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Khoon Kiat Tan

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Author's address: Department of Nursing Science
University of Eastern Finland
KUOPIO
FINLAND

Supervisors: Professor Katri Vehviläinen-Julkunen, Ph.D.
Department of Nursing Science
University of Eastern Finland
KUOPIO
FINLAND

Professor Sally Wai-Chi Chan, Ph.D.
School of Nursing and Midwifery
The University of Newcastle
NEWCASTLE
AUSTRALIA

Reviewers: Professor Helen Bartlett, Ph.D.
President and Pro Vice-Chancellor
Monash University Malaysia
SELANGOR
MALAYSIA

Professor Brian Kelly, M.D., Ph.D.
Chair and Director, Centre for Resources Health and Safety
Centre for Brain and Mental Health Research
School of Medicine and Public Health
Faculty of Health and Medicine
The University of Newcastle
NEWCASTLE
AUSTRALIA

Opponent: Professor Karin Enskär, Ph.D.
Head of Department, Department of Nursing
School of Health and Welfare
Jönköping University
JÖNKÖPING
SWEDEN

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ABSTRACT

Across the globe, populations are ageing. An increasing number of older people are living independently in smaller households. In the communities, older people must remain relatively independent and healthy. Deeper understanding of local contexts is required, to appreciate the effects of and resources related to enhancing the health of older people who live independently. Salutogenesis, the process of movement towards the health end of a health ease / dis-ease continuum, has been presented as a health-promotion framework. It is important to explore the incorporation of this theory in self-care intervention programmes, to promote a sense of coherence, health and quality of life for older community-dwellers.

The purpose of this study was to examine ways of improving the health and quality of life of people aged over 65 years, living in the community in Singapore. The objectives were to:

(i) synthesise the published empirical evidence that uses salutogenesis as the theoretical framework, and that examines the relationship between key salutogenesis constructs, health and quality of life;
(ii) describe the health and quality of life of older people living independently, or with an unrelated older person in the community;
(iii) explore their experience of the process;
(iv) evaluate the feasibility (effectiveness and acceptability) of a self-care programme (the Resource Enhancement and Activation Programme, REAP) in promoting a sense of coherence and quality of life for people aged 65 or above and living in the community.

The study comprises an integrative review, a descriptive quantitative study, a descriptive qualitative study, and a feasibility randomised controlled trial, with both outcome evaluation and process evaluation.

The integrative review was conducted in December 2011. This revealed a dearth of literature that has adopted a salutogenesis framework that examines the health and quality of life of older people globally. None have been conducted in Asia. Eight studies were reviewed. The sense of coherence was generally strong among community-dwellers aged 65 or above, and was positively correlated with health and quality of life, but less strongly correlated with physical health. Generalised resistance resources were also correlated with sense of coherence, suggesting the importance of external and internal resources to a sense of coherence as an orientation for coping with life stresses. There is a need to establish the cause and effect relationship between salutogenesis constructs, health and quality of life in older people.

The descriptive quantitative and qualitative studies were conducted between March and June 2012. The former was a structured survey, performed through individual face-to-face surveys, as many of the participants were illiterate (n = 60). Descriptive statistical analysis was used to perform chi-square and Pearson correlation tests. For the descriptive qualitative study, data collected through semi-structured individual interviews (n = 25) were first transcribed, and thematic analysis was performed. It was found that older community-dwellers deliberately decide to live independently or

with an older person, for various reasons. Those living in public rental apartments were more socially isolated and were at higher risk of depression than those living in apartments that they purchased themselves.

Older community-dwellers encountered challenges related to deteriorating physical health, which affected their psycho-socio-spiritual health. Some were concerned with dependent care, the end-of-life and death. They were moderately satisfied with their health and quality of life, but were noticeably less satisfied with their physical and social domains. They depended on both external and internal resources to cope with life challenges. There is a need to inform and equip older community-dwellers with the knowledge, skills and access to resources to enhance their physical and social quality of life, so that they can be better supported in ageing in the right place.

The feasibility randomised controlled trial was conducted between February and August, 2013. A total of 64 participants were recruited through a senior activity centre. A set of outcome measures were collected before commencement of study. This includes World Health Organisation Quality of Life, Sense of Coherence, Patient Activation Measure, Connor-Davidson Resilience Scale. Satisfaction With Life Scale, World Health Organization Well-Being Index, Geriatric Depression Scale and Gierveld's Loneliness Scale. The participants were allocated equally to an intervention and control group, using a computer-randomisation method. The 12-week and twice-weekly intervention—Resource Enhancement and Activation Programme—was developed based on the salutogenesis theory and relevant literature. The same set of measures was collected at the end of the three months. SPSS software was used to perform descriptive and inferential statistics analysis. Multivariate repeated measures analysis of covariance (ANCOVA) was performed to examine the interaction effects between time (three-month period) and group (intervention and control groups). Intention-to-treat analysis with p less than 0.05 being considered as statistically significant was adopted, to estimate the treatment effects.

Five focus groups were conducted, with a total of 26 participants. The recordings were transcribed and analysed thematically. The trial demonstrated that salutogenesis is an appropriate theoretical framework for an intervention programme for older people. The salutogenesis-based Resource Enhancement and Activation Programme was feasible and acceptable to the older community-dwellers. The programme had helped them to comprehend the challenges of daily living accompanying old age, and to recognise that resources were available. The older people also stated that they were satisfied with their psychological quality of life.

The generalisation of the findings may be limited, as the feasibility randomised controlled trial was a single-centre trial, with participants who were engaged in activities at the centre. The trial did not evaluate whether the effects of the programme were sustainable. The Resource Enhancement and Activation Programme could be further studied on a larger scale across different centres. The salutogenesis-based programme is promising in facilitating ageing in the right place in the community, and enhances healthy ageing and quality of life.

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Kheon Kiat Tan

List of the original publications

This dissertation is based on the following original publications:

I Tan, K. K., Vehviläinen-Julkunen, K., & Chan W. C. S. (2014). Integrative review: salutogenesis and health in older people over 65 years. *Journal of Advanced Nursing. 70*(3), 497-510. doi: 10.1111/jan.12221.

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III Tan, K. K., He, H-G., Chan, S. W. C., & Vehviläinen-Julkunen, K. (2015). The experience of older people living independently in Singapore. *International Nursing Review.* doi:10.1111/inr.12200.

IV Tan, K. K., Chan, S. W. C., & Vehviläinen-Julkunen, K. (2014). Self-care program for older community-dwellers: Protocol for a randomized controlled trial. *Central European Journal of Nursing and Midwifery, 5*(4):145–155. doi: 10.15452/CEJNM.2014.05.0010

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Contents

Abbreviations

AMD	Advance Medical Directives
ANCOVA	Analysis of Covariance
CD-RISC	Connor-Davidson Resilience Scale
CLOX	Executive Clock Drawing Task
CONSORT	Consolidated Standards of Reporting Trials
FG	Focus group
GDS	Geriatric Depression Scale
GRRs	General resistance resources
IADL	Instrumental Activities of Daily Living
IRB	Institutional Review Board
NK	Natural Killer
PAM	Patient Activation Measure
QoL	Quality of life
RCT	Randomised controlled trial
REAP	Resource Enhancement and Activation Programme
SAC	Senior activity centre
SES	Socioeconomic status
SOC	Sense of coherence
SSQ6	Social Support Questionnaire Short-Form
SSQN	Social Support Questionnaire Number Score
SSQS	Social Support Questionnaire Satisfaction Score
SWLS	Satisfaction With Life Survey
UK	United Kingdom
UN	United Nations
US	United States
WHO-5	World Health Organization Well-Being Index
WHOQoL	World Health Organization Quality of Life
WHOQoL-BREF	World Health Organization Quality of Life 26-item

1 Introduction

Population ageing is a global phenomenon that will continue (UN Department of Economic and Social Affairs Population Division, 2013). More older people will live independently (alone or with a spouse), and in smaller households. This trend is becoming more prominent in Singapore (Thang, 2014).

The traditional, prominent paradigm in healthcare is pathogenesis. This means that older people are perceived to have declining physical, mental and functional health, and so population ageing is considered a major societal burden (Chan, 2014). Health expenditure is expected to increase alongside ageing populations, due to high rates of morbidity and a greater need for healthcare among older people (UN Department of Economic and Social Affairs Population Division, 2013).

It is important that older people retain independence and health, as life expectancies continue to rise (World Health Organization, 2012). Ageing-in-place, defined as 'remaining living in the community with some level of independence rather than in residential care' (Davey, de Joux, Nana, & Arcus, 2004, p. 133), enhances health and quality of life (QoL) (Iecovich, 2014; Wiles, Leibing, Guberman, Reeve, & Allen, 2012; World Health Organization, 2002, 2012). Older people can maintain autonomy and a sense of control if they continue to live in a familiar environment. Ageing-in-place allows them to remain engaged with their environment and surrounding people. Older people must be supported in continuing to live in their homes for as long as possible, so that they age in the places that are best for them. Otherwise, their deteriorating functional competencies over time can lead to long-term institutional care and poorer health and QoL (Iecovich, 2014).

Intervention programmes should be underpinned by a theoretical framework. Self-care programmes can improve self-care behaviour (Köberich, Lohrmann, Mittag, & Dassen, 2015) and QoL (Wang, Lin, Lee, & Wu, 2011) for patients with chronic illnesses. Many studies evaluating self-care interventions have examined patients with chronic conditions (Collins-McNeil et al., 2013; Melchior et al., 2013; Wu, Kao, Wu, Tsai, & Chang, 2011). Few studies have exclusively focused on older community-dwellers. It is important that older people accept the responsibility of self-care, and are able to do it well.

Salutogenesis is a health-promotion framework that is both person-centric and community-based (Eriksson & Lindström, 2008). It encourages older people to perceive wellbeing as something that originates from health, and that health is the optimal function on the health ease / dis-ease continuum (Antonovsky, 1979). A salutogenesis approach suggests that older people can review their lives, draw upon available internal and external resources and adapt to challenges in a stress-rich environment (Antonovsky, 1987; Becker, Glascoff, & Felts, 2010; Eriksson & Lindström, 2008; Lewis, 1997). No studies have used salutogenesis as a theoretical framework to evaluate self-care programmes among older community-dwellers.

The purpose of this study is to examine ways of improving the health and QoL of community-dwellers aged 65 years or above, in Singapore. It addresses several points:

(1) an integrative review of empirical evidence based on salutogenesis, examining the relationship between SOC, generalised resistance resources (GRRs), health and QoL;

(2) a descriptive quantitative study to examine the psychosocial health and QoL of older people who live independently or with an unrelated older person;
(3) a descriptive qualitative study that explores the experiences of older people who live independently or with an unrelated older person;
(4) a feasibility randomised controlled trial with a process evaluation, which examines whether a self-care programme, Resource Enhancement and Activation Programme (REAP), would enhance QoL and SOC.

This chapter introduces salutogenesis as a framework to support ageing-in-place and states the purpose of this study. The following chapter is a literature review to provide the background and rationale for the study.

2 Literature review

This chapter first outlines the global trend of ageing, and household status changes among older community-dwellers. Next, it presents the benefits of promoting ageing-in-place. It then discusses the international emphasis on healthy ageing, which is intended to manage the inevitable demographic challenges. This chapter justifies the need to evaluate a self-care intervention programme. Salutogenesis is then discussed here, as a plausible theoretical framework for attaining healthy ageing for older people who are ageing-in-place. The chapter provides the rationales for this study.

2.1 AGEING AND HOUSEHOLD STATUS

2.1.1 The ageing trend

With longer life expectancy and a corresponding reduction in the proportion of younger people, populations around the world are ageing. The United Nations (UN) has projected that the proportion of people aged 60 years or more will grow from 11.7% in 2013 to 21.1% in 2050 (UN Department of Economic and Social Affairs Population Division, 2013). The situation is more acute in developing countries than in developed or less-developed countries: about two-thirds of people aged 60 or above are from developing countries (UN Department of Economic and Social Affairs Population Division, 2013). At present, the ageing trend is accelerating faster in Asia than in Western countries (Beard et al., 2011; National Institute on Aging, 2011).

Singapore, a developing economy (UN Development Policy and Analysis Division, 2015), is facing this challenge (Mahendran, Feng, Ng, & Kua, 2013). In 2014, the total fertility rate for the resident population was 1.25, while the projected life expectancy at birth was 80.5 years for males and 84.9 years for females (Singapore Department of Statistics, 2015). The proportion of Singapore's residents aged 65 years or above increased from 9.0% in 2010 to 10.5% in 2015. The old-age support ratio, which reflects the proportion of the economically-productive population (aged 20–64) against those 65 or over, for the same period reduced from 7.4 to 5.7 (Singapore Department of Statistics, 2011, 2015). This ratio is set to reduce further in the future.

2.1.2 Living independently

The definition of 'older people living independently' is older people who live alone or only with their spouse (UN Department of Economic and Social Affairs Population Division, 2013). With the current population trend, it is inevitable that older people increasingly live independently. In Northern Europe, 90% of the older population lives independently, while the global average is 40%, with 30% in Singapore (UN Department of Economic and Social Affairs Population Division, 2013; Wong & Teo, 2011).

Living independently are associated with personal preference, cultural acceptability, intergenerational support, individual economic self-sufficiency, assets and income, and social security provisions (UN Department of Economic and Social Affairs Population Division, 2013). To understand the relationship between health and household arrangement,

the cultural and social contexts must be identified (Kim, 2014). Generally, older people who live independently in developed countries receive financial assistance through public social protection systems and pensions (UN Department of Economic and Social Affairs Population Division, 2013). However, in Asia, it is expected that families will support the older generation, rather than society (Chen, Hicks, & While, 2014a; Shin & Sok, 2012; Tan, 2013; Wu & Chan, 2012). Younger family members may continue to live in the same household as their parents in Korea and Singapore, but this traditional support is reported to be weakening (Park & Park, 2013; Singapore Ministry of Community Development Youth and Sports, 2009). The quality of support for older people in these families can vary according to economic stability and familial relations, thus affecting the psychosocial health of older people (UN Department of Economic and Social Affairs Population Division, 2013). Regardless of whether older people live with their families or not, loneliness is a strong predictor of depression among older community-dwellers in Singapore (Lim & Kua, 2011).

2.2 AGEING-IN-PLACE

2.2.1 Living at home

Higher health expenditure is associated with an ageing population because of higher morbidity and the greater need for healthcare among older people (UN Department of Economic and Social Affairs Population Division, 2013). Ageing comes with the physical and functional deterioration of health, and individuals may confront a change of living environment. Notwithstanding physical relocation, an unpredictable future, depletion of finances and diminishing social networks may also naturally occur (Clarke & Warren, 2007; Economist Intelligence Unit, 2009). Institutional care is more costly than home support and nursing care in the community (Iecovich, 2014).

Ageing-in-place is an important consideration for more than just financial reasons. Increasingly, older people are choosing to live at home (Economist Intelligence Unit, 2009). Ageing in a familiar and meaningful living environment facilitates the maintenance of a life of purpose, the ability to be self-deterministic and actively engaged with the community, so enhances health and QoL (Iecovich, 2014; Wiles et al., 2012; World Health Organization, 2002, 2012). Individuals can continue to access essential amenities and services, maintain personal and social connections, secure their safety, make choices, and be independent and autonomous. Rowles (1983) conceptualised the theory of 'insideness' as attachment to a place. He related it to the dimensions of physical insideness, where one develops a sense of control with routines and rhythm in relation to the environment. Social insideness is where one is socially related to others in the vicinity, in a 'community of concern' (p. 114), and autobiographical insideness where one feels belongs to the dwelling place that is noteworthy because of memory and self-identity.

