World Bank Group). In the 1950s fertility rates among the less developed countries were around 6 births per woman on the average signaling nearly absence of birth control. This situation changed in 2000s with certain regions of the developing countries to about 2.5 births per woman. The fertility rate in the developed countries during the 1950s was low but continues to decline with 2.0 births per woman in North America and 1.4 births per woman in Europe in the 2000s (McFalls 2003 & Bongaarts 2009). Inevitably due to medical advancement (immunizations), life expectancy has increased across the world. In 1950s for example, Africa for instance had life expectancy of 41 years but in the 2000s it had increased to 64 years even though mortality rate due to AIDS were higher (Bongaarts 2009; UNDP 2009; Ferrucci 2008 & Kinsella 2005). These are strong indications that world population dynamics are changing and it is impacting on society which requires greater understanding in how to structure policy to promote and maintain health and wellness.

There is a need to change our structural and functioning systems of health and social services. As the average life expectancy continuously increases, we may be faced with spending more years in poor health. In a study by Seshamani & Gray (2002) conducted to examine national age specific expenditure trend in England and Wales comparing to Canada, Japan and Australia, results showed that per capita health expenditure in England and Wales increased 8 percent for 65 years and over as compared to 31 percent for age 5 to 64. Demographic shift and population growth accounted for only 18 percent of the observed increases in England and Wales as compared to 68, 44 and 34 percents for Japan, Canada and Australia. Furthermore, Veras (2009) discusses the social and, particularly, the health consequences resulting from the expansion of the numbers of elderly people in Brazil. Indications showed elderly people presented greater disease burden and incapacities and they use healthcare services more. On the other hand, current models for their healthcare for the elderly are shown to be inefficient and costly.

Meanwhile, a comparison on the effects of population aging on health spending, retirement policies, use of long-term care services, workforce composition, and income across eight countries: Australia, Canada, France, Germany, Japan, New Zealand, the United Kingdom, and the United States reveals that between one-third and one-half of total health care spending went on the elderly in each country. There was very little correlation between the percentage of GDP spent on health care for people aged 65-years and older and the percentage of the population in this age group (Anderson and Hussey 2000). This suggests that an aging population does not necessarily mean higher health spending rather other factors is much more important predictors.

### ***3.2 Health and well-being among the Older People***

Health, according to the Merriam- Webster dictionary; is a condition of being sound in body, mind, or spirit especially being free from physical disease or pain (<http://www.merriam-webster.com/dictionary/health?show=0&t=1303982949>). The World Health Organisation (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (<http://www.who.int/about/definition/en/print.html>). It could be believed that this definition of ‘health’ with regard to older people will no longer hold since aging inevitably goes along with altered general health status with disabilities. This definition places emphasis on three important aspects however, those aspects are where the older people have most deficit. Older people suffer from several diseases including cardiovascular diseases, cancers, musculoskeletal problems, diabetes, mental illnesses, sensory impairments, incontinence, and especially in poorer parts of the world infectious diseases. However, rates, trends, and specific types of these diseases differ between women and men (WHO 2003). These diseases further affect older people’s life such that accomplishing basic task or/and daily activities of living (ADL) becomes difficult and make them dependent on other people to care and help them in their ADL whether in their own home or in an institutions.

According to Luleci et al. (2008) 25% of patients in nursing homes over the age of 65 in western countries need help of another person to perform ADL, such as bathing, dressing, eating, transferring, continence and toileting. In addition, Berlau et al. (2009) reported 71% in 90–94 year olds, 89% in 95–99 year olds and 97% in centenarians had difficulty with

ADL. The ADL most commonly causing difficulty was walking (70%) whereas the ADL most commonly causing dependency was bathing (51%). Age, gender and institutionalization were significantly associated with both ADL difficulty and ADL dependency. It could therefore be agreed that health in older people cannot meaningfully be defined as the absence of disease because the prevalence of diagnosable disorders in elderly populations can be high. In addition to that Bowling (2003) found out that 50 percent of people aged 65 and over, living at homes in Britain consider poor health as taking quality away from their life. Social relationships and health were judged to be the most important areas.

Health is a strongest predictor of wellbeing (Smith 2001 & Abdel-Khalek 2012) and it is in many respects viewed as quality of life and can either be objective “physical” or subjective “psychological” (Rapley 2003). It is the attitudinal aspect of a person such as his or her satisfaction or dissatisfaction with life, or happiness or unhappiness that makes their sense of wellbeing “quality of life” (Wish 1986). The objective wellbeing is the obvious physical manifestations (hard data) which aids to the increase or decrease of functional health Wish (1986). Some of the objectives elements include: life expectancy, criminal rate, unemployment rate, gross domestic product, poverty rate, school attendance, working hours per week, perinatal mortality rate and suicidal rate (Rapley 2003).

The subjective wellbeing is a positive side of mental health. It is a broad category of phenomena including emotional responses, domain satisfactions and global evaluations of life satisfaction (Wiesman & Hannich 2008). Subjective wellbeing represents a meta-construct comprising personal evaluations of one’s emotional and psychological states and of general circumstances of one’s inner life. It can be described as joy, enjoyment, fulfillment, pleasure, contentment, satisfaction, happiness, and other indicators of a life that is full and complete (Wiesman & Hannich 2008 & Abdel-Khalek 2012). The subjective elements also include: sense of community, material possession, sense of safety, happiness, satisfaction with life as a whole, relationship with family, job satisfaction, sex life, perception of distributional justice, class identification and hobbies and club membership Abdel-Khalek (2012). Thus, subjective wellbeing is an umbrella term that refers to several separable components: life satisfaction and satisfaction with life domains such as marriage, work, income, housing, and leisure; feeling positive affect (pleasant emotions and moods) most of

the time; experiencing infrequent feelings of negative affect (such as depression, stress, and anger); and judging one's life to be fulfilling and meaningful (Diener 2002).

These components have been the main areas of interest when trying to understand and measure quality of life. Through these concepts health care professionals are able to answer some of the questions surrounding the meaning of quality of life in the older people. The term quality of life is not only used in our everyday speech, but a multidisciplinary term used in researches linked to various specialized areas such as sociology, psychology, medical and nursing science, economics, philosophy, history and geography (Farquhar 1995 & Cooney 2009).

### ***3.3 Understanding Quality in the Life of Older People***

Quality of life is a complex concept to define and many do not even attempt defining it. The main reason is that to do so limits its meaning and that any definition necessarily reflects a value judgment of the person. Quality, to some people is like saying beauty is in the eye of the beholder and that quality of life (QOL) means different things to different people and takes on different meanings in different areas of application. The word is somehow ubiquitous in health care, but what does it really mean to health planners, providers, patients, and payers? Is quality a process, a tactic, or just an aspiration? What is quality of life in terms of care? This therefore means that nursing professional's in-depth understanding is warranted. Knowledge about factors that can promote or hinder a good life or quality of life (QOL) in older people's life is needed to provide high-quality care and to develop the concept of care appropriate to the older people.

"Quality of life" is a new name for the older terms "general welfare" and social "well-being" (Wish 1986). It is the output of a certain production function of two different but often interdependent input categories, physical inputs which are objectively measurable and transferable, and the psychological inputs which are subjectively, ordinary differentiable but usually not interpersonally comparable" (Wish 1986). According to Liu (1976) the term quality of life consists of five components; (1) economic; (2) political; (3) environmental; (4) social, and (5) health and educational. Some also add more to make it nine components: (1) climate; (2) housing; (3) health; (4) crime; (5) transportation; (6) recreation; (7) art; (8)

economics, and (9) education (Wish 1986). This is entirely different from the medical perspective when defining quality. However, for health professionals to succeed in their effort to providing quality health care services to its clients, it is paramount that they incorporate some of these aspects of quality domains into the service packages. The Institute of Medicine (IOM) defines quality as "*the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*" (<http://www.iom.edu/en/Reports/2001/Crossing-the-Quality-Chasm-A-New-Health-System-for-the-21st-Century.aspx>)

Furthermore, the Centre for Health Promotion (CHP) puts it as a dynamic, complex, subjective, and multidimensional phenomenon that refers to the degree to which a person enjoys the important possibilities of his or her life (Mowad 2004). Evidently, different organisations make their own meaning of what quality is. There is also a belief that quality of life has three main domains (Mowad 2004). The first domain is being, which refers to who one is in the world physically, psychologically, and spiritually. The second domain, belonging, refers to the connectedness one has with others and the environment physically, socially, and in the community. Becoming, the third domain, represents the practical, purposeful, and recreational activities that contribute to the achievement of one's desires, needs, goals, and aspirations, as well as those activities that provide for the development of additional knowledge and skill required for learning and growing (Mowad 2004). The amount of enjoyment and the relative importance of these domains are what define quality of life for an individual.

### ***3.4 Salutogenesis as a Basis for Sense of coherence***

Sense of coherence came about through the endeavours of Aaron Antonovsky. Born in Brooklyn, New York in the early 1920's to Russian-Jewish immigrant, he grew up to become medical sociologist and academician (Lindström & Eriksson 2006). As a Professor and Head of the Department of Sociology of Health, Faculty of Health Sciences at the Ben-Gurion University of Negev- Israel, he devoted most of his research activities on sociological aspects of health and medicine (Lindström & Eriksson 2006). Example of some of his areas of research is the socio-cultural aspects of menopause. Antonovsky developed the salutogenesis



theory through the spectacles at that time and the state of public health. In thinking that the methodologies and processes of public health have been held hostage by theoretical progress of curative and preventive medicine, he focused his attention on what predicts health rather than the causes of sickness “risk factors” (Antonovsky 1996; Lindström & Eriksson 2006; & Read et al. 2005). He described this as salutogenic and pathogenic orientation which I will explain shortly. Confronted with the big thought, the salutogenic questions arrived as: why some people, regardless of major stressful situations and severe hardships, stay healthy and others do not? How do people manage the lack of control of their life? He formulated salutogenic model from a system and chaos theory framework which he noted that chaos and stress were part of life as natural condition (Lindström & Eriksson 2006).

According to Antonovsky individual is regarded as a highly complex living system that is hierarchically organized into bio-psycho-social subsystems. An essential characteristic of living systems is the capability of re-producing itself persistently, which is, living systems are self-creating, self-organizing and self preserving. In the chaos theory the fundamental idea is heterostasis in contrast to homeostatis (Wiesman & Hannich 2008 & Lindström & Eriksson 2006). Thus, at every point in time, a living system can face a multitude of forces which can enhance tension and produce disorder, chaos, disease or discomfort (Wiesman & Hannich 2008). Hence, the focal point of salutogenesis is the explanation of the mystery of a living system that does not break down but maintains bio-psycho-social ‘integrity’.

In Antonovsky’s world, health is relative on a continuum. He argued that there is no such state as “health” or “illness” in a strict sense but rather an “ease-disease continuum” on which people move back and forth during their life cycles (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al. 2005). This, he describe as a salutogenic orientation as opposed to the biomedical model’s pathogenic one. The salutogenic orientation views health and disease as a continuum, as opposed to the pathogenic one, which considers it as a dichotomy (Lindström & Eriksson 2006). Antonovsky considered the pathogenic model to be inadequate in the sense that it unilaterally seeks to explain why people get sick, focusing on the way in which stressful life events predispose an individual to a variety of negative health outcomes Read et al (2005). In his theory, he pointed out that stressors generate a state of tension with which the individual has then to deal with. How well an individual manages tension depends on the generalized resistance resources (GRRs) at their disposal which leads to sense of

coherence (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al 2005 & Wiesman & Hannich 2008). The diagram below illustrates people's movements on the health continuum.

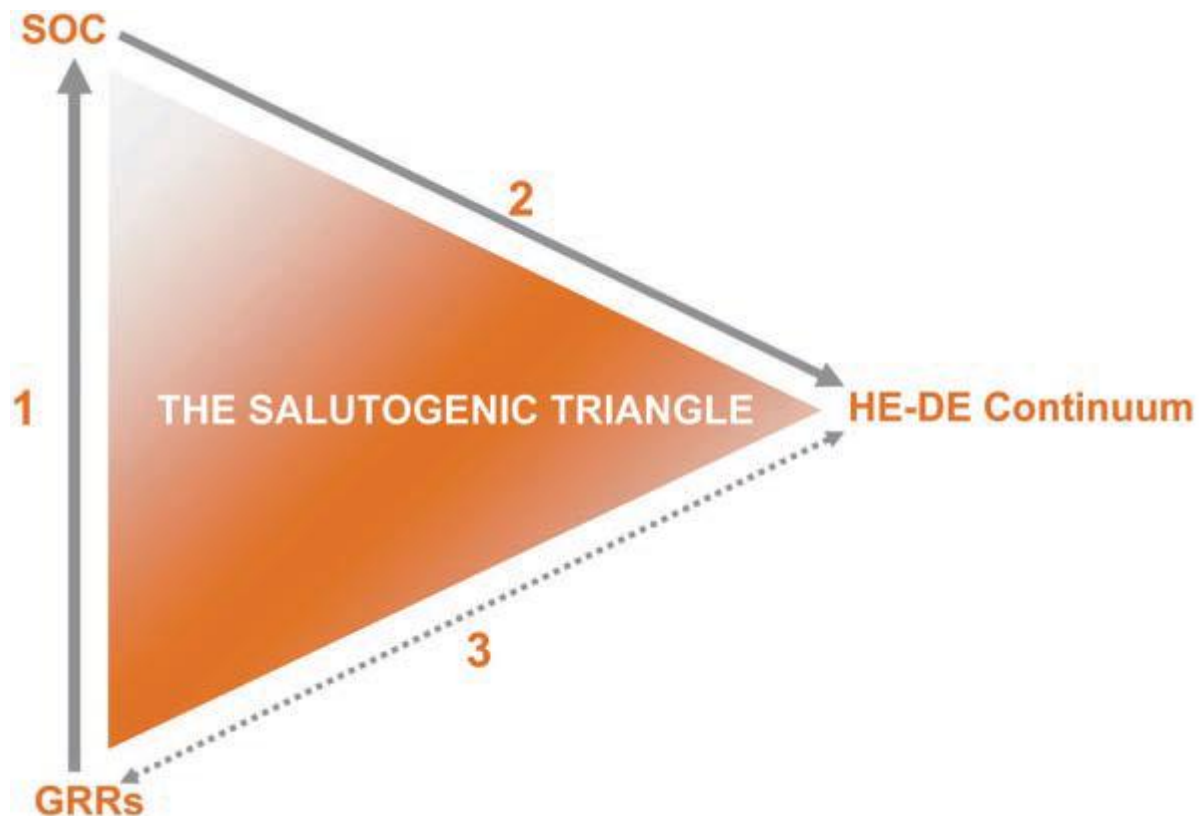


Figure 1. Simplified diagram of Antonovsky's (1987) salutogenic model

Note: SOC = sense of coherence; HE-DE = health-ease/dis-ease; GRRs = generalized resistance resources.

As explained above, individuals can move from one end to another on the health continuum depending on the stressors whether pathogenic, neutral or salutary impacting on them. How these stressors can be managed will be reliant on the GRRs available to the individual. This will determine the wellbeing of the individual. The key feature of the salutogenic model is that good health can be sustained by positive factors (Read et al 2005). Such factors are, according to Antonovsky, generalized resistance resources (GRRs) and sense of coherence (SOC).

### **3.4.1 Generalized Resistance Resources**

The generalized resistance resources (GRRs) are biological, material and psychosocial factors that make it easier for people to perceive their life as consistent, structured and understandable (Lindström & Eriksson 2006). They are any one of a broad range of resources that neutralize the barrage of stressor life events that individual usually encounter (Read et al. 2005). The typical GRRs are money, knowledge, experience, self-esteem, healthy behaviour, commitment, social support, cultural capital, intelligence, traditions and view of life (Lindström & Eriksson 2006). GRRs encompass such things as a high level of education, sufficient income, marital status, preventive health orientation, and intelligence; and anything else that provides an individual with meaningful, coherent life experiences which are effective in coping with a wide variety of stressors (Read et al. 2005). The adequacy of available GRRs is an important factor in determining whether a stressful situation will result in changes of the individual's SOC, which is a life orientation that determines the individual's location on the ease-disease-continuum (Read et al. 2005). If an individual has these kinds of resources at their disposal or in their immediate surroundings there is a better chance for them to deal with the challenges of life. They help the person to construct coherent life experiences.

GRRs lead to life experiences that promote strong SOC. That is the way of perceiving life and the ability to successfully manage the infinite number of complex stressors encountered in the discourse of life (Lindström & Eriksson 2006). What is more important than even the GRRs themselves is the ability to use them. This will lead to the SOC, the second and more generally known salutogenic key concept (Lindström & Eriksson 2006). Antonovsky argued that over time, in response to positive experiences provided by successful use of GRRs, an individual would develop an attitude that was in itself the essential tool for coping (Lindström & Eriksson 2006).

### **3.4.2 Sense of Coherence**

The event that led to the construction of the SOC as key construct of salutogenesis is the study on a group of women who had remained healthy despite their experiences in the

holocaust concentration camps of the 2<sup>nd</sup> world war (Antonovsky 1996); Lindström & Eriksson 2006; Read et al. 2005; Nilsson 2010 & Nygren 2005). Antonovsky explained his revelation as a result of the view they had of their lives and of the essence of their existence. He took the view that SOC promotes an individual's health status through three different components. SOC he defines it as the way people see the world as comprehensible, manageable, and meaningful. To be very precise *“it is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feelings of confidence that 1) the stimuli deriving from one's internal and external environment in the course of living are structured, predictable and explicable; 2) the resources are available to one to meet the demands posed by the stimuli and 3) these demands are challenges, worthy of investment and engagement”* (Antonovsky 1996 & Lindström & Eriksson 2006).

He further explained that comprehensibility is the extent to which an individual perceives the situation that confronts her or him as cognitively meaningful and predictable. Manageability is the degree to which an individual perceives her or his resources to be sufficient to meet internal and external demands. And meaningfulness, the degree to which an individual feels that life is emotionally meaningful and that some of her or his problems are perceived as challenges rather than hindrances (Antonovsky 1996; Lindström & Eriksson 2006 & Nygren 2005). In order for one to resolve or deal with the demands and conflicts confronting him/her all three of these components labelled as (1) comprehensibility, (2) manageability and (3) meaningfulness, are needed. These three components of SOC are highly and dynamically interrelated (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al. 2005).

Based on the three components, a scale was developed comprising of 29 self-reported statements. Currently, a 13-item version of the SOC is available and it is used more often. The scale is of Likert type with each item formed as a visual analogue graded scale of 1-7 with anchoring answer range of possible scores 13–91, and the higher the score, the stronger the sense of coherence (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al. 2005 Nilsson, Nygren 2005 & Thomé & Hallberg 2004). The items measured perceived comprehensibility (5 items), manageability (4 items), and meaningfulness (4 items). A typical item is as follows, “Have you ever been disappointed by people whom you counted on?” (Antonovsky 1996; Lindström & Eriksson 2006 & Ekman 2002). This is the description of the scale and has been used in many countries and in different languages. The SOC is

assumed to be flexible and not constructed around a fixed set of mastering strategies like the classic coping strategies. It functions in a way as a “six sense” for survival and generates health promoting abilities (Lindström & Eriksson 2006) The SOC is the capability to perceive that one can manage in any situation independent of whatever is happening in life. Because the SOC is not a coping strategy in itself, individuals with a strong SOC may be more likely to be flexible to adopt adaptive strategies that are appropriate to the needs of the specific situation (Antonovsky 1996).

According to Antonovsky, a person with a strong SOC when coping with a stressor has the ability to find appropriate solutions to a specific situation and to successfully resolve conflicts through adaptability (Read et al. 2005). A person with a strong SOC is less likely to perceive stressful situations as threatening and anxiety provoking than a person with a weak SOC (Lindström & Eriksson 2006 & Read et al. 2005). A strong SOC decreases the likelihood of perceiving the demands confronting the individual as stressful. This reduces susceptibility to the health-damaging effects of chronic stress by lowering the probability of repeated emotions related to stress perceptions (Read et al. 2005). SOC may have direct physiological health-maintaining consequences insofar as the perception of the world of stimuli as comprehensible, manageable, and meaningful activates the brain to send messages to the other bodily systems which maintain homeostasis. SOC can operate through the selection of health-promoting behaviours (Read et al. 2005).

### ***3.5 Summary of the theoretical background***

Inevitably the world’s population is changing at an unprecedented rate. This change is, however, projected to further rise by the year 2050 to 9.2 billion (Population Reference Bureau 2009 & Bongaarts 2009). While these demographic change worldwide, it seems to be that the balance between young and old is shifting in favour of the old throughout the world (UNDP 2009). Meanwhile, scarcity and waste of social resource, concentration of population in certain region of the world, social disturbances and quality of life are creating a lot of concerns among many societies around the world (McFalls 2003 & Bongaarts 2009). There is therefore the need to change our structural and functioning systems of health and social services. As the average life expectancy continuously increases, we may be faced with

spending more years in poor health as the studies by Seshamani & Gray (2002) and also Veras (2009) has indicated. At the other hand, other studies for instance (Anderson and Hussey 2000) suggest that an aging population does not necessarily mean higher health spending rather other factors is much more important predictors.

Contrary to the WHO definition of health older people suffer from several diseases including cardiovascular diseases, cancers, musculoskeletal problems, diabetes, mental illnesses, sensory impairments, incontinence and so on. Health can be either described in terms of “objective” the physical aspect or “subjective” the psychological aspect of which some sees it as wellbeing. Under these concepts understanding and measurements of quality of life have been able to emerge. The term quality is a complex concept to define and many do not even attempt defining it. "Quality of life" according to (Wish 1986) is a new name for the older terms "general welfare" and social "well-being.