Some older people chose to remain living in an environment that they are used to, thus living apart from their families. In Asia, although some local studies have examined middle-aged (Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012) and older people living alone (Wong & Verbrugge, 2009), the reasons for some older people's choice to live independently has not been well-investigated. Kim (2014) has recognised that health and social policies will be better informed if the effect of household status on health is understood.

2.2.2 Ageing-in-the-right-place

Ageing-in-the-right-place is more important than ageing-in-place (Alberta Health and Wellness, 2008). Older people become attached and sensitive, and therefore vulnerable in the home and community (Iecovich, 2014). Rowles (1983, p.127) described a 'dynamic sociospatial support system'—involving home, a surveillance zone, the vicinity and community—which facilitates ageing-in-place. This can supplement a macro-level multi-faceted approach, involving social inclusion, urban planning, accessibility, affordability and integration of services (including home care, transition care, emergency support programmes and respite programmes), gerontology-friendly training for healthcare professionals and adoption of gerotechnology (Alberta Health and Wellness, 2008; Doty, 2010; Iecovich, 2014; Rowles, 1983; World Health Organization, 2007).

Failure to facilitate adaptation according to the changing functional competencies of older people may result in the deterioration of holistic health and reliance on long-term institutional care (Iecovich, 2014). It is vital both economically and in terms of quality of care for older people to be able to continue to age-in-the-right-place, which means in well-supported homes, for as long as possible.

2.3 HEALTHY AGEING AND SELF-CARE

2.3.1 Approaches to remaining healthy

Particularly in a globally ageing society, older people need to maintain their wellbeing, lest the economy, society and relationships among people would be affected (World Health Organization, 2012). Traditionally, the approach of pathogenesis dominates and healthcare professionals are seeking solutions to manage diseases (Antonovsky, 1979; von Humbolt & Leal, 2012; Wiesmann & Hannich, 2010). Under this paradigm, older people were perceived as beings with declining physical, mental and functional health and thus population ageing is remarked as a major societal burden (Chan, 2014).

According to the Swedish National Institute of Public Health (2007, p. 16), healthy ageing is: 'the process of optimising opportunities for physical, social and mental health to enable older people to take an active part in society without discrimination and to enjoy an independent and good quality of life'. More than just adding years to life, the concept of healthy ageing encourages wellness and health in the remaining years of life (Havighurst, 1961; World Health Organization, 2012) and reduces burden on the healthcare system (Thiamwong, McManus, & Suwanno, 2013).

Healthy ageing is not possible unless older people take responsibility for their care. Self-care is about:

> individuals taking responsibility for their own health and wellbeing. This includes: staying fit and healthy, both physically and mentally; taking action to prevent illness and accidents; the better use of medicines and treatment of minor ailments, within the community and better care of long term conditions (National Health Service Dorset and Somerset Strategic Health Authority, 2011, p.3)

Daily functioning activities include executive skills such as planning, initiating, sequencing and monitoring, and these correlate to QoL (Davis, Marra, Najafzadeh, & Liu-Ambrose, 2010). Social support is: 'various forms of aid and assistance supplied by family members, friends, neighbours and others' (Barrera, Sandler, & Ramsay, 1981, p.435). Social

support is an important coping resource for older people (Trouillet, Gana, Lourel, & Fort, 2009). Older people must remain cognitively competent; realise their internal resources to maintain autonomy and optimal independence and be engaged as activated partners; to tap into external community resources to regain functional capacity; improve wellbeing and attain a better QoL (Lezwijn et al., 2011; Rowe & Kahn, 1997).

Porter (2009) has suggested that measures that promote and maintain health that support the perpetuation of values (e.g., autonomy and independence) are less costly than disease management. A Swedish study has acknowledged how the personal values of older people is important to their wellbeing, and to the maintenance of their independence (Viglund, 2013). By remaining active, positive and engaged, older people are able to postpone retirement and deterioration of health and wellbeing, and can continue to contribute to the community and economy (Howse, 2012; Suh, Choi, Lee, Cha, & Jo, 2012). Despite understandings of the benefits of healthy ageing, there is a gap between existing knowledge and what is implemented (Morgan, 2012). Most countries have recognised the urgency of investing in health-enhancing resources, and seek practical and effective programmes and strategies to promote healthy ageing (Brobeck, Odencrants, Bergh, & Hildingh, 2013). These efforts should be well-coordinated and supported by a theoretical framework (Antonovsky, 1996; Swedish National Institute of Public Health, 2007).

Bartlett, Warburton, Lui, Peach, and Carrol (2013) have commented that most intervention programmes conducted in the community are not evaluated systematically, or have not adopted valid or reliable outcome measures. Effective and empirically-tested approaches are needed to effectively promote healthy ageing. To develop an evidence-based healthy ageing intervention programme suited to older community-dwellers in Singapore, a deeper understanding of the perspectives of older people is required. It is particularly important to understand how they perceive the factors affecting their wellbeing, needs and resources. Both quantitative and qualitative research approaches are essential (Lezwijn et al., 2011; Markle-Reid, Browne, & Gafni, 2011; Nicholson, Meyer, Flatley, & Holman, 2013).

The Government of Singapore is developing several more senior activity centres (SAC) in precincts with a large number of older people (Singapore Ministry of Health, 2012). Currently, SACs offer repetitive recreational and social activities for older community-dwellers. SACs are located in community hubs where older people congregate and age-in-place. Such strategic locations are ideal sites for the introduction of self-care programmes. The Government of Singapore has enlisted the help of voluntary welfare organisations (VWOs) and private organisations to manage the SACs. There has been little scientific evaluation of the benefits of SAC, although it has been suggested that daily social participation at SACs is beneficial to older people, as it reduces social isolation (Wu & Chan, 2012).

2.3.2 Need to evaluate a self-care programme

Self-care programmes can improve self-care behaviour (Köberich et al., 2015) and QoL (Wang et al., 2011) for chronic patients. Chronic disease self-management programmes were developed to facilitate participants' development of self-care skills (Lorig et al., 1999). The United Kingdom (UK) adapted the approach, calling a self-care programme the 'Expert Patients Programme' (UK Department of Health, 2001). Several studies have evaluated self-care programmes for chronic diseases globally (e.g. Lorig, Sobel, Ritter, Laurent, & Hobbs, 2001; Melchior et al., 2013). However, few empirical studies that have examined

interventional health-promotion programmes (e.g. Yeun, Baek, & Kim, 2013), and even fewer have looked specifically at older people exclusively. The limited studies that exist often focus on physical fitness and activities (e.g. Sung & Bae, 2012).

It is important that older people accept responsibility for self-care. Activation correlates with self-care behaviour (Hibbard, Mahoney, Stock, & Tusler, 2007). Activation is comprised of four components:

(1) belief in the importance of role;
(2) having both the knowledge and confidence to take the necessary actions;
(3) taking actions to improve or maintain health;
(4) continuing to persevere even under stress (Hibbard, Stockard, Mahoney, & Tusler, 2004).

Resilience was reported to be associated with better self-care, health-enhancing behaviours, social support, emotional wellbeing, fewer symptoms of depression and physical activity (Lamond et al., 2008; Lim et al., 2015; Nur Ahdiah Binti Mohamed Salleh, Tan, & Chan, 2014; Perna et al., 2011). Self-care programmes must promote acceptance of self-care responsibilities and enhance resilience.

2.4 SALUTOGENESIS SUPPORTS SELF CARE

2.4.1 The theory

Salutogenesis constitutes the theoretical framework for this study. Self-care adopts a bio-psychosocial model, and aims to support people with enabling resources so that they can gain control in the process of achieving optimal QoL (UK Department of Health, 2006). Antonovsky (1979) questioned the prevailing pathogenesis paradigm that begins by examining the disease, and how it can be eliminated (Becker et al., 2010). Antonovsky hypothesised salutogenesis—the study of the origins of health—as a positive person-centric self-care approach. With health as an optimal functionality in the health-disease continuum, the salutogenic approach motivates older people to perceive wellbeing as originating from health. It promotes reflection on life and knowledge, experience and resources, and supports reframing and adaptation in a stress-rich environment (Antonovsky, 1987; Becker et al., 2010; Eriksson & Lindström, 2008; Lewis, 1997). As the health maintenance process is strengthened, the individual progresses towards the optimal health end of the continuum. The approach harnesses older people's resilience, and uses resources optimally to maintain health (Chan, 2014; Porter, 2009). The theory has been used in the disciplines of health, sociology and psychology (Allan & Dixon, 2009; Bengtsson-Tops & Hansson, 2001; Markle-Reid et al., 2011).

2.4.2 Sense of coherence and general resistance resources

Two main concepts are proposed in salutogenesis theory: SOC and GRRs, which explain the differences among people when faced with stressful situations (Antonovsky, 1987). SOC is defined as:

> a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli 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 these stimuli; and (3) these demands are challenges, worthy of investment and engagement (Antonovsky, 1987, p. 19).

The three features listed above are comprehensibility, manageability and meaningfulness, respectively. SOC is a disposition orientation that can be developed over time (Read, Aunola, Feldt, Leinonen, & Ruoppila, 2005).

GRRs are defined as 'any phenomenon that is effective in combating a wide variety of stressors' (Antonovsky, 1987, p. xii). These are classified as:

(1) physical and biochemical;
(2) valuative-attitudinal;
(3) cognitive-emotional;
(4) artefactual-material;
(5) interpersonal-relational;
(6) macro-sociocultural (Antonovsky, 1979; Lewis, 1997).

The first three are internal resources, while the remaining three are external resources.

2.4.3 Sense of Coherence Scale

Antonovsky (1987) developed a self-administered 29-item SOC scale to measure SOC. This was then reduced to 13 items (Antonovsky, 1987) and then three items (Schumann, Hapke, Meyer, Rumpf, & John, 2003; Togari, Yamazaki, Nakayama, & Shimizu, 2007). Both SOC-29 and SOC-13 were included in two systematic reviews, and were reported to be both valid and reliable (Antonovsky, 1993; Eriksson & Lindström, 2005).

2.4.4 Relationships with health and quality of life

Eriksson and Lindström conducted two systematic reviews of the relationship between SOC scales, health (2006) and QoL (2007). They concluded that SOC predicts health and QoL. However, all four systematic reviews reported studies involving SOC scales for participants belonging to a wide range of age groups. There was no dedicated analysis of older people. According to Read et al. (2005) and Saevareid, Thygesen, Nygaard, and Lindström (2007), only a few studies have adopted salutogenesis as the underpinning theory and have focused on older people specifically. Some studies exploring health and/or QoL using salutogenesis theory were not included in earlier systematic reviews because they were qualitative in nature (e.g. Forssén & Carlstedt, 2006; Mayer & Boness, 2011). An integrative review involving both qualitative and quantitative studies may provide insight into the complex relationship between internal and external resources and SOC, and the salutogenic effects, if any, on health and QoL among older people. Such understandings could inform the optimisation of resources, while achieving better outcomes and reduce the healthcare burden.

2.4.5 Self-care programme informed by salutogenesis

No studies on health-promoting self-care programmes using salutogenesis as an underpinning framework among older community-dwellers (aged 65 or above) have been reported in Asia. The vital components that constitute effective salutogenic self-care programmes are unknown. A feasibility randomised controlled trial examining whether self-care programmes enhance QoL and SOC is recommended. A process evaluation would offer insights into the acceptability of such programmes to older participants.

2.5 SUMMARY OF THE LITERATURE

Population ageing is increasingly acute around the world. Alongside changes in household arrangements (more older people living independently from their younger dependents), it is significant that older people enjoy a longer period of optimal health, and must remain relatively independent to continue to age-in-place. While older people wish to remain in a living environment that they are familiar with and have control over, supportive strategies must enable ageing-in-the-right-place. Salutogenesis focuses on the cognitive, instrumental and motivational aspects of understanding and working through life challenges, and thus promotes access and use of resources to attain optimal health. It is a suitable framework for promoting healthy ageing among older community-dwellers. This literature review justifies the need for a deeper understanding of older people's perspectives at the local context, so as to appreciate the influences and resources related to enhancing the health of older people who live independently. It also rationalises the need for a self-care intervention programme to improve QoL and SOC. The conceptual framework for this study is outlined in Figure 1.

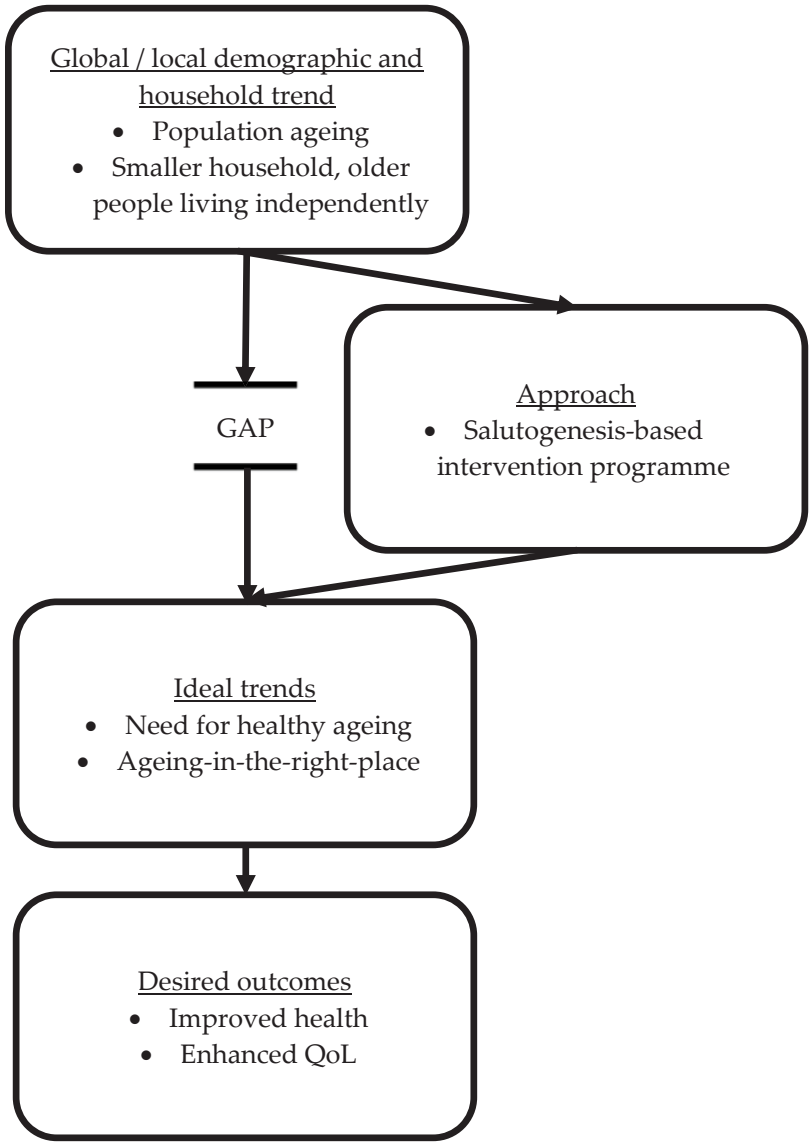

Figure 1. The conceptual framework of the study

3 Aims of the study

The purpose of this study is to examine ways of improving the health and QoL of older people living in the community in Singapore. The specific aims were to:

1) synthesise the published empirical evidence that used salutogenesis as the theoretical framework, in order to examine the relationship between SOC, GRRs, health and QoL in people aged 65 years or above (Article I).
2) describe the health and QoL of people aged 65 years or above, who were living independently or with an unrelated older person in the community (Article II).
3) explore the experience of people aged 65 or above living independently or with an unrelated older person in the community (Article III).
4) evaluate the effectiveness of a self-care programme—REAP—in promoting SOC, QoL, resilience, activation, satisfaction with life and well-being and reducing depression and loneliness, for people aged 65 or above and living in the community (Articles IV and V).
5) explore the participants' views towards the usefulness of the REAP, and to highlight areas for content and delivery improvement (Articles IV and V).