As a result of efforts being made to bring out best strategies to enhance people’s way of life, several theories are being considered to achieve quality in health care and one of them is Antonovsky’s salutogenesis and sense of coherence. Antonovsky’s salutogenesis theory and sense of coherence (SOC) claims that the way people view their life has a positive influence on their health and result in quality of life (Antonovsky 1996, Lindström & Eriksson 2006). With his salutogenesis on which the SOC scale was developed, he argued that there is no such state as “health” or “illness” in a strict sense but rather an “ease-disease continuum” on which people move back and forth during their life cycles (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al. 2005). And how well an individual manages tension depends on the generalized resistance resources (GRRs) at their disposal which leads to sense of coherence (Antonovsky 1996; Lindström & Eriksson 2006 & Read et al 2005 & Wiesman & Hannich 2008). SOC explains why people in stressful situations stay well and even are able to improve their health. Antonovsky postulated that individuals with a strong SOC are more likely and more often to stay healthy than persons with a weak SOC (Antonovsky 1996, Lindström & Eriksson 2006 & Read et al 2005). For one to resolve or deal with the demands and conflicts confronting him/her all three of the components labelled as (1) comprehensibility, (2) manageability and (3) meaningfulness, are needed and is highly and dynamically interrelated. The SOC comprise of 29 self-reported statements of Likert type. Currently, a 13-item version of the SOC is available and it is used more often.

## **4 MATERIALS AND METHODS**

### ***4.1 Systematic Literature Review Process***

Systematic review is literature review focusing on a research question that tries to identify all relevant published and unpublished evidence, select studies for inclusion, appraise or assess the quality of each study, and synthesises/ combine the findings from individual studies and report it in an unbiased way (Colling 2003). It should interpret the findings and present a balanced and impartial summary of the findings with due consideration of any flaws in the evidence (Colling 2003; Jones & Evans 2000 & Hemingway 2009). Systematic literature review attempt to bring current scientific knowledge to the forefront and can alone answer many questions. Systematic review has been found to provide the most effective way of understanding, implementing, and establishing authority within health care area (Colling 2003 & Hemingway 2009). It is regarded as research upon research. As a result, it is deemed appropriate method for this research study since it provides an insight to the research problem by answering the questions through literature.

### ***4.2 Keywords and Search Terms***

The keywords used to search for the articles were; Aged OR elder OR old people OR aging and sense of coherence. They were extracted from the objectives of the study and were used as search items. They were created using captions sense of coherence (SOC) and older people. This was done to increase the “sensitivity” and the “precision” of the keywords used. Sensitivity was taken as the ability to identify all relevant materials while precision is the amount of relevant material among the information retrieved by the search (Table 1).

### ***4.3 Search Strategy and Selection of Studies***

This research is a literature based study using various search terms, conducted to identify sufficient relevant literature relating to the study’s aims and objectives. A systematic approach to literature searching is known to have great potential to increasing the chances of

finding pertinent information. Relevant literatures for this study were obtained through electronic search for original, reviewed and guideline articles on the subject of interest. Manual search from printed articles (reference list) was also referred to give detail information on the subject under study. Electronic search was predominantly from the CINAHL, PUBMED, and PsychINFO.

In CINAHL using search term: ( **(MH "Aged") OR elder\* OR "old people" OR aging ) and "sense of coherence"** ), it gave 216 hits. When limited to Peer Reviewed, English Language, Abstract Available, 2001 to 2011 and age 64+years, it produced 131 results.

PUBMED search with the same search terms ( **(MH "Aged") OR elder\* OR "old people" OR aging ) and "sense of coherence"** ), gave 65 results, limiting it to items with links to full text, English, Aged: 65+ years yielded 40 articles.

In PsycINFO with the same search terms ( **(MH "Aged") OR elder\* OR "old people" OR aging ) and "sense of coherence"** ) appeared 92 hits. Limiting it to full text, English language, abstracts and year 2001 – 2011 resulted in 3 articles, so limits were left out to allow relevant articles to be retrieved.

After careful screening and reading through the titles and abstracts with careful attention on the aims and objectives of studies a total 16 articles were purposefully selected for review of which 9 article was selected from CINAHL, 5 from PUBMED and 2 from PsycINFO. There were also several articles which appeared in PUBMED and PsycINFO but were later dropped as it has already been selected in CINAHL (see table below).

#### ***4.4 Inclusion and Exclusion Criteria***

This study included both qualitative and quantitative studies to ensure vast description of the phenomenon under study. The relevance of the research question focused on the Population of interest, intervention, comparing, and outcome of interest. Choices of relevant articles were based on some inclusion criteria, which include:

1. Citations in English language on older people 65 years and above.
2. Review, empirical or guideline articles.



3. Studies published within the 2000 and 2011.
4. Studies with full texts available.
5. Studies with contents relevant to the research objectives.

Articles that were published with only abstracts were excluded because they did not give full information of the articles. Published articles that did not focus on the older people were also excluded from the study. Additionally, studies and reviews that were not in English language were also excluded (Table 1).

Table 1. The search process and the number of articles selected.

No	DATABASES	KEYWORDS	TOTAL RESULTS	LIMITS RESULTS	SELECTED
1	Cinahl	( (MH "Aged") OR elder* OR "old people" OR aging ) and "sense of coherence*"	216	131	9
2	Pubmed	( (MH "Aged") OR elder* OR "old people" OR aging ) and "sense of coherence*"	65	40	5
3	PscyInfo	( (MH "Aged") OR elder* OR "old people" OR aging ) and "sense of coherence*"	92	3	2

#### ***4.5 Description of Included Studies***

Among the sixteen articles identified for review, five of them were population base survey (observational) study: (i.e. Nilsson et al. 2010; Thomé et al. 2004; Norekval et al. 2009; Dantas et al. 2002 and Lundman et al. 2010). Five of them were cross sectional study: (i.e. Delgado 2007; Drageset et al. 2009; Schneider et al. 2006; Söderhamn et al. 2008 and Borglin et al. 2005)., Tthree of them were descriptive study: (i.e. Nygren et al. 2005; Nesbitt

et al. 2000 and Ekman et al. 2002). Langeland et al. (2009) was prospective study, while Mowad (2004) was correlational study and Gilhooly et al. (2007) used in-depth qualitative interviews for methods of their data collection. The table below illustrates the type of articles.

Table 2. Summary of Articles

No.	Author	Title of Article	Type of Design
1	Nilsson et al (2010)	Sense of coherence and psychological well-being: Improvement with age	Observational, Population study (Survey)
2	Borglin et al (2005)	Older people in Sweden with various degrees of present quality of life: their health, social support, everyday activities and sense of coherence.	Cross Sectional Survey
3	Thomé et al (2004)	Quality of life in older people with cancer – a gender perspective.	Population study
4	Nygren et al (2005)	Resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health among the oldest old	Descriptive Study
5	Delgado, C. (2007)	Sense of Coherence, Spirituality, Stress and Quality of Life in Chronic Illness	Cross Sectional Survey
6	Norekval et al (2009)	Sense of coherence—a determinant of quality of life over time in older female acute myocardial infarction survivors	Survey (correlational)
7	Drageset et al (2009)	The impact of social support and sense of coherence on health-related quality of life among nursing home residents—A questionnaire survey in Bergen, Norway	Cross-sectional, descriptive, correlational design
8	Langeland et al (2009)	The impact of social support on mental health service users' sense of coherence: A longitudinal panel survey	Prospective design
9	Dantas et al (2002)	The relationship between quality of life, sense of coherence and self-esteem in persons after coronary artery bypass graft surgery	Observational study
10	Mowad, L. (2004)	Correlates of Quality of Life in Older Adult Veterans	Correlational study
11	Nesbitt et al (2000)	Sense of Coherence and Illness Appraisal in Older Women's Quality of Life	Cross Sectional, Descriptive, correlational study
12	Ekman et al (2002)	Health-related quality of life and sense of coherence among elderly patients with severe chronic heart failure in comparison with healthy controls	Descriptive, comparative Study
13	Schneider et al (2006)	Old and Ill and Still Feeling Well? Determinants of Subjective Well-Being in >60 Year Olds: The Role of the Sense of Coherence	Longitudinal and Cross-sectional Design
14	Söderhamn et al (2008)	Self-care ability and sense of coherence in older nutritional at-risk patients	Cross-sectional study
15	Lundman et al (2010)	Sense of coherence (SOC) related to health and mortality among the very old: The Umeå 85+ study	Population-based study
16	Gilhooly et al (2007)	Successful ageing in an area of deprivation: Part 2—A quantitative exploration of the role of personality and beliefs in good health in old age	In-depth qualitative interviews

#### 4.6 Population of Individual Study and Method of Data Selection

In order to assess the quality of the articles, it was very important to ascertain whether the population of interest has been clearly defined with inclusion and exclusion criteria and also with the actual sample size mentioned. Additionally, the process by which the data were collected was also examined. In the study, Sense of coherence and psychological well-being: Improvement with age by Nilsson et al. (2010), the total sample of interest were 43 598

respondents (64% response rate), of which 20 060 (46%) were males and 23 529 (54%) were females. In the study, randomised samples stratified by sex, age and city were drawn from the total population by Statistics Sweden. Data was collected from September to November 2004 with questionnaire sent out to respondents. After 10 days, a reminder was sent to the participants who had not responded. Three weeks after the first reminder, a new questionnaire together with a second reminder and a third reminder including a third questionnaire sent after 10 additional days. The questionnaires were scanned and transformed into a data file with no personal identification of the participants. Therefore, no follow-up study was possible.

With the initial survey carried out by Stenzelius et al. (2004) during summer and autumn 2000, Borglin et al. (2005) randomly selected sample stratified in four age groups (75–79, 80–84, 85–89, 90+) as the targeted sample (n= 8500) from the main study. 600 participants consisting of 150 participants from each age group were selected using SPSS and invited to participate in a postal questionnaire follow-up study, with an initial letter and one reminder letter being administered. Similarly, after all consenting respondents agreeing to participate in a study by Thomé et al. (2004), eligible participants (150) response rate of 61%, with inclusion criteria of age 75 and over and a cancer disease, and a matched group (age and receiving help for daily living) of women and men without cancer. Telephone interviews and questionnaire were used to collect data in participants own homes. Data on demography, diseases, complaints and QoL using the SF-12 (HRQoL instrument) covering age, gender, profession, living conditions, social resources, perceived economic situation and receiving help for daily living were gathered.

Using specific inclusion criteria of being 95 years of age and older, being 90 years old, or being 85, Nygren et al. (2005) invited all those who were 95 years of age or older, and all 90 year olds, and a random sample of individuals who were 85 years old who were able to answer questionnaires of the Likert type and had the strength to participate in narrative interviews. The total subjects consisted of 125 participants including 86 women (69%). 26 participants (21%) were 95 years or older, 46 (37%) were 90, and 53 (42%) were 85 years of age. Personal ADL's was assessed with Barthel's index and were totally independent in both

instrumental and personal ADL assessed also with 'The Staircase of ADL'. The cognitive status of the participants was assessed with the Mini Mental State Examination (out of 30).