This study has two hypotheses:

1) compared to the control group, participants who completed the REAP reported significant improvement in their SOC, QoL, resilience and activation (Articles IV and V).
2) compared to the control group, participants who completed the REAP reported significant reduction in the depression and loneliness level.

4 Materials and methods

4.1 STUDY DESIGN

This study was comprised of an integrative review, a cross-sectional descriptive quantitative study, a descriptive qualitative study and a feasibility randomised control trial (RCT). Figure 2 illustrates the various components of this study. Table 1 details the methods employed.

The integrative review examined empirical quantitative and qualitative evidence to gain an in-depth understanding of the relationship between resources, SOC, health and QoL for people aged 65 years or above. The integrative review adopted a five-stage approach, conceptualised by Whittemore and Knafl (2005) and Cooper (1998). The stages are problem identification, literature search, data evaluation, data analysis and presentation.

A cross-sectional descriptive design was selected to examine the instrumental and cognitive functions, psychosocial health and QoL of older people living independently or with an unrelated older person. In view of the literacy profile of the target population, face-to-face interviews based on a structured questionnaire were adopted.

A descriptive qualitative approach was undertaken (Rebar, Gersch, Macnee, & McCabe, 2011) to gain insight into the experiences—such as apprehension, thoughts or emotions through the senses or the mind—of participants who lived independently or with an unrelated older person. A semi-structured interview guide provided a structure for the face-to-face interviews.

Based on the findings of these studies and other available literature, a self-care programme was developed. This was subsequently evaluated by a panel of experts, before being put to trial.

The self-care programme for older community-dwellers adopted a feasibility RCT, involving two groups, pre and post-tests between subjects design. It was evaluated using established outcome measures. Process evaluation was conducted using a descriptive qualitative approach. This explored participants' views about the programme's content and delivery via focus groups, thus providing direct feedback (Bellg et al., 2004).

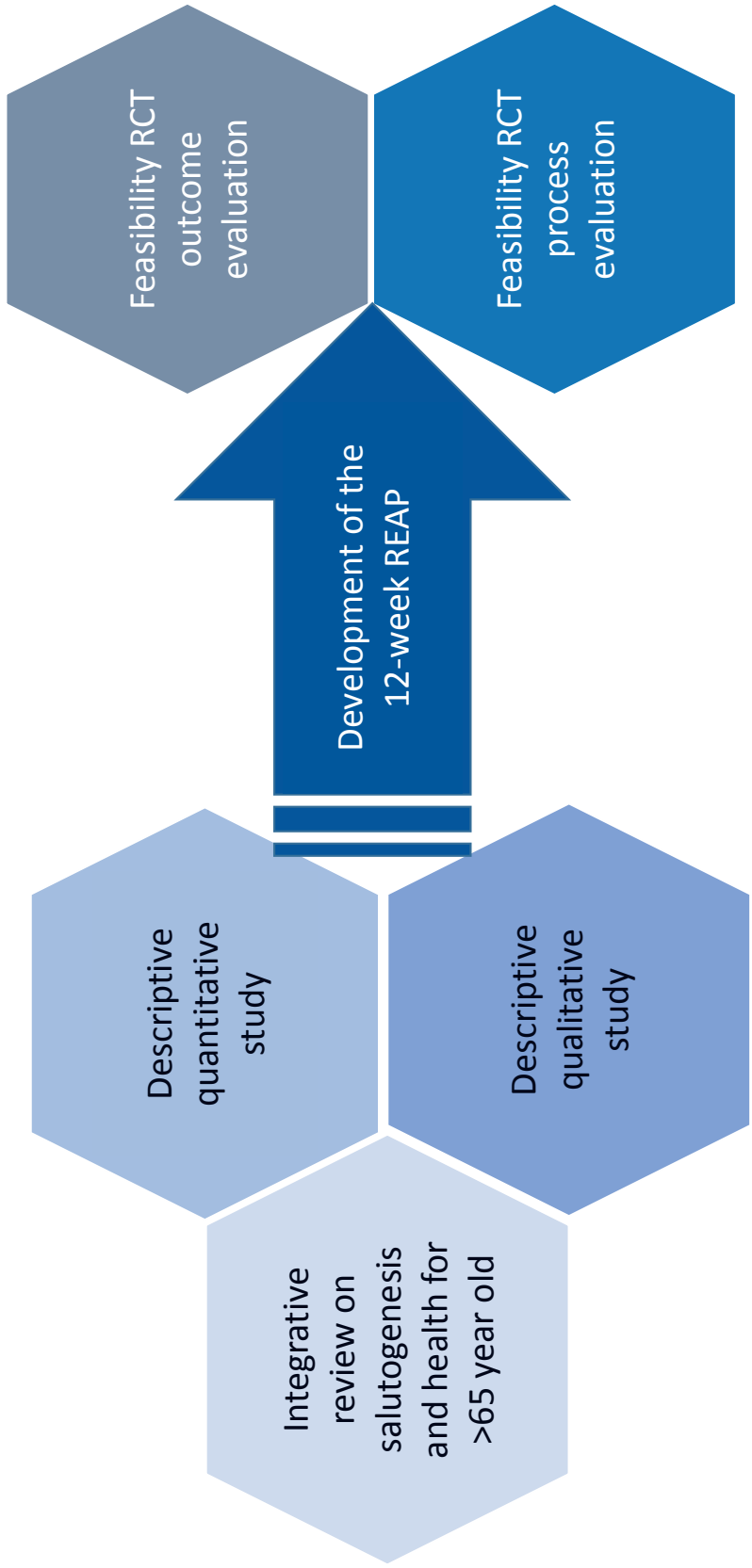

Figure 2. Various components of the study

Table 1. Summary of the methods for the various components in the study

Objective	Methodology	Analysis

Synthesise published empirical evidence that adopted salutogenesis as the theoretical framework to examine the relationship between SOC, GRRs, health and QoL in older people aged 65 years or over	• Design: Integrative review
	• Duration: 1979 to 2011
	• Databases: CINAHL Plus with full text (from 1991), JSTOR, PsycInfo, PubMed, SCOPUS, Sociological Abstracts (Social Science subject area) and Web of Science
	• Keywords: 'salutogen*', 'aged', 'elder*', 'older adult*' and 'older people'.
	• Criteria:
	  • English empirical studies
	  • Use salutogenesis as the theoretical framework
	  • Focused on health or QoL
	  • Older people aged 65 years or above.
	• Sample size: n = 8
		• Followed these five steps: data reduction, data display, data comparison, and drawing and verification of conclusions. (Whittemore & Knafl, 2005)

Describe the health and QoL of people aged 65 years or above who were living independently or with an unrelated older person in the community	• Design: Descriptive quantitative study
	• Setting: Three activity centres for older people in the Central Singapore District
	• Sampling: Convenience sample
	• Criteria:
	  • Singaporean or permanent resident
	  • 65 years or above
	  • Household status – living independently or with an unrelated older person
	  • Language - Mandarin, English or dialects, such as Hokkien or Cantonese
	  • Hearing impaired or self-reported mental illnesses excluded.
	• Sample size: n = 60 (67 older people contacted, response rate = 89.6%)
	• Data collection: Individual face-to-face interviews
	• Instruments:
	  • Executive Clock Drawing Task (CLOX)
	  • Instrumental Activities of Daily Living Scale (IADL)
	  • Geriatric Depression Scale (GDS)
	  • De Jong Gierveld's Loneliness Scale
	  • Social Support Questionnaire Short-Form (SSQ6)
	  • World Health Organization Quality of Life (WHOQoL-BREF)
		• SPSS version 22
		• Descriptive statistics analysis, chi-square, and Pearson correlation tests.

Objective	Methodology	Analysis

Explore the experience of people aged 65 or above living independently or with an unrelated older person in the community	• Design: Descriptive qualitative study
	• Setting: Two activity centres for older people
	• Criteria:
	  • Singaporean or permanent resident
	  • 65 years or above
	  • Household status – living independently or with an unrelated older person
	  • Language - Mandarin, English or dialects, such as Hokkien or Cantonese
	  • Hearing impaired or self-reported mental illnesses excluded.
	• Sample size: n = 25 (27 approached). Data saturation achieved by the twenty-second informant
	• Data collection: Audio-recorded individual face-to-face interviews
		• Transcribed into written Chinese
		• Thematic analysis performed in Chinese

Evaluate the effectiveness of a self-care programme—REAP—in promoting SOC, QoL, resilience and activation for people aged 65 or above and living in the community	• Design: Feasibility randomised controlled trial - Two-group pre and post-test, between subjects design
	• Outcome evaluation
	• Setting: One activity centre for older people.
	• Criteria:
	  • Community-dwellers
	  • 65 years or above
	  • Able to communicate in Mandarin or English
	  • Self-reported mental illnesses excluded
	  • Unable to commit for the programme duration were excluded
	• Sampling: Convenience sample
	• Sample size: n = 64 (71 participants approached, response rate = 90.1%)
	• Instruments:
	  • SOC-13
	  • WHOQoL-BREF
	  • Connor-Davidson Resilience Scale (CD-RISC)
	  • Patient Activation Measure (PAM)
	  Not reported in Article V
	  • Satisfaction With Life Scale (SWLS)
	  • World Health Organization (Five) Well-Being Index (WHO-5)
	  • GDS
	  • De Jong Gierveld's Loneliness Scale
	• Completion: 30 out of 32 (93.8%) participants in the intervention group; 29 of 32 (90.6%) participants in the control group
		• SPSS version 22
		• Descriptive statistics analysis, chi-square, and independent t-test.
		• Multivariate repeated measures analysis of covariance was performed to examine interaction effect between time and group.
		• Intention-to-treat analysis with $p < 0.05$

To be continued

Table 1 continues

Objective	Methodology	Analysis

Explore the participants' views towards the usefulness of the REAP and highlight areas for improvement in its content and delivery	• Design: Descriptive qualitative study, process evaluation
	• Setting: One activity centre for older people.
	• Criteria:
	  • Community-dwellers
	  • 65 years or above
	  • Able to communicate in Mandarin or English
	  • Those with self-reported mental illnesses excluded
	  • Those unable to commit for the programme duration were excluded
	• Sampling: All participants in the intervention group
	• Sample size: n = 5 (26 of 32 participants in the intervention group)
	• Data collection: audio-recorded focus group interviews
		• Transcribed into written Chinese
		• Thematic analysis performed in Chinese

4.2 SAMPLES

4.2.1 Integrative review (Article I)

A search of English empirical studies between 1979 and 2011 was conducted on several electronic databases, namely CINAHL Plus with full text (from 1991), JSTOR, PsycInfo, PubMed, SCOPUS, Sociological Abstracts (Social Science subject area) and Web of Science. Keywords included salutogen*, aged, elder*, older adult*, and older people. While manual search were not performed, an ancestry search from relevant studies was adopted.

For an empirical study to be included, it must explicitly adopt salutogenesis as the theoretical framework. The studies focus on health or QoL, and solely on people aged 65 years or above. Non-English publications and unpublished dissertations and editorials were excluded.

4.2.2 Older people living independently or with an unrelated older person (Article II and III)

Descriptive quantitative study (Article II)

The subjects were selected from the central Singapore district through convenience sampling. They were recruited via three activity centres for older people, although they might not have attended activities in these centres. The inclusion criteria were based on nationality (Singaporean or permanent resident), age (65 years or older), household status (living independently or with another older person) and language (Mandarin, English or dialects, such as Hokkien or Cantonese). According to Wong and Teo (2011), only about 20% of older people in Singapore had more than six years of formal education. Therefore, it was important to include dialects as a criterion. Older people with hearing impairments or who self-reported mental illnesses, and those who could not provide informed consent, were excluded. Of a total of 67 older people contacted, six refused participation and one dropped out during data collection. This gave a total of 60 participants, and a response rate of 89.6%.

Descriptive qualitative study (Article III)

The informants were referred by two activity centres for older people. Not all attended the activities conducted by the centres, however. The inclusion and exclusion criteria were identical to that described in the previous section. A total of 27 older people were contacted. Two refused participation due to unavailability. Data saturation (Rebar et al., 2011) was achieved by the 22nd informant, and the next three informants did not provide new information in the interviews. Analysis was based on all 25 interviews.

4.2.3 Outcome and process evaluation of a self-care programme for older community-dwellers (Article IV and V)

In this two-group RCT, the primary statistical test was multivariate repeated measures ANCOVA. For medium effect size with power = 0.8 and $p = 0.05$, 128 participants are required (Cohen, 1992). Using an upper bound of 40%, the required sample would be 52, with 26 participants in each arm (Hertzog, 2008).

A convenience sample of 71 participants was recruited via an activity centre for older people. The inclusion criteria were community-dwellers aged 65 years or above, and able to

communicate in Mandarin or English and to give informed consent. Prospective participants who had known psychiatric histories, who were unable to hear or see, ambulate independently or who were unable to commit for the programme duration were excluded. Seven prospective participants were subsequently excluded. Altogether, 64 participants (90.1%) were accepted in the trial. This was more than the 52 required to provide for potential attrition of 20%.

All of the 64 older community-dwellers were randomised equally into two groups, after baseline measurements were taken. Of the 32 participants in the control group, 29 (90.6%) were followed-up after three months. In the intervention group, 30 out of the 32 (93.8%) participants completed the REAP and the follow-up measurements.

At the end of the programme, all participants in the experimental group (n = 32) were invited to participate in a focus group interview. Two participants who dropped out and four other participants who completed the programme declined to participate in this step of the process due to their unavailability. The size of each focus group was kept below 10, to ensure engagement among members (Wong, 2008). Five focus groups with a total of 26 participants were conducted.

4.3 DATA COLLECTION AND ANALYSIS

4.3.1 Integrative review (Article I)

The literature search was last conducted in December 2011. The search procedure and outcomes are outlined in a PRISMA flow diagram in Article I. The 82 full-text articles were retrieved and assessed for eligibility, based on the inclusion and exclusion criteria by the primary researcher. This led to a total of 13 articles. Ancestry searches from these 13 articles gave rise to another 12 articles. These 12 were assessed, and 11 were deemed unsuitable, so only one article was included. A co-investigator reviewed a total of 14 articles. After much discussion, both researchers agreed on the final eight articles.