With overall return rate that completed mailed packets 64% of the 280, a final sample of 181 was further selected for Delgado (2007) study. The age of the participants ranged from 30 years to 87 years with the largest number between 60 and 79 years of age (61.8%). Questionnaires were then mailed to the non-hospitalized patients with chronic obstructive pulmonary disease. Demographic data were collected on gender, race, income, education, marital status and household composition, chronic illnesses, disabilities, medication, and the need for caregiver assistance were also assessed.

Nonetheless, in determining the relationships between different sense of coherence levels and quality of life, and in older female myocardial infarction survivors, Norekval et al. (2009) retrospectively drew up a sample of 138 (response rate of 80%) aged 60 to 80 years, hospitalised within five years between 1992 and 1997 diagnosed with MI (ICD-9CM code 410), and now living at home from the patient administration system. Using a postal survey, self-reported socio-demographic, clinical data and hospital records, data were collected for a six months follow up study.

Furthermore, in the study by Drageset et al. (2009), all cognitively intact (assessed with Clinical Dementia Rating CDR less than 0.5) nursing home residents aged 65 years and older who were capable of carrying out a conversation and had been residing in the nursing home for at least 6 months were eligible for the study. Overall the total sample of the population that participated in a face to face interview was 227.

Meanwhile, Langeland et al. (2009) used a consented sample of 107 people with mental health problems with age 18–80 years in their study to investigate the ability of the six social provisions in Weiss's theory of social support to predict the positive development of sense of coherence among people with mental health problems. Questionnaire was mailed to them at home emphasizing on the participants choice to opt out of the study at any time without giving reasons for doing so. The actual response rate after a year follow up was 92 (78%).

By examining the contribution of Antonovsky's sense of coherence to explain the variance of quality of life (QOL) in 84 patients (response rate of 44%) with coronary artery bypass graft surgery in an age group of 41-89 years, Dantas et al. (2002) tested whether after controlling for demographic, clinical, and environmental variables, the addition of Antonovsky's construct of sense of coherence will explain additional variance of the quality of life in patients who undergone CABG surgery. The method of data collection used was again questionnaire.

Furthermore, the testing of theoretical propositions describing positive relationships between health promotion, sense of coherence, personal autonomy, and quality of life in older adult veterans explored their overall contribution to the prediction of quality of life. The sample included 135 veterans between ages of 65 and 85 years old ( $M = 73.53$ ,  $SD = 5.39$ ) of whom 98.5% (133) were men with ethnic breakdown of participants 79.3% (107) White, 17% (23) African American, 2.2% (3) Hispanic, and 1.5% (2) other were used Mowad (2004). She hypothesized that based on theoretical and empirical literature: (a) health-promoting lifestyle would be positively related to quality of life, (b) a sense of coherence would be positively related to quality of life, (c) personal autonomy would be positively related to quality of life, and (d) all three independent variables together would explain quality of life better than any subset of variables. Method of her data collection was questionnaire.

Nesbitt et al. (2000) also tested a conceptual model of proposed relationships between physical health limitation, the sense of coherence, illness appraisal, and quality of life. Their sample size was 137 older women who were 76, widowed, with an income less than \$12,000, and several health problems. Through voluntary involvement by an advertisement participants were recruited by non-probability methods within a four-county region from two bordering Midwestern states. A trained interviewer obtained informed consent, followed by a structured interview to collect the data.

In another study, Ekman et al. (2002) described health-related quality of life (QoL) and sense of coherence (SOC) in a group of elderly people with moderate to severe chronic heart failure and made comparisons with a healthy sex- and age-matched control group. With a clearly defined inclusion and exclusion criteria, they selected a sample of 158 eligible and consented 65years or older to participate in their study using interview. Schneider et al. (2006) also

investigated the determinants of subjective well-being in a sample of elderly by applying a salutogenetic model of subjective well-being in which sense of coherence (SOC) was playing a central role. It was hypothesised that subjective evaluation and SOC as a personality resource explain more variance of subjective well-being than the objective changes resulting from the aging process. With a sample size of 261 between 1994 and 1997 and later 2000 and 2002, a final 56 patients were investigated by means of psychometric scales and biographic interviews. The participants were 60-year-old patients of an internal medicine hospital who had been examined extensively by means of clinical examinations and questionnaires.

With actual sample of 144 (84%) patients because of 16 patients refusing to take part and 12 not being able complete the entire data collection procedure, Söderhamn et al. (2008) recruited 65 year olds and older to investigate self-care ability and sense of coherence in geriatric rehabilitation patients. Nutritionally screened using the Nutritional Form for the Elderly and related it to the patient's perceived health to self-care ability and sense of coherence. Within the period of about 24 months spanning from the end of August 2002 to the turn of the year 2004/2005, with a two summer break (2003 and 2004), they collected data using interview.

Additionally, Lundman et al. (2010) collected two samples of very old people totalling 203 participants, of whom 190 (123 women, 67 men) completed an initial SOC scale. The study was part of the Umeå 85+ Study. Inclusion criteria were having the ability to complete questionnaires of the Likert type and being of age between 85–103 years old. The objective of the study was to describe associations between sense of coherence (SOC) and sense of well-being, diseases, physical function and the predictive value of SOC on depression and mortality. The data was collected in the participants own home with a questionnaire after consent has been given by telephone and by letter. Gilhooly et al. (2007) also conducted a study to examine the determinants of good health and successful ageing in an area of deprivation. Their sample comprised 106 males and 94 females (53 male matched pairs and 47 female matched pairs) ranging in age from 70 to 90 years of age with the majority (n=165) falling into the 71–80 age group and the remaining 35 in the 81–90 age group. An In-depth face to face interview was adapted for data collection.

Each of all these articles is unique in its own perspective in addressing its objectives. It is also important to note that each of the study has its focus of interest. In reviewing these articles it

was noticed that most of the studies (8 articles) used questionnaire in collecting their data (Nilsson et al. 2010; Delgado 2007; Norekval et al. 2009; Lundman et al. 2010; Langeland & Wahl 2009; Dantas 2002; Mowad 2004 & Borglin et al. 2005). These studies (Nesbitt & Heidrich 2000; Ekman et al. 2002; Schneider et al. 2006; Söderhamn et al. 2008 & Gilhooly et al. 2007) used interviews as the method of data collection, whilst these studies (Thomé & Hallberg 2004; Nygren et al. 2005 & Drageset et al. 2009) used both questionnaires and interviews for collecting data.

The actual reason for these choices of method for data collection were not specified however, it could be believe that because of the obvious reasons of funding and resource constrain that is why they chose these methods. Additionally, the concepts under study also had pre-defined, tested and validated measuring tools which will make it easier for data collection that is why they did not see the need to use other methods. The table below provides a summary of aims, subjects, ages, exposure measurement of the various studies.

Table 3. Summary of methodologies of the reviewed articles

<b>Author &amp; Year</b>	<b>Study Aim</b>	<b>Study Subject</b>	<b>Ages of Subjects</b>	<b>Data Gathering Tool</b>
<b>Nilsson et al (2010)</b>	(i) to investigate SOC in relation to age and sex, (ii) to investigate psychological wellbeing in relation to age and sex, and (iii) to investigate the relationship between generalised resistance resources and psychological well-being.	In all 43 598 respondents (64% response rate), of which 20 060 (46%) were males and 23 529 (54%) were females.	68 000 individuals aged from 18 to 85 years was asked to participate.	A questionnaire of a postal Form with prepaid return envelopes. SOC was measured by the SOC-13 and well-being by the General Health Questionnaire-12 questionnaire.
<b>Borglin et al (2005)</b>	To investigate the characteristics of a sample of people (75+) reporting various degrees of Quality of Life (QoL) with respect to QoL in different areas, as well as self-rated health, health problems, social support, everyday activities and sense of coherence.	600 out of previously existing data (n= 8500) of the main study (Stenzelius et al 2004) were selected at random using SPSS, 150 being selected from each of the four age groups.	Subjects were in four age groups (75–79, 80–84, 85–89, 90+)	A postal questionnaire sent out in spring 2001 to a randomly selected population-based sample.
<b>Thomé et al (2004)</b>	To investigate quality of life (QoL) and its association with sense of coherence (SOC), complaints, comorbidity, social resources, perceived economic situation and receiving help for daily living, investigating differences between women and men aged 75 and above with cancer and comparing women and men aged 75 and above without cancer. A further aim was to identify which of these factors were associated with low QoL in older	246 were eligible however, 150 consented to participate further yielding a response rate of 61%.	Women (n = 74, mean age 84.3) and men (n = 76, mean age 84.3), with inclusion criteria aged 75 and over and a cancer disease, and a matched group (age and receiving help for daily living) of women (n = 64, mean age 83.1) and men (n = 74, mean age 83.5)	Telephone interview and a questionnaire in their own homes

	people with cancer.		without cancer.	
<b>Nygren et al (2005)</b>	To describe resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health in a sample of the oldest old	The total subjects consisted of 125 participants including 86 women (69%).	26 participants (21%) were 95 years or older, 46 (37%) were 90, and 53 (42%) were 85 years of age.	A questionnaire of a Likert type and participating in narrative interviews.
<b>Delgado, C. (2007)</b>	To investigate the relationship between sense of coherence and spirituality and their association with perceptions of stress, and quality of life.	Out of 1,154 informed of the study, 280 (26%) people agreed to be contacted with a packet about the study. Overall, the return rate for completed packets was 64% of the 280 mailed, for a final sample of 181 for the study.	The age of the participants ranged from 30 years to 87 years with the largest number between 60 and 79 years of age (61.8%).	Questionnaires were mailed to non-hospitalized patients with chronic obstructive pulmonary disease.
<b>Norekval et al (2009)</b>	To determine the relationships between different sense of coherence levels and quality of life, and in older female myocardial infarction survivors; to investigate how socio-demographic, clinical characteristics, sense of coherence self-reported symptoms and function affect quality of life; and to determine whether sense of coherence and quality of life are stable during a six-month follow-up.	A total of 145 women returned the questionnaire, yielding a response rate of 60%. The responders mean age was 72.0 and non-responders 72.8 years, $p = 0.154$ . Later, 7 patients died leaving participants to be 138 with response rate of 80%.	Women aged 60–80 years, hospitalised within five years (1992–1997).	A postal survey. Self-reported socio-demographic and clinical data and hospital medical records data. Sense of coherence scale (SOC-29) and the World Health Organization Quality of Life Instrument Abbreviated (WHOQOL-BREF) were also used.
<b>Drageset et al (2009)</b>	To determine the relationship between social support and HRQOL and to investigate whether the SOC modifies the effect of social support on HRQOL.	227 mentally intact long-term nursing home residents.	All 65 years olds or older and cognitively intact of the nursing home.	The data were obtained through face-to-face interviews using the SF-36 Health Survey, Social Provisions Scale and Sense of Coherence Scale.
<b>Langeland et al (2009)</b>	To investigate the ability of the six social provisions in Weiss's theory of social support to predict the positive development of sense of coherence among people with mental health problems.	107 people with mental health problems.	18–80 years of age	Sense of Coherence questionnaire, revised Mental Health Symptoms Checklist-90-R and The Social Provision Scale (all Norwegian versions).
<b>Dantas et al (2002)</b>	To test whether, after controlling for demographic, clinical, and environmental variables, the addition of Antonovsky's construct of sense of coherence explains additional variance of the quality of life scale in patients who underwent CABG surgery.	With response rate of 44%, eligible subjects were 84 out of 191 (14 addresses were incorrect and 7 individuals had died).	41-89 years of age.	A questionnaire package.
<b>Mowad, L. (2004)</b>	To test theoretical propositions describing positive relationships between health promotion, sense of coherence, personal autonomy, and quality of life in older adult veterans and to explore their overall contribution to the prediction of quality of life.	The resultant sample consisted of 135 veterans. The ethnic breakdown of participants included 79.3% (107) White, 17% (23) African American, 2.2% (3) Hispanic, and 1.5% (2) other.	65 and 85 years old ( $M = 73.53$ , $SD = 5.39$ ) of whom 98.5% (133) were men.	A questionnaire (i.e. Health-Promoting Lifestyle Profile, the Sense of Coherence–13 Scale, the Perceived Enactment of Autonomy Scale and the Quality of Life Profile: Senior Version, Short Scale).
<b>Nesbitt et al (2000)</b>	To test a conceptual model of	137 older women	Women aged	Structured interview



	proposed relationships between physical health limitation, the sense of coherence, illness appraisal, and quality of life.	and was 76, widowed, with an income less than \$12,000, and several health problems.	65 or older.	through voluntary involvement by a trained interviewer.
<b>Ekman et al (2002)</b>	To describe health-related quality of life (QoL) and sense of coherence (SOC) in a group of elderly people with moderate to severe chronic heart failure and to make comparisons with a healthy sex- and age-matched control group.	158 eligible and consented participants took part in the study.	65years or older.	Interview using the 36-Item Short Form Health Survey (SF-36) and SOC scale 12 item.
<b>Schneider et al (2006)</b>	To investigate the determinants of subjective well-being in a sample of elderly by applying a salutogenetic model of subjective well-being in which sense of coherence (SOC) plays a central role	56 patients were investigated by means of psychometric scales and biographic interviews.	60-year-old patients of an internal hospital.	Psychometric scales and biographic interviews.
<b>Söderhamn et al (2008)</b>	To investigate self-care ability and sense of coherence in geriatric rehabilitation patients nutritionally screened using the Nutritional Form For the Elderly and to relate the patients' perceived health to self-care ability and sense of coherence.	Out of the original 172, 144 patients were included in the study because 16 patients refused to take part and 12 could not complete the entire data collection procedure.	65 and above years.	Interviews, with one instrument for nutritional screening and the other measuring self-care ability and sense of coherence with 1 question about perceived health.
<b>Lundman et al (2010)</b>	To describe associations between sense of coherence (SOC) and sense of well-being, diseases, physical function and the predictive value of SOC on depression and mortality.	The sample consisted in total of 203 participants, of whom 190 (123 women, 67 men) completed the initial SOC scale.	85–103 years olds.	Questionnaires of the Likert type i.e.13 item scale, Philadelphia Geriatric Center Morale Scale (PGCMS), Geriatric Depression Scale-15 (GDS-15), Barthel Index of ADL and Mini-Mental State Examination (MMSE).
<b>Gilhooly et al (2007)</b>	To examine the determinants of good health and successful ageing in an area of deprivation. The paper also report findings from the quantitative data related to two of the original eight research questions: (1) To what extent can health in old age be attributed to psychological/personality variables? and (2) What is the role of religious beliefs and 'spirituality' in healthy ageing?	106 males and 94 females (53 male matched pairs and 47 female matched pairs.	The ages ranged from 70 to 90 years of age with the majority (n=165) fell into the 71–80 age group and the remaining 35 in the 81–90 age group.	In-depth interview study in which standardized measures of personality and beliefs were administered, along with measures of beliefs devised for the study.

#### ***4.7 Interventions and Outcome Measures in Individual Article***

For the sake of this study, it was also important to identify the kind of interventions the participants are exposed to and the tools used to measure the concepts under study. This is to help in understanding the nature of the concept. Because of the uniqueness of the individual

study, various interventions in different study could not be summed up to reduce the repetition. Nilsson et al. (2010) used Sense of Coherence the SOC-13 item scale and General Health Questionnaire-12 item as its measure. Borglin et al. (2005) used sociodemographic data, data on social support, everyday activities and health problems as its variables of interest. From the follow-up questionnaire, Life Quality Gerontological Centre scales (LGC), the sense of coherence 13-item scale as well as a self-rated health item to assess health status were used. Thomé et al. (2004), used to self-reported diseases based on classification ICD-10, 30 complaint items with the response alternatives ‘no’, ‘yes, a little’, ‘yes, rather much’, ‘yes, very much’, cancer-specific HRQoL (EORTC) questionnaire and the SOC scale (13-item version).

Nygren et al. (2005) adopted Resilience Scale (RS) 25 items, Sense of Coherence Scale (SOC), Purpose in Life Test (PIL), Self-Transcendence Scale (STS), and the SF-36 Health Survey (SF-36). Delgado (2007) Sense of coherence (SOC) scale, Spiritual Transcendence Scale (STS), Perceived Stress Scale (PSS) and Quality of Life Index – Pulmonary Version III (QLI-PV). Norekval et al. (2009) used sense of coherence scale (SOC-29) and the World Health Organization Quality of Life Instrument (WHOQOL-BREF). Drageset et al. (2009), used sociodemographic data, medical records, Social Provisions Scale (24 items), Sense of Coherence Scale (SOC-13), HRQOL (SF-36 Health Survey). Langeland et al. (2009), Sense of Coherence SOC (29 items), the revised Social Provision Scale (SPS) and the Symptom Checklist-90-Revised (SCL-90-R) were tools that was used. Dantas et al. (2002), Quality of life (QOL) 15-item Flanagan quality of life scale, Health vulnerability 5 set demographic variables: age, gender, race, education, and marital status, perceived social support scale 12-item, Rosenberg self-esteem scale 10-item scale, stability and work of chronic illness trajectory was reflected by: (a) trajectory of presence of CAD symptoms before and after CABG surgery (b) first CABG surgery (yes or no); (c) number of bypass grafts (1–2; 3–4; 5 or more); (d) surgical complications (yes or no); (e) time since CABG surgery, in years; (f) report of other medical problems (yes or no); (g) reported number of treatments used for CAD among five choices (medication, physical exercise, healthy diet, stress control, smoking cessation); (h) physical comfort (i) emotional comfort (j) social function and (k) self-reported NYHA Functional Class and finally, sense of coherence (SOC) 29- item questionnaire. Mowad (2004)’s instruments were Health- Promoting Lifestyle Profile, Sense of Coherence–

13 Scale, Perceived Enactment of Autonomy Scale and Quality of Life Profile: Seniors Version, Short Scale).

Nesbitt et al. (2000) used Physical health limitation (PHL), Sense of Coherence Scale 29-item scale, Illness appraisal (IA) and Quality of Life Index-Generic Version. Ekman et al. (2002) used quality of life 36-Item Short Form Health Survey (SF-36) and sense of coherence SOC scale 12 items. Schneider et al (2006) used Activities of Daily Living Scale (ADL) based on 23 items, Nuremberg Self-Evaluation Scale 20 items, self-evaluation of age-related changes such as vitality, cognitive abilities, social contacts, subjective evaluation of individual's own health and sense of coherence 29 items scale. Söderhamn et al. (2008), used self-care ability scale for the elderly (SASE), SOC scale 29-items and Nutritional Form for the Elderly (NUFFE).

Lundman et al. (2010) used sense of coherence scale (13 item), Philadelphia Geriatric Centre Morale Scale (PGCMS), Geriatric Depression Scale-15 (GDS-15), Barthel Index of ADL and Mini-Mental State Examination (MMSE). Gilhooly et al. (2007) tools were standardized measures of personality and beliefs were administered, along with measures of beliefs devised for the study. Example the Eysenck Personality Questionnaire- Revised, Short Form (EPQ-R) a 48-item version of the classic personality assessment, the Multidimensional Health Locus of Control Scale (MHLC), Optimism measure of the 10- item Revised Life Orientation Test (LOT), a seven item spiritual beliefs and religious practice scale and sense of coherence (SOC-13) scale.

Evidently, different measuring tools have been used to measure phenomena's being studied. Most of the tools are well explained in the studies. Many of the tools have been in existence for long time and have been tested for its reliability and validity. In almost all of the articles the issue of reliability and validity or trustworthiness have been addressed. Because of the focus of this current study, explanations of individual tools from different studies will not be given as it does not add much weight to the current topic under study.

## 5 RESULTS

The aim of this study was to find out the connection between sense of coherence (SOC) and health among the older people and how it differs between men and women. Another aim was to understand the major factors associated in attaining healthy aging and to establish if there is evidence which shows that high score of sense of coherence (SOC) will translate into good quality of life (QoL) in the older people. In all the sixteen studies reviewed, there was one way or the other some kind of association between SOC, health and QoL among the older people. However, the effect of SOC, health and QoL differed slightly between ages, sex and time period of which the studies were carried out. Overall nine studies showed direct relation on SOC and health whiles hinting on some connecting factors to SOC and QoL. Six gave major factors relating SOC and QoL. Additionally women score lower on the SOC as compared to their male counterpart.

### ***5.1 The Connection Between Sense of Coherence and Health Among Older People.***

In the study conducted by Lundman et al. (2010), SOC was found to be positively related to the entire areas of well-being. High mean of SOC score was found among the very old. Heart failure, COPD, depression, and osteoarthritis were all significantly associated with low values on the SOC scores. Another interesting finding was that, 1-year mortality was also associated with weak SOC but it did not however, predict 4 year mortality. Similarly, physical health limitations particularly symptom bother and functional health had a significant negative influence on quality of life. However this effect was mediated by sense of coherence and illness appraisal. The most frequently encountered illnesses were arthritis (77%), high blood pressure (49%), cataracts (46%), heart disease (43%), and circulation problems (35%). Other problems common to older groups such as lung disease, diabetes, glaucoma, thyroid, and intestinal problems also were reported Nesbitt & Heidrich (2000). Meanwhile, it was found that women with cancer reported a significantly higher number of other diseases ( $P < 0.05$ ) than men with cancer. Example of some of the most reported problems were loss of appetite, chest pain, fatigue ( $P < 0.01$ ), dizziness, stomachache, osteoporosis, urine incontinence, problems in urinary tracts, prolonged coughing, sleep and oedema in legs whiles men

significant complaints were found to be constipation, problems in urinary tracts ( $P < 0.01$ ) and pain ( $P < 0.05$ ) (Thomé et al. 2004).

These above findings were somehow different in the study of Nygren et al. (2005) which reported significant correlations between scores on the Resilience Scale, the Sense of Coherence Scale, the Purpose in Life Test, and the Self-Transcendence Scale. Their findings showed that the oldest old had higher (or at least the same level of) sense of coherence, resilience, purpose in life and self-transcendence as younger persons. There was no significant correlation between perceived physical and mental health.