The researchers evaluated the methodological rigour of the seven quantitative studies and the trustworthiness of the qualitative study using an adapted approach by Tranter, Irvine, and Collins (2012). Each article was appraised, based on methodological rigour, trustworthiness and data relevance. All eight studies were included for review. The methodological descriptions of the quantitative and qualitative studies and data abstraction, comparison and synthesis of the eight studies are presented as online supporting documents S1, S2 and S3 of Article I. These can be accessed at http://onlinelibrary.wiley.com/doi/10.1111/jan.12221/suppinfo.

Whittemore and Knafl (2005) proposed that data analysis for integrative review should follow the following five steps: data reduction, data display, data comparison, and drawing and verification of conclusions. The included studies were reduced and displayed in Article I.

4.3.2 Older people living independently or with an unrelated older person (Article II and III)

The data collection procedure adhered closely to the approved process outlined in Appendices 1 and 2.

Descriptive quantitative study (Article II)

With the assistance of staff from the activity centres, potential participants were ascertained to have met the criteria and understood the study before written informed consent was sought. Data were collected between March and June 2012.

The older people's instrumental and cognitive functions, psychosocial health and QoL were assessed using several instruments, in the structured questionnaire.

The risk of executive control function and cognitive impairment were examined using the CLOX (Royall, Cordes, & Polk, 1998). This was recommended for use in Singapore (Yap, Ng, Niti, Yeo, & Henderson, 2007). An older person's ability to perform eight activities of daily living was assessed, using the IADL (Chan et al., 2009a; Yoon et al., 2013).

The likelihood of depression was assessed using the GDS, a commonly used tool to screen older people living in the community. It was validated and recommended for use in Singapore (Ma Shwe Zin Nyunt, 2010; Thilagaratnam et al., 2010).

Social and emotional loneliness were appraised using the De Jong Gierveld Loneliness Scale, a six-item scale that has been validated for use in Asian countries (De Jong Gierveld & Van Tilburg, 2010).

The amount and quality of social support among older people living in the community was determined using the SSQ6 (Sarason, Sarason, Sheerin, & Pierce, 1987). This has been used among older community-dwellers in Asia (Chan et al., 2009a).

QoL was measured holistically over four domains—physical, psychological, social and environmental health—using the WHOQoL-BREF (World Health Organization, 2004). This also provides an overall assessment of QoL and health. The 26-item instrument has satisfactory Cronbach's alphas for its domains (0.68 to 0.79), and has been widely used in Asia (Chan, Hsiung, Thompson, Chen, & Hwu, 2007; Chan et al., 2009b).

Version 22 of the SPSS software was used to perform the descriptive statistics analysis, chi-square and Pearson correlation tests.

Descriptive qualitative study (Article III)

The interviews were conducted between March and June 2012. The team developed an interview guide based on the literature. This was pilot-tested with two older people recruited from different neighbourhoods. After discussion with the team, no changes were made.

Information on the study was provided after staff at the activity centres introduced potential informants to the primary researcher. Next, informants' eligibility was ascertained, and permission to audio-record and written informed consent were sought.

The 25 interviews were conducted in Mandarin and/or dialects (Hokkien or Cantonese), and lasted between 15 and 64 minutes, with an average duration of 35 minutes. Field notes and personal thoughts were also documented immediately after each interview. Two research assistants transcribed the interviews into Chinese, and these transcripts were verified by the primary researcher. All three are native Chinese speakers and proficient in the spoken dialects. The audio-recording was listened to repeatedly before thematic analysis

was performed. Thematic analysis involved identifying condensed meaning units from the Chinese narrative transcripts of rich life stories and the field notes (Vaismoradi, Turunen, & Bondas, 2013). These units provided initial codes, and themes and subthemes consequently emerged. Meaning units that were subsequently cited in the manuscript and this dissertation were translated into English by the primary researcher, and verified by another researcher, both of whom are fluent in Chinese and English.

4.3.3 Outcome and process evaluation of a self-care programme for older community-dwellers (Article IV and V)

The data collection procedure adhered closely to the approved process, outlined in Appendices 4 and 5.

The feasibility RCT started in February 2013 and was completed in August 2013. The REAP was conducted at an activity centre for older people. The centre is located in a geographic zone with the seventh-highest proportion of older residents in Singapore: 15.2% of residents are aged 65 years or over (Singapore Department of Statistics, 2012).

Outcome evaluation

The CONSORT flow diagram can be found in Article V. Baseline measurement was collected by the primary researcher and a trained assistant through face-to-face interviews. Although the participants comprehended spoken language, many were unable to read. Based on computerised randomisation, participants were allocated either to the intervention or control group. At Week 12—that is, after the completion of the intervention programme—participants in both groups were evaluated again using the same set of outcome measures. Permissions to use the instruments were sought where necessary.

The primary outcomes are SOC and QoL. The older people's SOC was measured by SOC-13. This 13-item seven-point scale has been widely used across different cultures (Bergman, Malm, Berterö, & Karlsson, 2011; Eriksson & Lindström, 2005), and the Chinese version was reported to have good validity and reliability (Ding, Bao, Xu, Hu, & Hallberg, 2012). In our outcome evaluation study, the internal consistency (Cronbach's alpha) of SOC (Chinese version) was reported to be at an acceptable range of 0.703. QoL is measured by WHOQoL-BREF.

Six secondary outcomes are CD-RISC, PAM, SWLS, WHO-5, GDS, and Gierveld's Loneliness Scale. The resilience of the older people was assessed by CD-RISC. The Chinese scale was reported to have good construct validity and is reliable (Cronbach's alpha = 0.91; intraclass correlation coefficient = 0.90) (Wang, Shi, Zhang, & Zhang, 2010). Changes in activation, health-related outcomes and the self-management behaviour of the older people were assessed using a reliable and valid PAM (Greene & Hibbard, 2011; Hibbard et al., 2007). In our outcome evaluation study, the internal consistency (Cronbach's alpha) of the Chinese version of PAM was reported to be at an acceptable range of 0.894.

SWLS assessed cognitive satisfaction with life globally. Aishvarya et al. (2014) used SWLS in Malaysia and reported it to be a reliable tool (Cronbach's alpha = 0.86). The Chinese version had been used among hospital and community-based participants in Hong Kong (Chan, Ungvari, Shek, & Leung, 2003).

WHO-5 was reported to be a reliable tool when used among older people in Asia to screen for depression (Allgaier et al., 2013; Saipanish, Lotrakul, & Sumrithe, 2009). Volinn et al.

(2010) had used a Chinese version in China among hospitalised patients with pain. The validity of GDS and de Jong Gierveld's Loneliness Scale were reported in Section 4.3.2

Version 22 of the SPSS software was used to perform descriptive statistics analysis, chi-square and independent *t*-tests. Multivariate repeated measures ANCOVA were performed, to examine the interaction effects between time (three-month period) and group (intervention and control group). The more conservative intention-to-treat analysis, with p less than 0.05 being considered as statistically significant, was adopted to estimate the treatment effects.

Process evaluation

The general satisfaction level of the REAP was assessed using a "0" to "10" scale. The 26 informants chose the focus group sessions based on convenience. In all, five focus groups were organised, and the number of participants per focus group ranged from three to nine. The average duration of the sessions was 43.5 minutes (with a range of 33 to 64 minutes), and were conducted by the primary researcher in Mandarin, using a semi-structured interview guide. Examples of the questions included are listed in Article IV. The participants were reminded that consensus was not the intention in these focus groups, and they were encouraged to be forthcoming, as no one would be specifically directed to speak. The process of transcription, analysis and translation was similar to that described in Section 4.3.2.

Self-care programme – Resource Enhancement and Activation Programme

While participants assigned to the experimental group would attend the self-care programme REAP, those assigned to the control group would continue to attend the activities provided by any agencies.

Treatment fidelity is vital to ensuring that the delivery of REAP would be valid and reliable (Bellg et al., 2004). The following five components must be observed: intervention design, training providers, delivery, receipt and enactment of treatment (Bellg et al., 2004). The various measures undertaken to assure treatment fidelity is described in Article IV.

The REAP intervention was designed based on the literature (Howse, 2012; Swedish National Institute of Public Health, 2007; World Health Organization, 2012), salutogenesis theory (Antonovsky, 1979, 1987, 1993, 1996) and the findings reported in Articles I, II, and III. The salutogenesis theory provided the theoretical framework for the REAP. The salutogenic perspective is person-centric and health promoting (Antonovsky, 1996). It provides a stronger structure to the approach. The REAP is a broad-based structured programme that focuses on enhancing older people's QoL, SOC (comprehensibility, manageability and meaningfulness) and activation and through healthy ageing.

The 12-week, 24-activity programme, and the underpinning domains of SOC and GRRs, are described in Article IV. All 24 activities had clear objectives, which centred around four themes: physical wellbeing, psychosocial wellbeing, physical activity and activation. These activities directly contribute to the cognitive (comprehensibility), instrumental (manageability) and motivation (meaningfulness) domains. The participants would review their personal resources and explore ways of engaging with valuable external resources provided by the government, VWOs, lay physical activity groups and professionals. The REAP was appraised by a panel of eight experts, whose suggestions were subsequently incorporated.

The primary researcher was instrumental in the development of the REAP, and is an experienced educator and the main training provider for the REAP intervention. He worked closely with his trained assistant to facilitate the REAP. Several professionals (nurses, social workers, public librarians, student and older volunteers and crime-prevention ambassadors) contributed to the conduct of the REAP. They were briefed in advance of the session objectives and lesson plans, to ensure consistency in delivery.

The 32 participants were organised into two cohorts, and the REAP was conducted twice, with 14 participants in the first cohort and 18 in the second. The participants were required to attend most of the core activities to remain on the REAP. To promote their engagement in the REAP, group cohesion was fostered and reminders of upcoming sessions—along with follow-up phone calls to participants who missed a session—were made. This helped address any concerns early. In the REAP, participants had numerous opportunities to demonstrate their knowledge and skills. These helped to promote confidence and motivation.

4.4 ETHICAL CONSIDERATIONS

The various centres supported all of the studies. Ethical approval was obtained from the university's institutional review board (Appendices 1, 2, 4 and 5). Additionally, the studies were conducted in full accordance with the ethical principles specified for research involving human subjects (World Medical Association Inc., 2013). Informed consent and permission to audio-record where required were directly sought from the participants, who were provided with the participant information sheet in advance. This allowed the participants to discuss the study with their family members if they chose to. These documents and discussion were in a language in which the participants were fluent. They were assured of their right to withdraw without any negative consequences to their routine service. They were also informed that the research would not cause more than a minimum risk to them. It was reiterated that all information collected was solely for the purpose of the study, and would be kept confidential and secure. In the event that participants were identified from the GDS as at risk of depression, referral to counsellors would be arranged, but only with their agreement. During the individual interviews, some informants became emotional when recounting past events. Nevertheless, they all chose to continue and rejected referral to counsellors or general practitioners after the interviews. Pseudonyms were used for all transcripts and in the reports.

4.5 SUMMARY OF THE MATERIALS AND METHODS

The study is comprised of an integrative review, a descriptive quantitative study, a descriptive qualitative study and a feasibility RCT.

The integrative review examined eight empirical studies published between 1979 and 2011. It adopted the analysis methodology proposed by Whittemore and Knafl (2005).

Both the descriptive quantitative and descriptive qualitative studies examined people aged 65 or above, who lived independently (alone or with a spouse only) or with an unrelated older person. The community-dwellers were recruited via activity centres for older people, although not all attended activities at these centres. The quantitative study was conducted using structured questionnaires comprising validated tools, which had been used in Asia.

The qualitative study adopted a semi-structured interview guide for the face-to-face interviews. Descriptive and appropriate inferential statistical analyses were used for the descriptive quantitative study, while thematic analysis was performed on the qualitative study.

The feasibility RCT was conducted in an activity centre for older people. A total of 64 participants were recruited via the centre's network of older community-dwellers aged 65 or above. Baseline measures using validated instruments were first collected, before the older people were randomly assigned to intervention and control groups, using a computer-generated randomization method. The intervention group attended a 24-activity REAP, while the control group continued to attend routine services. Measures for both groups were again collected at the end of the three months. Appropriate statistical tests were used for analysis. Five focus groups were formed from the participants in the intervention group. Thematic analysis was subsequently performed.

5 Results

This chapter presents the findings of this study. It begins with the findings from the integrative review, followed by those on the descriptive quantitative and qualitative studies conducted on older people who were living independently or with an unrelated older person. Next, the findings from the feasibility RCT (i.e., outcome evaluation and process evaluation) are presented. A summary of the findings concludes the chapter.

5.1 INTEGRATIVE REVIEW ON SENSE OF COHERENCE, GENERALISED RESISTANCE RESOURCES, HEALTH AND QOL (ARTICLE I)

5.1.1 Characteristics of the studies

Of the eight studies included, six were conducted in Northern Europe (Borglin, Jakobsson, Edberg, & Hallberg, 2006; Drageset et al., 2008; Ekwall & Hallberg, 2007; Forssén & Carlstedt, 2006; Read et al., 2005; Söderhamn, Dale, & Söderhamn, 2011) and two in the United States of America (USA) (Lutgendorf, Vitaliano, Tripp-Reimer, Harvey, & Lubaroff, 1999; Nesbitt & Heidrich, 2000). Most of the studies (n = 6) examined older community-dwellers, while one sampled older patients in hospital and one nursing-home residents. Only one study was qualitative. The other seven were cross-sectional descriptive quantitative studies, of which two used the SOC-29 scale and five the SOC-13 scale. Four overlapping themes emerged. They were: SOC in older people, SOC and health, SOC and GRRs, and SOC and QoL.

5.1.2 Sense of coherence in older people

SOC was reported to be strong among community-dwelling older people in four studies from the USA and Sweden (Borglin et al., 2006; Ekwall & Hallberg, 2007; Lutgendorf et al., 1999; Nesbitt & Heidrich, 2000). The older people in the study by Ekwall and Hallberg (2007) were informal caregivers, and they appeared to have the lowest SOC. Noticeably, the self-reported SOC was even lower among older people in a Swedish hospital (Söderhamn, Bachrach-Lindström, & Ek, 2008) and a Norwegian nursing home (Drageset et al., 2008).

5.1.3 Sense of coherence and health

Seven studies posited health of older people as a key variable. Nesbitt and Heidrich (2000) only assessed the limitations of physical health. Six studies explored the holistic aspects of health, using scales such as the single global item Short Form-36 Health Survey or the Short Form-12 (Borglin et al., 2006; Drageset et al., 2008; Ekwall & Hallberg, 2007; Lutgendorf et al., 1999; Read et al., 2005; Söderhamn et al., 2008).

Regardless of the setting of the studies, SOC correlated with various aspects of health. Nevertheless, the association with physical health was relatively weak (Drageset et al., 2008; Lutgendorf et al., 1999; Nesbitt & Heidrich, 2000; Read et al., 2005; Söderhamn et al., 2008). Relocating to a communal-care facility was a stress-inducing event even for those who agreed to do so. Lutgendorf et al. (1999) identified a lower SOC, reduced vigour and lowered mood.

5.1.4 Sense of coherence and generalised resistance resources

The different types of GRRs were explored in a total of seven studies. The activities of natural killer (NK) cells, a biochemical resource, reflect immune function. Compared to those with lower SOC, older people with stronger SOC levels apparently had less affected NK cell activity and immune responses (Lutgendorf et al., 1999).

Valuative-attitudinal resources support health and correlate with SOC. Examples of these resources include the psychological disposition, which determines how one appraises health, challenges and roles in life. A strong SOC was reported to mediate physical health limitations (Nesbitt & Heidrich, 2000) and caregiving roles (Ekwall & Hallberg, 2007).

Cognitive-emotional resources are associated with health and SOC. Examples of these resources include cognitive stimulation and function (Read et al., 2005), self-care abilities (Söderhamn et al., 2011) and coping style (Ekwall & Hallberg, 2007; Nesbitt & Heidrich, 2000; Read et al., 2005). They were reported to correlate with SOC. The adoption of distancing strategies was reported in a qualitative study as a valuable salutogenic resource to coping (Forssén & Carlstedt, 2006).

To the older people, interpersonal-relational and macro-sociocultural resources are vital external resources of health, and they correlate with SOC. For example, the perceived social roles and availability of social support were associated with SOC and health (Borglin et al., 2006; Ekwall & Hallberg, 2007; Nesbitt & Heidrich, 2000; Read et al., 2005). Social support from a spouse or other person in the household was associated with fewer physical health limitations and stronger SOC (Nesbitt & Heidrich, 2000; Read et al., 2005). Older people's access to the community was also reported to be related to reduced mobility, and the older people also had lower SOC (Borglin et al., 2006).

Artefactual-material resources support health and are associated with SOC. Examples of these resources are income and physical activity. These correlate with stronger SOC and fewer health problems (Nesbitt & Heidrich, 2000; Read et al., 2005).

5.1.5 Sense of coherence and quality of life

QoL was only examined in four studies using generic instruments (Borglin et al., 2006; Drageset et al., 2008; Ekwall & Hallberg, 2007; Nesbitt & Heidrich, 2000). SOC is associated with health-related QoL among older residents in a communal-care facility (Drageset et al., 2008). Similarly, Nesbitt and Heidrich (2000) reported that the SOC of older community-dwellers correlates to the perceived QoL ($r = 0.74$; $p < 0.001$). Coping resources are associated with HRQoL (Drageset et al., 2008). Coping resources may come in the form of social support. Older people with social support in the form of living with a significant other were associated with better QoL than those who lived alone (Borglin et al., 2006).

5.2 OLDER PEOPLE LIVING INDEPENDENTLY OR WITH AN UNRELATED OLDER PERSON (ARTICLE II AND III)

The findings of two studies on the health and experiences of older people who lived alone, with an older spouse or with an unrelated older person are reported in this section. The descriptive qualitative study uncovers five themes: (1) making their own choices; (2) contending with concerns; (3) coping with available assistance; (4) holding on to their values; and (5) preparing for the inevitable.

5.2.1 Characteristics of the older people in the studies

Characteristics of participants in the cross-sectional descriptive study (Article II)
A total of 60 older Chinese people participated in this study. Demographic details of the participants are described in Article II. The community-dwellers were between 65 and 94 years old (mean = 77.3, SD = 7.3). The ratio of men to women was approximately 1:2, and about one-third had a spouse at the time of the study. The same proportion had not attended any formal education, but more than four-fifths were able to communicate in Mandarin or English.

In this sample, more than half were living alone, while one-third was living with a spouse. Six in 10 older people resided in public apartments rented from the government. A quarter were financially self-reliant, that is, they did not receive any financial support from the government, VWO, friends or family.

Characteristics of informants in the descriptive qualitative study (Article III)
A total of 25 informants were interviewed. The informants' profiles are presented in a table published in Article III. These community-dwellers were between 65 and 95 years old (median = 83). About one-quarter were men. All informants held religious beliefs, and were from various marital and household statuses. The majority of the informants had a few years' formal education, and all the interviews were conducted in Mandarin or spoken dialects (Hokkien and Cantonese).

5.2.2 Reasons for living independently or with an unrelated older person (Article III)

Descriptive qualitative study (Article III)
The older community-dwellers made a choice to live alone. Autonomy was exerted based upon considerations of independence, practical convenience (physical and social amenities) and familiarity with the people and neighbourhood in which they had lived for many years. Mr LG shared that when he went over to the flat that his son owned in another suburb, he felt lonely and inconvenienced. He had no family members or neighbours to talk to, and cooked food was not easily available. Mdm LV valued her freedom by living alone:

> *This is my choice. Because my lifestyle differs from theirs…You know, sometimes, if I go out. The young ones may not be happy, right? 'Oh! Mother, you are going everywhere!' Hahaha…freedom!*

Some considerations deterred older people from staying with their family. Some participants made a conscious decision not to be an unnecessary burden on their children:

> *[My son] is already in his 60s! He does not have a job…He is dependent on his son. How can he look after us, right?" (Mr YS)*

Another reason that participants lived alone was to avoid any conflict that could have arisen from living in the same house as their children. For example, Mdm HH had lived with her parents-in-law, and did not wish to impose on her children and their families. She even credited her amicable relationship with her children to not living together.

5.2.3 Health, quality of life and concerns of older people living independently or with an unrelated older person (Article II and III)

Older people who lived independently or with an unrelated person did not have continuous social support, unlike those who lived with the younger generation in the same household. This could be problematic for their health needs and QoL.

Descriptive quantitative study (Article II)

The descriptive statistics of the various assessed measures, and the comparison against demographics, are presented in the tables in Article II.

Compromised cognitive function was identified among 41.7% (n = 25) of participants, and 35% (n = 21) might have other deficits, such as dementia. Older community-dwellers who lived in public rental apartments or alone were significantly more likely to suffer from cognitive deficits than those living in their own apartments (CLOX1 $t = 4.64$, $p < 0.01$; CLOX2 $t = 2.71$, $p < 0.01$) or with their spouse or another older person (CLOX1 mean = -4.17, $p < 0.01$; CLOX2 $t = -0.241$, $p < 0.01$). Compared to those below 75 years of age, those older than 75 years were significantly more likely to suffer from cognitive deficits than their younger counterparts (CLOX1 $t = 2.31$, $p = 0.02$).

Generally, older community-dwellers performed IADL independently. Those living in public rental apartments or alone were significantly more dependent than those living in their own apartments ($t = 2.91$, $p < 0.01$) or with their spouse or another older person ($t = -2.35$, $p = 0.02$).

In this sample, 23.3% (n = 14) had appraised themselves with GDS >= 5. That is, they were at risk of depression. Compared to older people living in their own apartments, older people living in public rental apartment were significantly more at risk of depression ($t = -2.47$, $p = 0.02$).

Loneliness was a concern among older community-dwellers; social loneliness (58.3%, n = 35) being more prevalent than emotional loneliness (35.0%, n = 21). Again, older community-dwellers in public rental apartment being significantly more likely to feel lonely socially than those in their own apartments ($t = -2.22$, $p = 0.03$).

The older community-dwellers reported having relatively few people to whom they could turn for social support. However, their satisfaction with the support they received was moderately high.

The global perception of satisfaction with health and QoL and the QoL Total Score were moderate. Specifically, older people living alone (compared to those living with a spouse or other older person) reported significantly lower satisfaction in QoL Total Score ($t = -2.20$, $p = 0.03$) and physical domain of QoL score ($t = -2.04$, $p = 0.05$). Additionally, community-dwellers' satisfaction with psychological and environmental domains was noticeably higher than the physical and social domains of QoL.

The correlation between the various measures of health and QoL is presented in Article II. A strong correlation was reported between QoL Total Score and GDS ($r = -0.78$, $p < 0.001$) and a moderate correlation between QoL Total Score and SSQS ($r = 0.71$, $p < 0.001$), while a moderate correlation was observed between GDS and SSQS ($r = -0.63$, $p < 0.001$).

Descriptive qualitative study (Article III)

The informants had to contend with concerns that affected their satisfaction with their health and QoL. Their physical health deteriorated over time, which affected their psycho-socio-spiritual health. For example, Mdm YM's deteriorating heart condition deterred her usual travel companions from including her in their overseas trip. Mr LG had stopped going to his church after it moved to another neighbourhood. His worsening eyesight deterred him from travelling beyond the precinct that he was familiar with, even though a free transport service was provided. Mdm DN was injured after a fall, and did not dare venture outside her

apartment alone. A VWO volunteer had reinforced her fear by telling her stories of falling accidents.

As people age, the external resources that they used to enjoy begin to shrink. Support networks shrink with the death of family members and peers. Mdm HH's daughter had become a grandmother, so had less time to spend with her.

External events could also affect the participants' confidence in established institutions. They began to worry for themselves. For example, Mdm YH expressed concern over her savings with a local insurance company, even though Lehman Brothers' bankruptcy occurred in 2008. Ms CZ, who was single and lived alone, was worried after widespread reports of abuse of an older resident in a long-term care facility.

The informants were passive recipients of services provided by community clubs and SAC. As a Committee Member, Mdm LV did not feel that she could propose any changes, as she had not been formally educated and was only a volunteer. Mr ZQ had run into conflict with SAC staff, so had withdrawn from activities provided by the centre. Mdm TY recounted heated arguments between attendees of the SAC and the Community Club. She had also withdrawn from activities organised by these institutions. While Mr HY continued to attend activities, he shared his frustration at having to be at the dinner site early and having to wait for a guest-of-honour's arrival. He had had to wait for two hours before the meal was served. The older people felt disempowered to propose changes.

5.2.4 Resources that help older people to live independently or with an unrelated older person (Article III)

Numerous challenges affect the health and QoL of older people living in the community. They needed resources to help them cope with daily life.

Descriptive qualitative study (Article III)

If living independently or with an unrelated older person, the participants had to adopt strategies and depend on available external assistance. Living with a spouse was not always pleasant. However, Mr ZQ was committed to looking after his life partner, despite their frequent arguments.

Participants had to share public rental apartments with anyone assigned by the housing authority. Mr CC stated that his previous apartment-mate had repeatedly stolen from him. He was pleased that his newly assigned apartment-mate was younger and willing to do the household chores for him. Ms WQ did not get along with her assigned apartment-mate, and had tolerated the wooden partition erected by her apartment-mate for the past seven years. Fortunately, she found refuge at the SAC.

Surveillance arrangements were made by some older people. The older public rental apartments had long corridors, and the front door was often directly opposite other units. This enabled residents to provide surveillance for each other. However, when the door was closed, it was not possible to know whether neighbours needed assistance. Two neighbours (Mdm JD and Mdm LV) had a lookout arrangement of checking whether each other's window was opened daily. Mdm TY, a widow, got her son-in-law to call her twice daily, to ensure that if something happened to her, it would be noticed.

Some neighbours offered help even though they received a meals-on-wheels service themselves. As some participants did not always consume all of the food provided, they offered it to others. This helped Ms XJ save money. Mdm LY's neighbour regularly provided her with fresh vegetables from the market, and a foreign worker who illegally rented a bed

space from another neighbour provided her with fish caught as a hobby at the weekend. They knew that she was wheelchair-dependent and could not leave the apartment by herself.

Some enduring relationships helped these older people. Ms YQ's and Mdm TY's former employers would often visit during the festive season, and offered them some money. VWOs, such as Lions' Befrienders and the Thye Hua Kwan Moral Society, served some of the participants. Unfortunately, others were rejected as the VWOs had reached maximum capacity, and could not accept new registrants.

Elder-friendly gadgets were also a source of support. Mr LG said how effective an emergency cord installed by the local authorities was when he needed help:

> *Inside (the rental apartment), (if I) just pull (the emergency cord), the police car will come…Five minutes and it arrived! Last year, I pulled it and the police car was here! I feel safe…just that the door must not be locked.*

Mdm HH was very impressed with the telephone that her daughter-in-law gave her, as it allowed her to quick-dial not only her individual children but also the whole family.

Besides relying on available external resources and strategies, the values that the older people had cultivated over the years helped them cope with daily challenges, many of which were inevitable. Many fraudsters targeted older people. Mdm TY and Mdm YH had encountered them, but their values had saved them from becoming victims of scams.

Resilience is an important internal resource for older people. The resilience of participants had been developed through difficult times, such as war (Ms XJ), careers (Mr HY) and major illnesses (Mr LG), and from their religion (Mdm TY and Mr YS).

Older people believed in maintaining a sense of self-determination. Mdm KY did not want to rely on the government, as she believed that her religion had guided her not to be greedy.

Mr HY's spiritual motivation supported his existence. In the past, he had endured the harsh working conditions of a sailor who travelled the world. In his old age, he tolerated his monotonous life routines as he waited to 'live in heaven':

> *From day to night, always busy…Now I follow. Two o'clock, shower. Five o'clock, I go for dinner.*

Strong religious values maintained good spiritual health. Ms WQ spoke about having a 'pure-heart'. Mr YS was satisfied with being alive every day. He had survived colon cancer, and was the sole caregiver of his spouse, who had dementia.

The desire to maintain an open mind as one grew old encouraged Mdm PA to learn from others. Older people wanted to maintain their health and be safe. Ms QJ valued self-efficacy and mobility. Every day she walked the corridors with an ambulating aid.

Family relations kept Mr LG alive. He had survived two surgeries and weeks of starvation because his family ties sustained him. He stated that without this support, he would have jumped from the eighth floor of the hospital.

5.2.5 Preparing for the inevitable for older people living independently or with an unrelated older person (Article III)

Older community-dwellers were aware of the inevitable challenges that they would need to confront as they aged.

Descriptive qualitative study (Article III)

Although the informants spontaneously shared their experiences of dependent care, end-of-life and post-death arrangements, they remained fearful of burdening the people around them with the process of dying. Mdm CT recalled what she saw in the hospital and described

how torturous life would be with a breathing tube, and how much trouble it would cause the government and her family.

The participants were uncomfortable using the word 'death'. Phrases such as 'no longer around', 'left', 'by that time' and 'leaving someday' were used instead.

Advance Medical Directives (AMD) were discussed by some of the informants. They had read about this in newspapers, or heard about it from friends, but it remained a challenge for them to discuss this openly with family members (Mdm HH, Mdm SN and Mdm YH). The confusion between AMD and euthanasia (which is illegal in Singapore) persisted. In AMD, the dying process is allowed to takes its natural course while euthanasia condone mercy killing (Singapore Government, 1997).

The ability to die at home was important to some of the participants. Mdm PA believed that she should die at home in order to join her ancestors. She believed that this is the wish of all older people. However, some participants were uncertain about the arrangements for dependent care, as they had not discussed this with their family. Some made arrangements with the help of VWO and clan associations (Ms CZ and Mdm YH) or family members (Mdm LY) in advance. Mdm YH had made a will and had taken photograph to be placed at the front of the hearse. Mdm TY had promised her husband that she would 'lie next to him' (referring to their ashes in urns) when it was time for her departure. However, despite having made prior arrangements with VWO, Ms CZ was not confident that the young volunteers would be familiar with funeral rites.

5.3 EFFECTIVENESS OF RESOURCE ENHANCEMENT AND ACTIVATION PROGRAMME (ARTICLE V)

In this section, the findings on the hypothesis regarding the participants involved in the REAP will be discussed. Participants of the REAP showed varied degree of improvement in their QoL, SOC, activation, resilience, satisfaction with life and well-being.

A table presenting the demographic variables of the older community-dwellers appears in Article V. There were no significant differences between the intervention group and the control group, except that the control group contained proportionally more older people who lived alone ($p = 0.039$). The proportion of participants living alone in the control group (n = 8, 25%) was significantly higher ($p = 0.039$) than in the intervention group (n = 2, 6.3%). There were many more female participants than male.