Nonetheless, Borglin et al. (2005) discovered that 18.4% of people with low present QoL were the oldest and most vulnerable of which majority were women. These people had 'poor or bad' self-rated health, high frequencies of health problems, low social support and sense of coherence and less physically active. Some of the most commonly reported health problems were mobility impairment, fatigue, sleeping problems, urinary incontinence, dizziness, vision impairment, breathlessness, and being nervous and/or worried. Those with present intermediate QoL (33.8%) had more of 'poor or bad' self-rated health, more health problems and were less physically active. Those who were with high QoL (47.8%) reported more 'excellent or good' self-rated health, physical activity, satisfactory social support and higher sense of coherence (Borglin et al. 2005).

Moreover, another study revealed significant difference in quality of life between weak, moderate, and strong sense of coherence groups (Norekval et al. 2009). Sense of coherence contributes to the level of all quality of life domains ( $p < 0.001$ ). Several clinical characteristics contribute to quality of life (1) physical domain: comorbidities ( $p < 0.001$ ), previous myocardial infarction ( $p = 0.013$ ), ejection fraction ( $p < 0.011$ ), length of hospital stay ( $p = 0.005$ ) symptoms and function ( $p < 0.001$ ) (2) psychological domain: previous myocardial infarction ( $p = 0.031$ ) and symptoms and function ( $p < 0.001$ ) and (3) environmental domain: education ( $p < 0.033$ ) and symptoms and function (0.003). On group level, both sense of coherence and quality of life were stable. Experiencing specific health changes ( $p < 0.001$ ), not major life events, influenced quality of life during the six-month follow-up (Norekval et al. 2009)

In another study, total number of chronic illnesses had weak but statistically significant negative relationship with quality of life ( $r = -.19, p < .05$ ). There were no differences found in quality of life based on any specific chronic illness, with the exception of hearing problems. Health promoting lifestyle ( $r = .56, p < .01$ ), sense of coherence ( $r = .39, p < .01$ ), and personal autonomy ( $r = .49, p < .01$ ) were each found to be positively related to quality of life Mowad (2004). Findings from Ekman et al. (2002) reveal that patients with chronic heart failure CHF had lower levels of health-related QoL scores (SF-36) compared with the healthy control group. Patients scored particularly low on the SF-36 in the physical dimension, such as physical function, role physical, general health, and vitality. On the other hand, they had also similar high scores of SOC.

This was also the case in a study by Schneider et al. (2006) that despite an increase in physical disability, subjective well-being remained constant for both points in time (1994-1997 and 2000-2002). With a tested path model it supported their hypothesis that subjective well-being at the second measurement point will hardly be influenced by “objective” conditions of aging and functional impairment but was significantly influenced by the individual’s subjective evaluation of the present situation as well as the sense of coherence. With the general health questionnaire (GHQ) scores applying the Likert method, it showed in another study that there is significant differences between the age groups, decreasing constantly mean score with increasing age until the group of 65- to 69-year olds, then rising continuously until the oldest age group. There was a relationship between SOC and age, with stronger SOC in the older age groups. Larger proportion of individuals experienced well-being as a function of age. An increase in SOC was related to a decrease in psychological well-being: (i.e. a stronger SOC corresponded to higher well-being) (Nilsson et al. 2010).

## ***5.2 Factors Related to Sense of Coherence among Older People***

There are many factors which are related to SOC and health among the older people. In identifying these factors it was realized that they were very much intertwined and most of the studies did not handle them in isolation. Social support, loneliness, economic situation, good nutrition and spirituality were factors identified to relate to SOC among older people. Social support is very important factors which in the life of older people and mentioned in literature

to contribute to SOC and QoL. For example in Borglin et al. (2005), among the (18.4%) vulnerable very old people, low social support and sense of coherence were related to lower quality of life. They had fewer available resources with which to meet everyday demand and had low SOC, lower social support than the two other groups who had higher scores of social support.

Furthermore in determining the relationship between social support and HRQOL Drageset et al. (2009), investigated whether the SOC modifies the effect of social support on HRQOL. It was realized that attachment affected the mental health subdimension ( $p = 0.001$ ), opportunity for nurturance affected social functioning ( $p = 0.003$ ) and reassurance of worth affected vitality ( $p = 0.001$ ) after adjustment for demographic variables and comorbid illness. After the analysis included the sense of coherence, nurturance still significantly affected social functioning and reassurance of worth still significantly affected vitality. No interaction with sense of coherence was found, and sense of coherence significantly affected all SF-36 subdimensions. Furthermore, results from Langeland et al. (2009) shows that social support predicted change in sense of coherence (standardized beta coefficient for social support was 0.32,  $P = 0.016$ ), mental symptoms did not (standardized beta coefficient - 0.07,  $P = 0.621$ ). The social provision of opportunity for nurturance contributed most to the prediction (standardized beta coefficient 0.24,  $P = 0.019$ ). This means that improving social support with special emphasis on opportunity for nurturance might provide important opportunities for increasing sense of coherence among older people.

This was also the case when Dantas et al. (2002) hypothesized that after controlling for variables related to poor health vulnerability, perceived support, self-esteem, and chronic illness trajectory instability and work, the addition of sense of coherence will significantly add to the explained variance of quality of life. The first two variables explained 49% of the variance of the QOL scale. Adding perceived social support, self-esteem and sense of coherence increased explained variance to 64%, 69%, and 75%, respectively.

Similarly, poorer social resources and perceived economic situation was found to make women more vulnerable than their male counterpart. Loneliness was most pronounced in women with cancer, who also had a poorer social context in access to children, grandchildren and siblings. Women in both groups were exposed to stronger feelings of loneliness and fear

than men. Another contributory factor to older women with cancer vulnerability also appeared to be their poorer economic situation. 22 percent of the women perceived their economic situation as bad or very bad as compared to 1 percent in the men with cancer (Thomé et al. 2004). This economic situation among older people especially women hampered their perception of QoL.

Another factor which came to the surface was spirituality. It is one of the factors which plays significant role in achieving higher SOC among the older people. Spirituality helps a person to perceive their lives as meaningful even in terms of difficult situations. This was supported by Delgado (2007), where high score of SOC and spirituality correlated with low stress and high (QoL). Additionally, it was found that healthy people scores higher on the internal locus of control (spirituality) subscale than the unhealthy participants (Gilhooly 2007). They were more likely to report a belief that they were responsible for their health, had the power to make themselves well, their physical well-being depended on how well they took care of themselves, and were less likely to endorse statements indicating that chance and luck play a big role in becoming ill and reported greater sense of coherence (Gilhooly 2007).

Another factor was malnourishment or under nutrition. There have been associations between undernutrition and decreased functional ability with dependency in activities of daily living and self-care ability. Söderhamn et al. (2008) found that patients who were at medium or high risk for undernutrition had lower self-care ability ( $p < 0.001$ ) and weak sense of coherence ( $p = 0.007$ ) than those who were at low risk for undernutrition. Patients who perceived good health had higher self-care ability ( $p < 0.001$ ) and stronger sense of coherence ( $p < 0.001$ ) than patients who perceived ill health. Last but not the least is personal autonomy, another important factor in older people's life which results in QoL. Personal autonomy is believed to contribute to quality of life by serving as a guiding value that determines the way in which one makes choices and conducts life as well as serving as a comparative framework when evaluating the quality of one's life. Personal autonomy is an individual value that reflects the ability to be freely self-directed and able to make choices that reflect one's needs and goals (Mowad 2004). According to Mowad Health-promoting lifestyle, sense of coherence and autonomy are all positively correlated to quality of life.



### ***5.3 Gender differences of SOC among the Older People***

Findings coming out from this study seem to show that there is some kind of gender differences in SOC among the older people. When Thomé et al. (2004) studied quality of life of older people with cancer with a gender perspective; it was found that women with cancer were more vulnerable than their male counterparts in terms of QoL, SOC, perceived economic situation and social resources. Women with cancer had significantly lower SOC and SF-12 scores in both scales than women without cancer. It was further discovered that there were significant correlations between scores on resilience, sense of coherence, purpose in life, self-transcendence scales and perceived mental health among women but not among the men (Nygren et al. 2005).

Additionally, in study by Borglin et al. (2005) although they did not specify the percentage of men to women it was found that majority of the participants who reported 'poor or bad' self-rated health, high frequencies of health problems, low social support and sense of coherence and less physically active were women. In another study by Nilsson et al. (2010) men had both stronger SOC and well-being as compared to women. Significant differences was also found between women and men of which men scored higher on the SF- 36 scale physical functioning (33 vs 45,  $P = .0005$ ) in the patients and (57 vs 77,  $P = .036$ ) in the controls. Although these sex differences were detected, women's lower scores on physical function, as compared to the men is likely to be because elderly women do not retire from their household work, which means that they often have more physical work to do with taking care of the home as compared with older men which could have effect on their SOC score (Ekman et al. 2002).

### ***5.4 Evidence suggesting SOC translate QoL among Older People***

From all the studies reviewed, significant correlations were found between QoL and SOC in total. A higher QoL score corresponded with a stronger SOC score. These results reflected in the findings from other studies example: (Delgado 2007; Thomé et al. 2004; Mowad 2004; Drageset et al. 2009; Nesbitt et al. 2000; Ekman et al. 2002; Norekval et al. 2009 and Borglin et al. 2005) which also reported similar findings that high SOC translated into QoL among the older people. Although all the studies used different version of the scales (29 items, 12 items, 13 items) higher scores were found to correspond to QoL.