Taking into consideration the maturation effect over a three-month intervention period, statistically significant improvements in the intervention groups were reported, compared to the control group: overall SOC-13 ($F = 8.029$, $p = 0.006$), 'comprehensibility' ($F = 5.004$, $p = 0.029$), and 'manageability' ($F = 4.733$, $p = 0.033$) domains of SOC, and in the 'psychological' subscale ($F = 5.425$, $p = 0.023$) of WHOQoL. No statistical differences were identified in the resilience, PAM, SWLS and WHO-5 measures. The findings are presented in Table 2

Table 2. Outcome evaluation at baseline and post-intervention using intention-to-treat analysis (n=64) (adapted from Table 2 in Article V)

	Intervention Group (n=32)		Control Group (n=32)		Interaction Effect Time x Group	
	Baseline	Follow-up (12th week)	Baseline	Follow-up (12th week)	*F*	*p*^
World Health Organization Quality of Life						
Physical Health, M (4-20) (SD)	13.5 (2.5)	14.6 (2.4)	13.6 (2.4)	14.0 (2.4)	2.560	0.115
Psychological, M (4-20) (SD)	14.0 (1.7)	15.1 (1.7)	14.3 (2.1)	14.3 (1.9)	5.425	0.023
Social Relationships, M (4-20) (SD)	14.1 (1.6)	14.5 (1.5)	14.0 (1.8)	14.1 (1.8)	0.352	0.555
Environment, M (4-20) (SD)	15.3 (1.4)	16.4 (1.7)	14.7 (1.7)	15.6 (1.6)	0.375	0.543
Overall QOL, M (1-5) (SD)	3.5 (0.8)	3.7 (0.7)	3.6 (0.8)	3.5 (0.7)	2.486	0.120
Overall Health, M (1-5) (SD)	3.1 (0.7)	3.4 (0.7)	3.2 (0.9)	3.4 (0.8)	0.955	0.332
Sense of Coherence						
Comprehensibility, M (5-35) (SD)	26.6 (4.1)	27.1 (3.5)	27.4 (4.4)	25.4 (4.5)	5.004	0.029
Manageability, M (4-28) (SD)	22.2 (3.6)	24.6 (3.2)	22.4 (4.0)	22.5 (3.6)	4.733	0.033
Meaningfulness, M (4-28) (SD)	19.2 (4.2)	23.0 (4.8)	18.4 (4.2)	20.0 (3.7)	3.342	0.072
Sense of Coherence-13, M (13-91) (SD)	68.0 (8.3)	74.7 (9.7)	68.2 (10.5)	68.0 (9.9)	8.029	0.006
Patient Activation Measure, M (0-100) (SD)	55.2 (8.9)	65.2 (16.7)	56.8 (11.8)	64.2 (15.5)	0.468	0.496
Connor-Davidson Resilience Scale, M (10-50) (SD)	26.3 (4.5)	28.1 (4.5)	26.1 (6.2)	25.5 (5.0)	3.342	0.072
Satisfaction With Life Scale, M (7-35) (SD)	28.0 (3.7)	29.1 (3.8)	27.6 (4.1)	27.9 (3.6)	0.738	0.394
WHO Well-Being Index, M (0-25) (SD)	16.3 (3.4)	17.8 (2.9)	15.9 (3.7)	16.6 (3.5)	0.994	0.323

^ Multivariate repeated measures ANCOVA
M Mean
SD Standard Deviation

At baseline, the proportion of older people with depression risk was comparable between the intervention group and the control group at about 17.2%. While the proportion of older people with expressed emotional loneliness was at 45.3% and higher than social loneliness at 39.1%, there was no statistical significance between the intervention group and the control group at baseline. Chi-square analysis was performed for two outcomes measures (GDS and Gierveld's Emotional and Social Subscales) and no significant differences were reported at the end of the intervention.

5.4 USEFULNESS OF RESOURCE ENHANCEMENT AND ACTIVATION PROGRAMME AND AREAS TO IMPROVE (ARTICLE V)

The details of the qualitative findings from the focus group interviews are presented in Table 3 in Article V. Three themes emerged from the focus groups interviews (Figure 3).

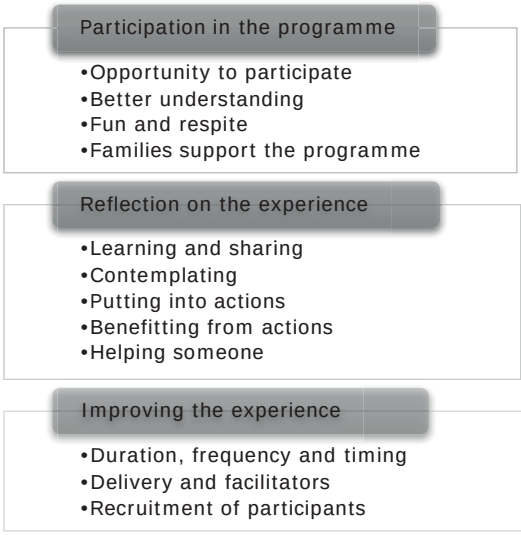

Figure 3. Themes and subthemes from the process evaluation

5.4.1 Participation in the programme

Opportunity to participate

The participants expressed their appreciation for the chance to participate in the REAP. Mdm YP remarked that she was fortunate to have moved to her precinct, as there were no such programmes in her previous neighbourhood. Mdm LG would periodically share what she had learned with her sister, who was envious as she could not attend.

Better understanding

The participants listed what they had learned to illustrate that the REAP was comprehensive. They discussed how they had gained a better understanding of the resources that they could utilise to manage various challenges. Ms JR described how the REAP had helped illustrate the relevance of public policies, and offered an objective perspective.

Fun and respite

The participants stated that they had enjoyed the REAP activities. Mdm XY said that she felt like she was back in her childhood when she exercised with the elastic band. To Mdm YH, participating in REAP was her respite, and enabled her to erase negative thoughts.

Families support the programme

Participants shared the affirmation that they received from their families. Mdm XZ described the support she received from her son-in-law when he saw what she had learned. Mdm GM felt encouraged when her relative advised her to laminate the elastic band exercise picture guide, and associated the exercise to a celebrity who recommended it after suffering from cancer.

5.4.2 Reflection on the experience

Learning and sharing
REAP encouraged learning through discussion of knowledge and experience. Several participants shared what they learned with their families and friends, with the help of the REAP materials or verbally, over dinner.

Contemplating
REAP prepared the participants to seek help. For example, Mdm LG said she would consult a doctor if she observed the signs or symptoms of chronic diseases discussed in the REAP. Ms JR had initially thought that retirement meant simply passing the time. By attending the REAP, she began to identify a purpose in life. From the discussion on death and dying, Mdm XJ realised that she wanted to die at home rather than in hospital, and Mdm XL had made plans to share with her son.

Taking action
The REAP introduced regimes for elastic band exercise and balance-enhancing exercise. The participants recognised that they would be healthier if they practised what they had learned. Some adapted the exercises into their exercise routines. For example, while watching television, Mdm YH would perform the stability exercise. However, she was careful not to perform the figure-of-eight manoeuvre, to avoid dizziness.

Benefiting from actions
The REAP discussed three major risk factors: high sugar, cholesterol and blood pressure. Subsequently, Mdm ZM underwent a health screening and was found to have hyperlipidaemia. Deep breathing exercises and guided imagery were also demonstrated and practised. Mdm YT reported sleeping better after adopting breathing exercises at bedtime. Several participants adapted the recommended exercise regimes and reported some physical improvement. For example, Mdm XL stated that the pain at the left shoulder had improved after exercising with an elastic band.

Two participants had encountered fraudsters since taking the course. They applied what they had learned from the crime-prevention ambassadors and police, so avoided becoming prey.

Helping someone
Having benefited from the REAP, participants were pleased that they were able to help other people, too. Mdm LG discussed AMD with her sister, who was excited to know more and also wished to sign up. Mdm YT learned about proteinuria, and shared this with a friend who was exhibiting signs of the problem. She encouraged her friend to consult a doctor, who prescribed medication after further investigation.

5.4.3 Improving the experience
The participants suggested ways of improving the REAP.

Duration, frequency and timing

After the REAP, the participants felt that a reasonable amount of time for the course was twice-weekly, 90-minute sessions in the mid-morning, over 12 weeks. Initially, many were concerned about the commitment, especially that they would lose interest. The REAP was able to sustain their interest because the sessions were clear, and they learned from participating. For those who could not commit to the whole course, Ms JR suggested shorter modular sessions.

Delivery and facilitators

The participants were pleased with the REAP's many learning activities, including discussions, seminars, hands-on practice, role-play, excursions, Power Point presentations, handouts, picture guides and videos. The participants remained interested when the facilitators were lively, engaging and knowledgeable.

Recruitment of participants

There was discussion of whether the REAP would benefit a younger cohort. Mdm LG was the youngest, and spontaneously led a discussion on this topic. It was believed that younger participants could prepare for old age, and would be able to take care of the older people better. However, there was concern that the younger people would not be able to commit because of work and other responsibilities. The participants did not believe that recruitment through advertisements would reach the potential participants. They suggested that older people would more likely participate if they were approached by trusted friends or through established centres for older people. Some participants in the second cohort were recruited through the participants of the first cohort.

5.5 SUMMARY OF FINDINGS

The first aim of the study was to synthesise published empirical evidence that adopted salutogenesis as the theoretical framework, to examine the relationship between SOC, GRRs, health and QoL in people aged 65 years or above. This was achieved by integrative review. It highlighted a lack of literature, particularly intervention study that used a salutogenesis framework to examine health and QoL on older people, particularly in Asia. The study designs were limited to cross-sectional descriptive studies and one qualitative study. Based on the limited evidence, SOC was generally strong among older community-dwellers aged 65 or over. While SOC was associated with QoL and various aspects of health, it was weaker with physical health. The various GRRs (e.g., psychological dispositions, cognitive and self-care abilities, coping style, social roles and social support, material resources and physical activity) correlated with SOC, suggesting the importance of external and internal resources to SOC as a way of coping with life stresses.

The second aim of the study was to describe the health and QoL of older people aged 65 years or above, who lived independently or with an unrelated older person in the community. In the descriptive quantitative study, the older people who lived independently or with an unrelated older people were generally able to perform IADL by themselves. The older people living in public rental apartments did less well than those who lived in their

own apartment. The former group felt lonelier socially, and were more at risk of depression. Generally, the older community-dwellers had few people with whom they could turn to for support, but they were moderately satisfied with the social support they received. They were also moderately satisfied with their health and QoL, but ranked lower in the physical and social domains of QoL.

The third aim was to explore the experiences of people aged 65 or above who lived independently or with an unrelated older person in the community. This was achieved by a descriptive qualitative study. It was found that older community-dwellers made a deliberate decision to live independently or with an older person, because they value independence and convenience and wish to avoid conflict with and burden on family members. However, proximity to family was desired. The older people faced challenges related to deteriorating physical health, which affected their psycho-socio-spiritual health. Also, with increasing age, their social networks were shrinking. They did not feel empowered to voice their needs or concerns, and perceived themselves as passive recipients of community services. Consequently, they depended on available external assistance, and devised strategies to cope with challenges. That help might come from apartment-mates, neighbours, relatives, former employers and VWOs. Technological gadgets offered a means of seeking help when needed. The participants' internal resources were valuable to them. Spiritual motivation provided a purpose, and even helped keep them safe from fraudsters. Satisfaction with one's life, treasuring family relationships and valuing independence helped them cope. Generally, the older people were concerned about dependent care, their end-of-life and death. Their understanding was limited. Some had an idea of what they wanted, but only a few had taken steps to organise this. Communication was hindered, as death was not a comfortable topic for discussion, particularly with family.

The study's final aims were to evaluate the effectiveness of REAP in promoting SOC, QoL, resilience, activation, well-being and satisfaction with life, and reducing depression and loneliness; to explore the participants' views on the usefulness of the REAP; and to highlight areas for improvement in content and delivery. The feasibility RCT demonstrated that participation in the REAP helped older community-dwellers comprehend the challenges of daily living that may accompany older age. They perceived a stronger SOC, and were more confident that resources were available. The participants were grateful to have attended a programme that their family members supported. Besides finding it fun, they reported a better understanding of available resources, which would help with their daily lives. Through sharing, they learned some knowledge and skills. Some had, in turn, shared with others. Some older people expressed that they had thought deeply about the challenges that may arise, while a few had taken actions to help themselves. Participants had also identified some ways of helping make the REAP even more acceptable. The older people also rated having a more favourable psychological QoL.

The hypothesis that participants in the REAP would report significant improvement in their SOC, QoL, resilience and activation was partially supported, but only for the overall SOC-13 and in the 'psychological' subscale of WHOQoL. However, the hypothesis of REAP in reducing depression risk and loneliness level was not supported.

6 Discussion

This chapter begins by analysing the health, QoL SOC and GRRs of older people. This is followed by an exploration of the factors associated with SOC, GRRs, health and QOL. Next, evidence gaps on the health and QoL of older people using salutogenesis framework are described, followed by a discussion of the salutogenesis-based intervention programme. The methodological considerations and limitations of this study, and suggestions for future research, are presented. Finally, this study's implications for practice are deliberated.

6.1 SENSE OF COHERENCE, GENERALISED RESISTANCE RESOURCES, HEALTH, AND QUALITY OF LIFE OF OLDER PEOPLE

The descriptive quantitative study described the health and QoL of older people who lived independently or with another older person in Singapore. The sample was not representative of everyone of the same age, as the sample came from people of a lower socio-economic status (SES), and a greater proportion of them lived in public rental apartments than the national average (Addae-Dapaah & Quah, 2014). The sampled group are part of what is known as the pioneer generation, because they helped build Singapore after independence in 1965. Because of limited opportunities then, their level of education was generally low, especially among the women (Wong & Teo, 2011).

The descriptive qualitative study explored the challenges the participants faced living independently or with an unrelated older person. It also examined how they managed with external assistance and internal values. The participants shared similar backgrounds as in the descriptive quantitative study.

6.1.1 Health and quality of life

In the descriptive quantitative study, in answer to a global question on overall health in the WHOQoL-BREF, the participants rated their health as satisfactory; they rated their physical health domain of QoL the lowest in WHOQoL-BREF. These results may not be surprising, as older people often have chronic health conditions.

The descriptive quantitative study identified that participants' self-reported QoL was satisfactory. They lived in rented or publicly owned mixed housing. This contrasted with the low satisfaction levels found in other studies of older people in public rental apartments in Singapore (Addae-Dapaah & Quah, 2014), and in self-owned studio apartments that were purpose-built for older people (Loh, 2004). A Taiwanese study showed that the QoL in all four domains of WHOQoL-BREF (physical health, psychological, social relationships and environment) were also lower for the older people living in long-term care facilities (Chien, Wang, Yao, Sheu, & Hiseh, 2007) than in the present study. The QoL of older people may be associated with housing type and whether they live in segregated housing projects. It may be beneficial for the QoL of older people to age in their own homes in the community, when possible. Our finding of satisfactory QoL levels among older community-dwellers was also higher than an international study that adopted the same QoL instrument in 25 countries (Skevington, Lotfy, & O'connell, 2004). A possible explanation for the generally higher QoL

is that the largely migrant population of the pioneer generation in the present study did not believe in relying on the government for provisions. They often accept their situation, as long as it is a result of their own efforts. A qualitative study would be useful to explore this in greater depth.