Table 4 Summary of Main Finding

Author	Authors Findings	Authors Conclusion
Nilsson et al. (2010)	Males had both stronger SOC and well-being compared to females. There was a relationship between SOC and age, with stronger SOC in the older age groups. There were a larger proportion of individuals who experienced well-being as a function of age. In addition, an increase in SOC was related to a decrease in psychological well-being, that is, a stronger SOC corresponded to higher well-being.	Males showed a stronger SOC and more well-being than females. Moreover, SOC and well-being increased with age in both sexes. Our findings suggest that SOC may develop over an entire lifetime.
Borglin et al. (2005)	Three groups were disclosed, classified as high, intermediate and low present QoL, of which 33.8% could be regarded being at risk of low QoL. Those with low present QoL (18.4%) were the oldest and most vulnerable, a majority were women with 'poor or bad' self-rated health, high frequencies of health problems, low total QoL, low social support and sense of coherence and less physically active. Those with high present QoL (47.8%) reported more 'excellent or good' self-rated health, physical activity, satisfactory social support and higher sense of coherence and total QoL than the other two groups. Those with intermediate present QoL (33.8%) had more of 'poor or bad' self-rated health, more health problems were less physically active, had lower total QoL and sense of coherence, and less social support than those with high present QoL.	The sample seemed to reflect the ageing process in that the respondents were at different stages of ageing. However, the fact that the level of social support, sense of coherence and self-rated health followed the same curve as QoL may indicate that some are more vulnerable to low present QoL given the same health and these should be targeted in preventive programmes since they report low QoL.
Thomé et al. (2004)	Women with cancer were more vulnerable than their male counterparts in QoL, SOC, perceived economic situation and social resources. Factors associated with low QoL in older people with cancer were receiving help for daily living, comorbidity, degree of complaints and pain.	From a caring perspective the findings suggest a focus on symptoms and treatment, to acquire an understanding of how a cancer disease, comorbidity and various complaints affect QoL and independence in older women and men and to intervene accordingly. It also suggests that socio-economic and social problems and needs influence their treatment and care and therefore should be in focus.
Nygren et al. (2005)	The findings showed significant correlations between scores on the Resilience Scale, the Sense of Coherence Scale, the Purpose in Life Test, and the Self-Transcendence Scale. Significant correlations were also found between these scales and the SF-36 Mental Health Summary among women but not among men. There was no significant correlation between perceived physical and mental health. The mean values of the different scales showed that the oldest old have the same or higher scores than younger age groups. Regression analyses also revealed sex differences regarding mental health.	The conclusions are that, the correlation between scores on the different scales suggests that the scales measure some dimension of inner strength and that the oldest old have this strength at least in the same extent as younger adults. Another conclusion is that the dimensions that constitute mental health differ between women and men.
Delgado (2007)	High sense of coherence (SOC) and spirituality were correlated with low stress and high quality of life (QoL). Neither SOC nor spirituality related significantly to objective symptom severity. In regression analyses 73.2% of the variance in QoL was explained by SOC, the FEV1/FVC ratio, and functional ability.	Psychosocial factors are important in patients' cognitive interpretations of illness. SOC and spirituality may buffer stress in the context of chronic illness.
Norekval et al. (2009)	We found a significant difference in quality of life between weak, moderate, and strong sense of coherence groups (p<0.001). Sense of coherence contributed to the level of all quality of life domains (p<0.001). Several clinical characteristics contributed to quality of life: (1) physical domain: comorbidities (p<0.001), previous myocardial infarction (p=0.013), ejection fraction (p<0.001), length of hospital stay (p = 0.005) symptoms and function (p<0.001); (2) psychological domain: previous myocardial infarction (p= 0.031) and symptoms and function (p<0.001); and (3) environmental domain: education (p=0.033) and symptoms and function (p = 0.003). On group level, both sense of coherence and quality of life were stable. Experiencing specific health changes (p<0.001), not major life events, influenced quality of life during the six-month follow-up.	Sense of coherence was an important stable determinant of quality of life domains in female myocardial infarction survivors. Although other factors were identified, further research is needed to elucidate additional determinants of quality of life. Relevance to clinical practice. These specific factors could guide clinicians in making treatment decisions that optimize the quality of life of their patients. Applying a salutogenic perspective through patient education may be important.
Drageset et al. (2009)	Attachment affected the mental health subdimension (p=0.001), opportunity for nurturance affected social functioning (p = 0.003) and reassurance of worth affected vitality (p = 0.001) after adjustment for demographic variables and comorbid illness. After the analysis included the sense of coherence, nurturance still significantly affected social functioning and reassurance of worth still significantly affected vitality. No interaction with sense of	The opportunity to provide nurturance for others appears to be important for social functioning, and sense of competence and sense of self-esteem appear to be important for vitality. Further, the residents' relationships with significant others comprise an important component of mental

	coherence was found, and sense of coherence significantly affected all SF-36 subdimensions.	health. Finally, independent of the level of sense of coherence, social support is an important resource for better health-related quality of life. Clinical nurses should recognize that social support is associated with health-related quality of life and pay attention to the importance of social support for the residents in daily practice.
<b>Langeland et al. (2009)</b>	The results show that while social support predicted change in sense of coherence (standardized beta coefficient for social support was 0.32, $P=0.016$ ), mental symptoms did not (standardized beta coefficient $-0.07$ , $P=0.621$ ). The social provision of opportunity for nurturance contributed most to the prediction (standardized beta coefficient 0.24, $P=0.019$ ).	The results indicate that improving social support with special emphasis on opportunity for nurturance might provide important opportunities for increasing sense of coherence among people with mental health problems.
<b>Dantas et al. (2002)</b>	The hypothesis was: after controlling for variables related to poor health vulnerability, perceived support, self-esteem, and chronic illness trajectory instability and work, the addition of sense of coherence will significantly add to the explained variance of quality of life. The first two variables explained 49% of the variance of the QOL scale. Adding perceived social support, self esteem and sense of coherence increased explained variance to 64%, 69%, and 75%, respectively. These findings supported our hypothesis.	The results provide a complex view of subjects. Although, in average, they reported low satisfaction with their health status, their perceived QOL, self-esteem and social support were high. The health care professional might be able to use the information on a patient's sense of coherence in order to improve his/her quality of life, by concentrating on changing one or more of the three components of that measure: comprehension, manageability, and meaningfulness.
<b>Mowad (2004)</b>	Health-promoting lifestyle, sense of coherence, and autonomy were each found positively correlated to quality of life. When the independent variables were subjected to a regression analysis, health-promoting lifestyle and autonomy explained 38% of the variance in quality of life.	By examining personal variables that are important to older adults and that have established theoretical linkages with quality of life, the current study contributes to the expansion of a coherent body of knowledge about quality of life, which is essential for nurses and other health care professionals who work with older adults.
<b>Nesbitt et al. (2000)</b>	Hierarchical multiple regression analysis indicated that physical health limitation, particularly symptom bother and functional health, had a significant negative influence on quality of life. However this effect was mediated by sense of coherence and illness appraisal. Regardless of the level of symptoms or functional health, women with higher sense of coherence and more positive illness appraisals had higher levels of quality of life.	The findings support the proposed model and further our understandings regarding the protective role of personality resources in perceived quality of life in older women with chronic illnesses.
<b>Ekman et al. (2002)</b>	The patients had lower levels of health-related QoL scores (SF-36) but high and similar scores of SOC compared with the controls. There were, however, significant positive correlations between the SOC scores and the emotional dimensions in the SF-36 instrument.	The findings from this study indicate that old age and severe chronic heart failure were associated with limited functional abilities and impaired health-related QoL but also with internal resources such as SOC.
<b>Schneider et al. (2006)</b>	Despite an increase in physical disability, subjective well-being remained constant for both points in time. The path model supported the hypothesis that subjective well-being at the second measurement point was hardly influenced by "objective" conditions of aging and functional impairment but was significantly influenced by the individual's subjective evaluation of the present situation as well as the sense of coherence.	Our results support a salutogenetic model of subjective well-being in our sample; these findings should, however, be replicated in other samples.
<b>Söderhamn et al. (2008)</b>	Patients at medium or high risk for undernutrition had lower self-care ability ( $P<0.001$ ) and weaker sense of coherence ( $P=0.007$ ) than patients at low risk for undernutrition. Lower self-care ability, being single and admitted from another hospital ward was found to be predictors for being at medium or high risk for undernutrition. Patients who perceived good health had higher self-care ability ( $P<0.001$ ) and stronger sense of coherence ( $P<0.001$ ) than patients who perceived ill health.	There is an indication that older patients at low risk for undernutrition have a greater capability to care for themselves than patients at medium or high risk for undernutrition. Perceived ill health in older patients is associated with lower self-care ability and weaker sense of coherence.
<b>Lundman et al. (2010)</b>	SOC score was positively related to well-being ( $p \leq 0.001$ ). Heart failure ( $p = 0.009$ ), chronic obstructive pulmonary disease ( $p = 0.015$ ), depression ( $p=0.015$ ), and osteoarthritis ( $p = 0.032$ ) were significantly associated with low SOC scores, as were high scores on the Geriatric Depression Scale (GDS) ( $p = 0.002$ ). One-year mortality was significantly associated with the SOC score (OR = 0.945, confidence interval (CI) = 0.898–0.995, $p = 0.032$ ), while the 4-year mortality was not (OR = 0.995, CI = 0.973–1.018, $p = 0.674$ ). The SOC score did not predict depression at 5-year follow-up (OR = 0.977, CI = 0.937–1.018, $p = 0.267$ ). Strong SOC was associated with well-being in this group of old people.	A high degree of SOC was found in this group of old people and SOC was associated with well-being. Low SOC was found among those with diseases known to have negative effects on daily life. One-year, but not 4-year mortality, was significantly affected by the SOC score.

	Low SOC was found among those with diseases known to have a negative influence on daily life.	
<b>Gilhooly et al. (2007)</b>	Compared to the unhealthy group, the healthy participants were less neurotic, more likely to endorse an internal locus of control belief and less likely to endorse a powerful others locus of control belief, and to report a greater sense of coherence. The unhealthy group scored higher on the religiosity/spirituality measure devised for this study.	The findings are interesting in that, although they cannot address the issue of cause and effect, the very fact that the personality traits measured in this study were linked to health status in old age, further strengthens the argument that in general practice and hospital settings, an understanding of personality aids practitioners in dealing with patients. Finally, with the growing body of evidence that personality traits have a high degree of heritability, the routine gathering of information on personality traits would aid epidemiologists in their understanding of the determinants of healthy and successful ageing.

## 5.5 Summary of the results

As noted above, among the sixteen articles reviewed, it was found that association between SOC, health and QoL among the older people were present. However, the effect of SOC, health and QoL differed slightly among ages, sex and time period of which the studies were carried out. Nine studies (Lundman et al. 2010; Nesbitt & Heidrich 2000; Thomé et al. 2004; Nygren et al. 2005; Borglin et al. 2005; Norekval et al. 2009; Mowad 2004; Ekman et al. 2002; Schneider et al. 2006 and Nilsson et al. 2010) showed direct relation on SOC and health whiles hinting on some connecting factors to SOC and QoL. Six (Drageset et al. 2009; Langeland et al. 2009; Dantas et al. 2002; Delgado 2007; Gilhooly 2007 and Söderhamn et al. 2008) gave major factors relating SOC and QoL. SOC is related to health and QoL such that in many of the studies reviewed; diseases such as heart failure, COPD, depression, osteoarthritis, cataracts and many more significantly affected the score of SOC. Factors which were found to relate to SOC among the older people were social support, loneliness, economic situation, good nutrition and spirituality. Additionally women score lower on the SOC as compared to their male counterpart. It was also found that a higher QoL score corresponded with a stronger SOC score.

## 6 DISCUSSION

This paper has succeeded in reviewing all selected articles regarding the connection between sense of coherence (SOC) and health, factors relating to sense of coherence and differences in genders among the older people. Interestingly, results did not differ so much across the study

dynamics. Although there were methodological differences among the selected studies however, findings seem to show strong positive connection between SOC, health and QoL. Nine studies, (Lundman et al. 2010; Nesbitt & Heidrich 2000; Borglin et al. 2005; Norekval et al. 2009; Mowad 2004; Ekman et al. 2002; Schneider et al. 2006; Nilsson et al. 2010; and Thomé et al. 2004) gave direct positive relationship of SOC, health and QoL. The associations between SOC and health problems such as; chronic heart failure, COPD, and osteoarthritis have been understood to have effect on daily life and influence SOC and QoL. Both heart failure and COPD are diseases with progressive severe symptoms, such as fatigue, breathlessness, and anxiety, which have considerable negative impact on ADL. Osteoarthritis affects mobility and thereby limits freedom of choice of activities. It is therefore reasonable to think that these diseases can contribute to low scoring of SOC, especially in the dimension of manageability, or perceived sufficiency of resources to meet internal and external demands as described by (Antonovsky 1996; Lindström & Eriksson 2006).

On the other hand, Nygren et al. (2005) not opposing this views, they are of the view that even though people grow older with multiple diseases they can still have higher scores of SOC provided resources are available and can be used efficiently. According to them to grow old means both gains and losses. Among those losses are physical diseases and disabilities. It is therefore also possible to develop resilience which can constitute a form of compensation for losses of functional capacity and physical health and can be understood in the light of the gains and losses of growing old.

These findings are no different to already existing evidence. It reinforces what Antonovsky meant that an individuals can move from one end of the health continuum to another depending on the stressors whether pathogenic, neutral or salutary impacting on them. How these stressors can be managed will be reliant on the resources available to the individual. This clearly indicates that despite multiple diseases if a person has resources there is likelihood to manage the stressors brought by diseases. Findings from the current study is therefore consistent with other studies which have been conducted to ascertain the effect of SOC on health (e.g. Motzer & Stewart 1996; Saevareid et al. 2007; Fok et al. 2005; Soderman et al. 2001 and Floyd et al. 2010).

Social support, loneliness, economic situation, good nutrition and spirituality were factors identified to relate to SOC among older people. According to Borglin et al. (2005), Dantas et al. (2002), Drageset et al. (2009) and Langeland et al. (2009) these factors predict change in SOC among older people. The concept of social support was initially examined in the mid 1970s and has emerged as a complex, important and multidimensional concept. Despite the diverse conceptualizations of social support, the definition of social support implies the positive and supportive ways, interactions and behaviors that different people provide to a person in need of support (Huang et al. 2010).

According to Queenan et al. (2010), social support has two separate domains thus: “structural and functional”. Structural social support is the actual physicality of the support such as frequency of contact with friends or family, voluntary organizations or associations, religious services and other community services. Functional social support includes happiness with such areas as verbal and physical appraisal, tangible help with tasks, communication of helpful information and guidance and social companionship. With its importance several literature (Lee et al. 2009; Adejumo 2010; Rambod & Rafii 2010; Queenan et al. 2010 and Golden et al. 2009) has mentioned it to contribute to QoL and has direct beneficial effect on SOC, health and QoL. In the absence of social support, loneliness and social isolation can increase risk of mental health problem for example: depression. Loneliness in Thomé et al. (2004) was found to be most pronounced in women with cancer and had poorer social context in access to children, grandchildren and siblings. Women were exposed to stronger feelings of loneliness and fear than men. Additionally, the prevalence of loneliness was found to be most common among women, those over 82 years, and those with the social support deficits. Contact with relatives was unrelated to loneliness (Field et al. 2002). Important factor of this kind should not be overlooked. It should be considered one of the major areas of interest if success can be achieved in caring for older people.

Economic situation is another important major factor which was identified to influence the life of older people. As seen in the descriptions above, attributes of QoL, GRRs and SOC enhances health and wellbeing. Economic situation (money) is one of the attributes mentioned as important and cuts across all the concepts. It could then be agreed that proper economic situation could enhance health promotion life styles. Having better economic situation usually leads to attaining healthy life style (Kawachi et al. 2010). Economic

situation undoubtedly plays important role in the life of older people. Having good economic situation can improve the health status of an older person. This is often not the case among the older people, as it was seen in Thomé et al. (2004) that 22 percent of older women with cancer perceived their economic situation as bad or very bad making them vulnerable and scored lower on SOC as compared to 1 percent of their male counterpart.

Additionally, certain preventable health problems such as malnutrition or under nutrition may be due to poor economic situation and could lead to lower SOC scores. Söderhamn et al (2008) found that patients at medium or high risk for undernutrition had lower self-care ability and weaker sense of coherence than patients at low risk for undernutrition. This problem however can be reversed if resources like money are made available for basic needs. Further to this financial worries about bills or debts, and having enough money for essentials, or being able to afford to run/maintain car/pay for petrol, was mentioned in 33 percent of respondents as giving quality to life “good” (Bowling 2003). Even though many articles reviewed did not study into detail of this issue, it has highlighted the importance of economic situation among the older people.

One very important factor which was also identified to contribute to stronger SOC is spirituality. Spirituality is a way people find meaning to life and hope for better future. It is usually done through religion. It was found in this review to be important factor which influences the SOC in the life older people. Spirituality helps a person to perceive their lives as meaningful even in terms of difficult situations. In Gilhooly (2007) & Delgado (2007) high score of SOC and spirituality correlated with low stress and high (QoL).

Evidence from this review seems to point to the direction of women having weaker SOC and health than their male counterpart (Thomé et al. 2004; Nygren et al. 2005 and Borglin et al. 2005). It seems that women reported more worries in terms of QoL, SOC, perceived economic situation and social resources and scored significantly lower on SOC. Although several reasons can contribute to this problem especially economic/financial resource, this is somehow debatable. It could be one of the shortcomings of the individual articles reviewed as will be discussed later. Furthermore, findings have also showed significant correlations between QoL and SOC in total. A higher QoL score corresponded with a stronger SOC score. Although all the studies used different version of the scales (29 items, 12 items, 13 items)

higher scores were found to correspond to QoL. About half of all the studies reviewed indicated these correlations. It is consistent with other studies which have been conducted on SOC and QoL.

Based on these evidence revealed we can then correspond this to health and wellbeing which emphasizes on objective (physical) or subjective (psychological) resources of life and existence as a whole? It seems to be difficult not to correspond them, because both structural and functional aspects of life have elements such as satisfaction or dissatisfaction, or happiness or unhappiness which are also attribute of QoL. It can be said to equate those aspects of wellbeing and QoL which SOC is design to measure. Wellbeing and QoL are no doubt complex concepts. Some experts assume it to be a new name for the older terms "general welfare" and social "wellbeing (Wish 1986). Two major domains thus "objective and subjective" aspects are however the point of interest. Both objective (physical) and subjective (psychological) elements of wellbeing and QoL of an older person can have either positive or negative effect on their life depending on availability of resources and capacity to use them. These elements could be believed as what Antonovsky defines as the generalized resistance resources (GRRs). These are any one of a broad range of resources that neutralize the barrage of stressor of life events an individual usually encounter e.g.: money, knowledge, experience, self-esteem, healthy behaviour, commitment, social support, cultural capital and so on and can even go far beyond these (Antonovsky 1996 & Lindström & Eriksson 2006).

### ***6.1 Strength and Weakness of the Studies***

There are some limitations to this study. Since this study is a review of literature its validity is partly predicted on the individual studies that were used. First and foremost, only literature published in English were used. This means that there is selection bias as there could have been other important findings written in other language that may have affected the findings of this study. Secondly, only articles with open access were used. Thirdly, criteria used in selecting the articles as well as those used in evaluating the articles are not standardised as they were developed by the author himself. Notwithstanding, these limitation, the study could



be seen as reliable and valid because the number of articles used were large enough to draw conclusion. Additionally, all the articles used SOC scale to measure its effect on older people.

As indicated in the result section of the positive connection between SOC and health, it is however, wise to exercise caution when interpreting these findings due to some methodological shortcoming that might have resulted in the designs employed in these reviewed studies. First and foremost, various articles used different assessment tools. In all the sixteen articles reviewed not only did they use different assessment tools, some also used multiple tools to extract information about SOC (29 items, 12 items, 13 items) and health and related factors among the older people. This made it very difficult to compare, contrast and give a clear connection to all the articles because it was realized that some authors were also measuring other concepts as well. However, with the main focus of this study on SOC, health and QoL attention was given to only those concepts.

The most commonly used assessment tools were self report based on interviews and/or questionnaires. This could have biased the exposure measurement. For example, wrong framing of questions, the interviewer characteristics, and interviewee memory could have influenced the results thereby leading to misclassification, overestimation or underestimation of results. Although all the studies used standardized or tested assessment tools respondents may exaggerate their problem in order to make their situation seem worse, or they may under-report the severity or frequency of problem in order to minimize their problems. It is also worth noting that the standardized tools or instruments could itself have some problems or inconsistencies. This could have been the case between the gender differences where women scored lower on SOC than the men. One baffling thing that comes to mind with regards to the gender differences is the SOC scale in itself. There is possibility that the questionnaire could be gender bias since it was developed through the study on women. This however calls for further research on the issue of gender and SOC.

In all the articles reviewed, processes of sample selection were described with almost all of them having over 60 percent response rate. Data collections were conducted at different times and at different locations. This could have led to some flaws and biases in the sampling and could have affected the results. Another important discovery was the types of designs used in conducting the studies. Many of the studies used cross sectional designs which again could

restrict the conclusions that can be drawn particularly to those regarding cause and effect. This problem can create inconsistent result in the findings.

## ***6.2 Conclusion and recommendation***

The population demographics worldwide are changing with people growing older than ever before. This problem is going to put immense pressure on the health system since aging inevitably goes along with altered general health status with disabilities. Among the older people physical health limitations particularly symptom bother and functional health seem to have negative influence on quality of life. Promoting health and wellbeing requires however adaptation of different strategies to manage effectively the problems of the older people. Additionally, efficient use of available resources such as GRRs mentioned by Antonovsky can help to change this situation to stronger SOC. Evidence from this review shows stronger connection between SOC and health. Several factors apart from those highlighted in this study can be used to improve health, wellbeing and QoL of the older people. Furthermore, evidence has showed that high SOC lead to QoL. It would be advantageous to older people if health care professional could explore all these options to improve the life of the older people. It is also worth mentioning that to be able to intervene effectively in older people's care, there is a need to understand and develop preventive interventions on different levels. This will help make the life of the older people enjoyable.

## ***6.3 Research and Implications for Practice***

Because nursing is moving towards patient-centered care, high patient's expectation and cost effectiveness, these findings will provide nurses and other health care professionals the necessary information that is very well needed. Thus, this study may inform the planners, policy makers, nurses and other health care professionals to better understand the phenomena. It will contribute to development of methods best suited for this population group now and for the future. This study could also serve as an evidence to design our education policy, training programmes and practices for this population group and to eventually reduce the theory-practice gap.

Evidence from this study has given insight into the problem of the older people. It calls on health professionals to utilise knowledge obtained from this study on SOC and health among older people. Increasingly, evidence seems to lean toward the fact that SOC is strongly related to QoL. These findings can only be successfully implemented into practice by integrating clinical expertise, patient's preferences, values, individual situation, beliefs and experiences. We need to also acknowledge the fact that availability of resources can positively or negatively influence the interpretation and the application of this evidence. The findings of this study revealed some differences in gender. It is unclear why this problem arises. In order to advance our knowledge on this problem it would be important to embark on further research into this issue.

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