6.1.2 Relationship among sense of coherence, generalised resistance resources, health, and quality of life

According to Eriksson and Lindström (2006), SOC and health are two separate constructs. SOC affects how one perceives one's health, and subsequently affects the way health is maintained. The integrative review reports that stress can be moderated by SOC (Lutgendorf et al., 1999), and SOC correlates with health, especially mental wellbeing (Drageset et al., 2008; Eriksson & Lindström, 2006; Nesbitt & Heidrich, 2000; Read et al., 2005; Söderhamn et al., 2011).

The integrative review also highlights the close relationship between external and internal resources with SOC, and that they are associated with health and QoL (Wiesmann & Hannich, 2010). These relationships are supported in the literature on people of various ages (Eriksson & Lindström, 2006; Eriksson & Lindström, 2007). How an older person manages external strains, daily living and health depends upon the availability of GRRs.

Older people generally have favourably strong SOC, which can be enhanced. This conclusion was derived by comparing SOC scores in the integrative review against that reported in a systematic review by Eriksson and Lindström, which included people of various ages (2005). The higher SOC scores at old age must be due to enhancement over time. This finding is supported by Nilsson, Leppert, Simonsson, and Starrin (2010) and may be explained by Antonovsky's suggestion that SOC would become stronger after stressful situations in life (Antonovsky, 1979, 1994).

6.2 FACTORS ASSOCIATED WITH SENSE OF COHERENCE, GENERALISED RESISTANCE RESOURCES, HEALTH, AND QUALITY OF LIFE OF OLDER PEOPLE

Factors associated with older people's SOC, GRRs and their health and QoL will be discussed. Living arrangements are one important factor. Other considerations include physical health and mobility, loneliness and depression, and diminished support. These are followed by an exploration of the salutary measures and values related to older people's QoL and health, and perceptions of death and dying.

6.2.1 Living arrangement

The descriptive qualitative study revealed that when older people chose to live independently or with an unrelated older person, the conscious decision was made for many reasons: independence, convenience, familiarity with existing environment, and to avoid conflict and burden on others. The results of this study are in line with the literature on living space as a resource. Older people's sense of self, independence and socio-cultural connections arise from the familiarity and meanings they strongly attach to home and neighbourhood (Dahlin-Ivanoff, Haak, Fange, & Iwarsson, 2007; Wiles et al., 2009). The salutary sense of autonomy, consistency and engagement with home are associated with

better health (Haak, Malmgren Fange, Iwarsson, & Dahlin-Ivanoff, 2011; Mitty & Flores, 2008; Wiles et al., 2012).

Filial piety is an important value in Asian culture. In some Asian societies, it has evolved from the obligations of living together to the substance of care (Yeh, Yi, Tsao, & Wan, 2013). Chinese collectivist culture keeps families together, although nuclear households are becoming more common in Singapore (Lim & Kua, 2011). The participants of the descriptive qualitative study chose not to impose upon their children, and valued the affable relationship afforded by living apart.

The integrative review suggested that men may enjoy better health and stronger SOC from living in a household with their spouse or with someone with whom they have a relationship (Read et al., 2005), possibly because men are more dependent (Clark & Mils, 1993). There is evidence that husbands derive satisfaction from reciprocal caring when wives become dependent (Ekwall & Hallberg, 2007; Kuuppelomäki, Sasaki, Yamada, Asakawa, & Shimanouchi, 2004). Many women outlive their husbands, but throughout their life have been ascribed a lower status and are economically dependent (Beard et al., 2011). The integrative review suggests that when older women have a weak SOC, they appraise their chronic problems poorly (Nesbitt & Heidrich, 2000). Seeking time alone and away from the hectic demands of daily life is beneficial to enhancing SOC (Forssén & Carlstedt, 2006). As live-in caregivers, older people reported lower SOC than when they do not have a caregiving role (Chow & Ho, 2012), due to challenges and stress. Depression among spousal-caregivers of people with dementia was reported in other studies (Pretorius, Walker, & Heyns, 2009; Välimäki, Vehviläinen-Julkunen, Pietilä, & Pirttilä, 2009).

Caregiving between older spouses can be positively perceived as a meaningful life goal that enhances psychological wellbeing and resilience (Chow & Ho, 2012; DiBartolo & Soeken, 2003). However, caregivers in need must be identified and equipped with the skills required to cope (Chow & Ho, 2012; Kuuppelomäki, Sasaki, Kouko, Noriko, & Setsu, 2004). Thus, residing together may be encouraged whenever feasible. Strengthening the mutual support between older people living together will be helpful, and in the meantime, greater external support is required to prevent burnout for older caregivers (Roth, Perkins, Wadley, Temple, & Haley, 2009; Välimäki et al., 2009).

According to international reports, older people consciously choose to live in their homes (Boldy, Grenade, Lewin, Karol, & Burton, 2011; Haak et al., 2011). The integrative review suggests that SOC may be stronger in older people who live at home than those in communal-care facilities. As SOC is associated with health and QoL, it is important that older people are supported if they remain living at home. Public policies should complement efforts by social and healthcare professionals to enable older people to live in the household arrangements that they choose; that is, to age-in-the-right-place.

While independent living may pose problems for older people, it should be supported if they wish to live apart from their families. Public policies can encourage different generations of a family to live close to each other (King & Farmer, 2009), by offering some form of financial subsidy (Lee, 2013) or dual-key residence for three-generation households. These measures provide greater convenience for families offering support and care. The concept of 'home as a refuge, community as a resource' was proposed for ageing-in-place and healthy ageing (Wiles et al., 2012, p. 361).

6.2.2 Other considerations

Older people who live independently or with another older person may face several challenges, including managing deteriorating health, poor cognitive functions, risk of loneliness, depression and shrinking available resources.

The integrative review suggests that worsening functional and holistic health and QoL are correlated to reduced physical activity among older community-dwellers (Borglin et al., 2006; Nesbitt & Heidrich, 2000; Read et al., 2005). This is affirmed by our descriptive qualitative study, which reveals that older people were concerned that poor physical health and impaired mobility would deter them from meeting their psycho-socio-spiritual needs. They were also very concerned about falling, as identified in previous studies (Painter et al., 2012). This became a vicious cycle: older people's experience of falls can lead to fear, which prevents them from leaving their house, thus affecting their health and QoL.

In earlier studies in the United States (US), the prevalence of compromised executive cognitive function among older Mexican Americans living in the community was 35.6% (Royall, Espino, Polk, Palmer, & Markides, 2004), and among older Americans at an emergency department it was 62% (Hirschman et al., 2011). Our descriptive quantitative study of older community-dwellers who lived independently or with an unrelated older person revealed that 40% may have compromised executive cognitive function. The likelihood of impairment correlates to more advanced age, living alone, living in a public rental apartment and not being in a marital relationship. A study of older Chinese community-dwellers revealed that widowers and unmarried men were at greater risk of impaired cognitive function than married men (Feng et al., 2014). There is evidence that integrative lifestyles involving physical, social and cognitive domains protect cerebral degeneration (Fratiglioni, Paillard-Borg, & Winblad, 2004). Social and healthcare professionals can engage older people, particularly those at risk, to engage actively in community activities.

Living alone is not synonymous with feeling lonely, although it can contribute to loneliness (Lim & Kua, 2011). A study conducted in Singapore reveals a prevalence of loneliness of 18.9% and 24.7% among older people living in the community and living alone, respectively (Lim & Kua, 2011). Instead of measuring loneliness using a single-item scale, our descriptive quantitative study measured both social and emotional loneliness, and the prevalence rates were 58.3% and 35.0%, respectively for the 60 older people who were living independently or with an unrelated older person. However, the baseline levels for the 64 participants of diversed living arrangements in the feasibility RCT were 39.1% and 45.3% respectively. Direct comparison was not possible, but social loneliness was more prevalent among older people who lived by themselves while emotional loneliness may be more apparent for those living with others.

When comparing this study to international studies, using the same loneliness instrument, it was apparent that our respective mean scores for social and emotional loneliness of 1.2 (SD = 1.2) and 0.4 (SD = 0.6) in the descriptive quantitative studywere lower than those in Japan. Japan scored 1.33 and 0.63, which is among the lowest when compared to six European countries (Leung, de Jong Gierveld, & Lam, 2008). The relatively better outcomes in Singapore may be due to its small geographical size, so easier access to social networks. Nevertheless, the finding that one in three older people experience less emotional bonding than they desire is unsatisfactory. Group intervention focusing on education and social aspects is reported (in systematic reviews) to be effective in alleviating social and emotional

loneliness (Cattan, White, Bond, & Learmouth, 2005). Social and healthcare professionals should conduct such intervention programmes in centres for older people, and public policies should support this strategy.

The descriptive quantitative study identifies depression as strongly and inversely associated with QoL. This finding is affirmed by studies in China (Chen, Hicks, & While, 2014b) and Hong Kong (Chan et al., 2009a). This study reveals that 23.3% of older community-dwellers who were living independently or with an unrelated older person are at risk of depression (GDS >= 5), and those residing in public rental apartments are more at risk. This prevalence is higher than that found in other studies conducted in Finland (Kariniemi-Ormala & Vehviläinen-Julkunen, 2012) and Singapore (Ma Shwe Zin Nyunt, 2010; Niti, Ng, Kua, Ho, & Tan, 2007). It is also higher than the feasibility RCT which shows that 17.2% of older community-dwellers of diverse living arrangements are at risk of depression. The results of a local study (Lim & Kua, 2011) of older people who lived alone (GDS = 2.5, SD = 3.4) and who lived with others (GDS = 1.9, SD = 2.7) are lower than the GDS mean score (3.2, SD = 3.2) in our descriptive quantitative study. Nevertheless, these findings highlight a trend that older people who live alone are at greater risk of depression than those who live with others. Social and healthcare professionals, along with VWOs, must identify older people who are at risk early (Atkins, Naismith, Luscombe, & Hickie, 2013). Psycho-sociological wellbeing must be enhanced so that the QoL of older people who live independently or with an older person is not compromised.

The descriptive qualitative study highlights the diminishing social support that older people encounter as they age. Similar to the findings from Cahill, Lewis, Barg, and Bogner (2009), older people sacrifice their own needs to prevent burdening others. Also revealed in our study was the fact that older people do not feel empowered to advocate for themselves to authorities, and some subsequently withdraw from community activities. They avoid conflict and adopt an accommodating approach (Zhang, Harwood, & Hummert, 2005). This potentially compromises their health and QoL, as a result of reduced social connectedness (Cornwell & Waite, 2009). Older people should feel able to advocate for themselves, and to have self-determination. Social and healthcare professionals should empower older people to create an environment that supports healthy ageing.

6.2.3 Resources

Various resources and strategies can affect the SOC, GRRs, health and QoL of older community-dwellers who live independently or with an older person. Accessible assistance and personal values are vital assets.

The descriptive qualitative study reveals several sources of help, and the strategies that older people adopt to meet their physical, environmental, psychosocial and financial needs. These resources enhance their confidence in being able to manage. Social support is an important resource for daily coping (Tung, Cooke, & Moyle, 2013). Technological gadgets are reported to be helpful in giving older people confidence that assistance is within their reach, and that they can continue to live alone. This is supported by some qualitative studies (Melander-Wikman, Faeltholm, & Gard, 2008; van Hoof, Kort, Rutten, & Duijnstee, 2011), although the findings of a recent study do not align (Nyman & Victor, 2014). Public policy should promote home safety and greater independence. Community social workers and healthcare professionals can advise about feasible home modifications that are acceptable to older people (Boldy et al., 2011).

Our descriptive qualitative study demonstrates that older people perceive health holistically. In a metasynthesis, Song and Kong (2015) identified the interconnected relationship between physical and cognitive abilities and independence as important for older people. Similarly, a local study on older people living with their spouses identified the maintenance of health and mobility as an important prerequisite to their independence (Soon, Tan, Wang, & Lopez, 2015). Older people maintain health by exercising and adopting measures to ensure safety. Wiesmann and Hannich (2010) found that older people judge their health by their physical mobility and activity. These are important salutogenic resources to their psychological wellbeing and QoL (Windle, Hughes, Linck, Russell, & Woods, 2010). For older people with already limited physical abilities, the integrative review highlights that they rely on their mental abilities to sustain their life's purpose and maintain QoL (Drageset et al., 2008). The World Health Organization (2012) advocates for the adoption of health-promoting behaviour to add healthy years to life and shorten the duration of illnesses and disability at the end-of-life.

Our integrative review reveals that older community-dwellers living alone have limited coping resources (Borglin et al., 2006). Community engagement via external resources (such as social networks), and community supports (in the form of physical and social activities) are salutary factors (Ek, Sahlberg-Blom, Andershed, & Ternestedt, 2011; Eloranta, Routasalo, & Arve, 2008; Gardner, 2011). Concurrently, our descriptive quantitative study suggests that while the social network may be small, older people are satisfied with the quality of support they receive, and this is associated with self-reported QoL. A systematic review by Chen, Hicks, and While (2013) affirms that older people value the quality of social support. Satisfaction with social support can reduce the risk of depression and improve QoL (Chen, Hicks, & While, 2012; Melchiorre et al., 2013; Puts et al., 2007; Schwingel, Niti, Tang, & Ng, 2009). This is because close, supportive relationships with a significant other with whom one can share life and experiences can provide the inner strength required to continue living, and help manage challenges such as poor health and psychosocial wellbeing (Puts et al., 2007; Torres & Hammarström, 2009).

Our descriptive qualitative study revealed that older people feel valued when their relationships are cherished. While emotional support can be more valuable than instrumental support, to the older people who lived alone, support services delivered to the home and participation in activities at community clubs and centres are helpful, as they lower isolation, which was reported in a large Singaporean study (Wu & Chan, 2012). By engaging in an active life through employment or voluntary work, older people may be able to find satisfaction (Chen et al., 2012). However, Mahendran et al. (2013) cautioned that active socialisation may not be accepted by all older people in Singapore, as some are more comfortable withdrawing socially, over time. Public social and health policies can support intervention programmes for older people, and advocate self-directed health-promoting behaviour.

The descriptive qualitative study found that older people's personal values help them cope with life changes and in upholding QoL. The values include sense of control, independence, openness to continual learning, having a life purpose and feeling grateful with what life has offered. This is consistent with the findings of several other studies (Hammarstrom & Torres, 2010; Nicholson et al., 2013; Samsi & Manthorpe, 2011; Tung et al., 2013). The older people felt that they had done their best, so accepted their lives (Soon et al., 2015). The ability to accept, adapt and adjust to life changes with optimism was perceived to

contribute to good health (Song & Kong, 2015). Internal resources strengthen self-efficacy in performing daily life activities, maintaining a predictable routine, managing challenges day-by-day, improving engagement with the community and contributing to spiritual wellbeing. Social and healthcare professionals should respect these values and support older people in manifesting them in the ways they want.

The resources and values that older people have are vital to the way they manage death and dying. While they may not be overly concerned about death, unease about how it will happen is common. This is noted in our descriptive qualitative study and in other studies (Chan & Yau, 2009; Clarke & Warren, 2007). Avoiding mentioning death is attributed to social prohibitions, rather than an actual fear of death (Chan & Yau, 2009). While many of the participants thought about dependence on care and how their suffering could be reduced, discussion with family members was uncommon. Other Asian studies suggest that older people trust God, or that their families would provide or manage things appropriately (Chan & Yau, 2009; Htut, Shahrul, & Poi, 2007; Samsi & Manthorpe, 2011).

This study found that some older people wish to die in the privacy of their home. In Europe, such decisions are a fundamental right (De Roo et al., 2014), but few Singaporeans can die at home. This may be because of limited community-based dependent and palliative care provisions in Singapore. Older people preferred extensive care and personal hygiene to be provided by formal service providers, so that their family members could focus on domestic and social support. There is evidence that when these tasks are fulfilled, the likelihood of older people dying at home, as they wish, is improved (Jack et al., 2013; King & Farmer, 2009). It was found in our descriptive qualitative study and elsewhere (Chan & Yau, 2009; Clarke & Warren, 2007; Samsi & Manthorpe, 2011) that some older people made death-related arrangements in advance. These include preparing a will, having a photograph ready for the hearse and organising the rites of passage and final resting place. However, prior arrangements were deemed unnecessary by some older people who were alone and who had limited financial resources, by those who had strong family relationships or who accorded less meaning to the concept of an afterlife. While family members did the best they could, open discussions can help older people determine their intentions more clearly. If sharing is not common, then social and healthcare professionals should facilitate the process. Public policy should provide for more accessible dependent and palliative care in the community, in order to provide better holistic health and QoL to older people.

6.3 EVIDENCE GAP ON HEALTH AND QUALITY OF LIFE OF OLDER PEOPLE USING SALUTOGENESIS FRAMEWORK

An integrative review of empirical literature that adopts the salutogenesis framework and that examines the health and QoL of older people revealed that the source of evidence was limited to European (particularly Nordic) countries and the US. Additionally, studies were mainly conducted in a community setting. This suggests a greater understanding of the theory in Europe, and that it is more commonly applied in public health settings (Lindström & Eriksson, 2006). Probably due to limited knowledge on salutogenesis, pathogenesis is the dominant paradigm in healthcare in Asia. In Antonovsky's view, SOC is a culture-free concept (1993). However, no studies had previously been conducted in Asia that explore its

relevance or acceptance among older community-dwellers. It is vital that studies utilising salutogenesis as an underpinning theory be conducted in Asia.

The available quantitative studies identified in the integrative review were limited to cross-sectional studies. They were unable to establish causal relationships between the key constructs in salutogenesis (SOC and GRRs) and the desired outcome of better health and QoL. Longitudinal interventional studies evaluating these measures would enhance our understanding. Only one qualitative study has been conducted thus far. Qualitative studies of how older people relate their resources and disposition to health and QoL will be beneficial in providing a deeper understanding of how people manage at old age.

Recently, a randomised controlled trial in Singapore supported a coordinated interventional approach that incorporated physical, nutritional and cognitive components. It was effective in improving frailty among older people living in the community (Ng et al., 2015). However, this study did not adopt the salutogenesis framework.

6.4 SALUTOGENIC INTERVENTION PROGRAMME TO ENHANCE SENSE OF COHERENCE AND QUALITY OF LIFE

6.4.1 Salutogenesis as an underpinning theory for a healthy ageing intervention programme

The integrative review highlights the importance of strengthening older people's internal resources and making external resources more accessible by healthcare professionals. These would improve their positive self-care and self-care abilities. Wiesmann and Hannich (2010) suggest that healthcare interventions that promote healthy ageing for older people should adopt a resource-directed approach.

To improve older people's health and QoL using a salutogenesis framework, strategies should encompass the comprehensibility, manageability and meaningfulness components of SOC. To enhance SOC, the approach should embrace a systematic orientation that affects older people at the level of daily activities, and healthcare professionals at the level of practice (Lindström & Eriksson, 2005). Comprehensibility can improve by creating a more predictable and explicable environment through facilitating older people's understanding and appraisal of challenges (Antonovsky, 1998). For older people to confidently face the challenges that come with old age (manageability), their personal values must be respected and they must be empowered to become more self-determining and independent. They can tap into their available external resources and be encouraged to make decisions about things that affect them (e.g., home modifications or attendance at activity centres for older people). They must feel motivated to take actions to promote their wellbeing (meaningfulness).

The feasibility RCT study compared the impact of REAP on QoL, SOC, activation, resilience, satisfaction with life, well-being, depression and loneliness of older community-dwellers. At baseline, the participants of both the intervention and control groups are quite homogenous, as no significant differences were noted in the demographics, except household status. There were also no significant differences in their baseline measures. The REAP was able to sustain the interest of the participants in the intervention group, as the dropout rate was low (n = 2, 6.3%). All the 30 participants who remained in the intervention group expressed high level of satisfaction with REAP.

6.4.2 Impact on sense of coherence

The feasibility RCT reports that the REAP has helped to significantly improve the SOC of the participants, when compared to those in the control group. This suggests that the REAP participants felt that their life challenges ahead were more comprehensible and explicable, and that they had greater confidence in the resources accessible to them. They also took actions to improve their current situation. According to Lindström and Eriksson (2006), SOC can be enhanced through intervention.

The REAP enhanced comprehensibility significantly in this study, and this finding was triangulated at the evaluation process. The participants valued the opportunity to share their experiences with fellow participants and their family. They had fun engaging in group sessions, and had gained knowledge and skills. They learned about the challenges that accompany older age (e.g. environment safety, health, death and dying), and reviewed their personal emotion and roles. This helped them to make sense of their challenges.

Statistically, there is significant improvement in the manageability domain of the SOC among REAP participants. They learned about available resources (e.g., public policies related to health and older people, physical activity facilities and informal groups), reviewed their values (inner strengths), and developed skills to help access resources (e.g. assertiveness, self-efficacy). Their confidence that these resources are available to them help ascertain their assessment of manageability (Antonovsky, 1998). Additionally, validation of their participation in the community programme from family members, and consideration of how they should act, are signs of increased confidence in the evaluation process.

While REAP participants had not significantly improved the meaningfulness component of SOC, there was noticeable improvement in their perceived ratings. Process evaluation suggests that participants had begun putting what they had learned into action, and in the meantime, had benefited from the process. Older people verbalised incorporating physical and balance exercises into their daily routines. Several studies have reported how physical activity is associated with SOC, mental wellbeing, functional ability and independence (Grant, 2008; Read et al., 2005; Windle et al., 2010). It is likely that physical activity is an important factor contributing to the enhancement of SOC among REAP participants. Some participants went further by helping others with their new health-promoting knowledge and skills. These reflect increased confidence and commitment. Meaningfulness is reflected through greater motivation to engage in salutogenic activities (Antonovsky, 1998). Supported by previous findings (Dale, Söderhamn, & Söderhamn, 2012; Söderhamn et al., 2011), this study demonstrates that improved SOC is associated with greater self-care efforts.

6.4.3 Impact on quality of life and activation

Other than a significant statistical improvement in the 'psychological' domain among REAP participants, there were no significant differences in other domains and the overall QoL, when compared to counterparts in the control group. The findings in QoL were comparable to those in the descriptive quantitative study involving older people who lived alone or with another older person. These ratings were better than several studies conducted overseas (Chien et al., 2007; Skevington et al., 2004). The fact that no significant improvements were found could be due to the ceiling effect. Importantly, QoL encompasses several aspects of life, and the REAP may not have affected all facets. It may be the case that the development of REAP was underpinned by salutogenesis, with an emphasis on enhancing SOC and GRRs. In just three months, the REAP affected the psychological domain of QoL, as it intentionally

works on older people's psychology. Gwee et al. (2014) reported that psychological functioning is strongly associated with successful ageing, which in turn could best predict satisfaction with life. REAP was unable to demonstrate a significant improvement in the physical capacity and performance of older people. This may be because not all 24 activity sessions include a physical improvement component. This may mean that a greater emphasis on physical activity is required in the REAP.

With improved self-care behaviours, activation measures should also improve (Hibbard et al., 2007). However, in the feasibility RCT, no significant difference was identified in the activation measures between the intervention and control group participants, though the scores did improve for both groups. Coincidentally, the 'environment' component of QoL also improved for both groups. The improvements in activation and 'environment' QoL may be due to circumstances at the time of the study. Singapore was suffering from very severe haze condition, and was anticipating the worst dengue epidemic in history as the study was being conducted (Khalik, 2013; Yahoo News Singapore, 2013). Aggressive public health messages came from newspapers, television and radio. These may have affected the participants' view of the environment and activation of self-care.

6.4.4 Impact on resilience

This feasibility RCT did not record a significant statistical increment in the resilience measure among REAP participants, when compared to their counterparts. Nevertheless, a noticeable improvement was evident. Resilience can be strengthened, especially with high social support before the occurrence of adversity (Coutu, 2002; Netuveli, Wiggins, Montgomery, Hildon, & Blane, 2008). Resilience means having a sense of purpose in life, persevering despite setbacks, maintaining a balanced perspective on life and believing in oneself (Choowattanapakorn & Norberg, 2010). From the focus groups, there were indications of how the participants of the REAP had identified their purpose in life, and they revised routines to incorporate new activities, in order to stay well. A study in Germany reported that older people who performed moderate or high level physical activity self-rated a higher resilience score than those who had little physical activity (Perna et al., 2011). More studies exploring how resilience can be strengthened—possibly through physical activity—are indicated.

6.4.5 Impact on other outcomes

In the outcome evaluation study, the prevalence of depression risk among the participants was slightly lower than those in the descriptive quantitative study. This may be explained by the different inclusion criteria and the sampling frame. The subjects in the descriptive quantitative study were living alone or with another older person and comprised more participants from the rental apartments. This supports the need to address the risk among older people who are more socially isolated and from lower SES. While the REAP participants reported more favourably to the psychological domain of the QoL, the absence of impact on depression risk may be because the risk factors for depression may be more complex and often include medical reasons and thus requiring more focused and longer term intervention (World Health Organization, 2015).

The reversed trends of participants reporting higher emotional loneliness relative to social loneliness in the outcome evaluation at baseline when compared to the findings in the descriptive quantitative study was unexpected. A likely explanation may be due to the

differences in the demographical background of the participants in the two studies. Less risk of social isolation and relatively more comfortable SES among participants in the outcome evaluation study may explain the lower self-reported social loneliness. These older people may seek for higher needs of emotional bonding with people around them. Lim and Kua (2011) suggested that some older people living with their family may not meet their desired level of support or may perceive that their children had not fulfilled the responsibilities of caring for them and thus experienced loneliness. While the REAP may provide opportunities for social interaction and making friends, the absence of significant reduction of loneliness level among REAP participants may be because attachment between people takes time and greater level of bonding activities.

6.4.6 Enhancement of the intervention

Some older people in the feasibility RCT shared what they had learned with their families, and family support was apparent in these cases. There was the suggestion that younger participants could benefit from the programme, as they could be prepared to care for older people better. Making the programme available to younger participants, or involving families and caregivers in some sessions, may facilitate better understanding and familial support. Committing to a three-month programme was a concern for some people. It was possible to format the programme into modules, each covering a specific topic. This allowed participants to make shorter commitments. However, the REAP was intended to be a comprehensive programme, and it possibly has to be conducted in its entirety to be effective. As well as having respectful and engaging facilitators, the incorporation of exercise in each session may be a way of promoting regular attendance and ensuring continual participation.

6.4.7 Summary of the intervention

The feasibility RCT evaluates a salutogenic intervention programme, which focused on enhancing resources and activating older people to improve and maintain health. Salutogenesis is a useful framework for guiding the development of REAP and the introduction of various resources for older people. It aimed to promote self-care and healthy ageing. The participants demonstrated improved SOC and in the 'psychological' domain of QoL, after attending the REAP. This would support their life processes in the health continuum.

6.5 METHODOLOGICAL CONSIDERATIONS AND LIMITATIONS OF THE STUDY

6.5.1 The trustworthiness of the integrative review

The five-stage approach for integrative review, proposed by Whittemore and Knafl (2005) and Cooper (1998) was adopted. The stages included problem identification, literature search, data evaluation, data analysis and presentation. The five steps for data analysis are data reduction, data display, data comparison, and the drawing and verification of conclusions. Adherence to these guidelines ensures the scientific value of the review. Details can be found in Article I.

6.5.2 The validity and reliability of the quantitative studies

All outcome measures adopted in the feasibility RCT were tested psychometrically, although some had not been used in Singapore setting. Treatment (REAP) fidelity in the feasibility RCT is crucial to ensure validity and reliability (Bellg et al., 2004). Principles in the intervention design, training providers, and delivery, receipt and enactment of treatment were adhered to (Bellg et al., 2004). Further details are available in Section 4.3.3, and in Article IV.

6.5.3 The methodological rigour of the qualitative studies

According to Rebar et al. (2011), appropriate measures must be taken to establish credibility, dependability, confirmability and transferability. In both the descriptive qualitative and process evaluation studies, credibility of data source, collection and analysis was assured through a few measures. First, credibility is ensured through the recruitment of a purposive sample (descriptive qualitative study), or by inviting all REAP participants (process evaluation). All informants were reminded that all opinions expressed would be considered valid, and nobody would be identified. Second, the researcher adopted open questions in the interviews. Probing, prompting and paraphrasing techniques were used to clarify, if necessary. Additionally, before commencing the focus groups, informants were encouraged to be forthcoming, as nobody would be specifically directed to speak. Finally, co-researchers were involved in the analysis process.

In both cases, there was no checking of codes by peers, because the value of the inter-coder reliability for the qualitative thematic analysis was questionable (Vaismoradi et al., 2013). To assure dependability and confirmability, preliminary analysis was performed by the primary researcher, whose native language is Chinese. The reviewers were Chinese co-researchers, in both cases. The researchers examined the detailed meaning units, codes, subthemes and themes separately. Transferability was assured, as detailed descriptions of the informants was provided in the descriptive qualitative study. Further, a range of quotations from different informants was used. Audit trails were kept.

6.5.4 Limitations of the study

The integrative review does not include non-English publications. This is a potential concern, as salutogenesis is more commonly investigated in the Nordic countries. Consequently, some relevant empirical studies may have been omitted.

Inherently, the descriptive quantitative study could only identify association among the variables. The use of convenience sampling, coupled with small sample sizes, limits the generalisability of the findings. This may be partially compensated for with the recruitment of participants from three different centres, deliberate recruitment of various proportions of participants of different ages, genders, language and household arrangements, and a high response rate.

The descriptive qualitative study and process evaluation study only included Chinese Singaporeans, although this was not the original intention. Fortunately, they were from different dialect groups and spoke different dialects. However, dialects could not be expressed in written form, so the dialect interviews were directly transcribed into Chinese, and analysis was performed in Chinese. Subsequently, only those quotations that would be cited in the dissertation and manuscripts were translated into English. The trustworthiness of data was assured by the engagement of researchers and research assistants proficient in

the languages and dialects. Prolonged engagement was not a feature in this study, as each interview was performed in one sitting. Nevertheless, the researcher would have met the participants at least twice for the descriptive qualitative study, and would have built a trusting relationship with the participants throughout the REAP, for the process of the evaluation study. A certain level of rapport was built.

The feasibility RCT adopts a two-group pre-test and post-test design. It did not evaluate whether the effects were sustainable. Without longer-term evaluation of the outcomes, the precise causal relationship between the variables cannot be established. Contamination between participants in the intervention and control groups was possible, as they attended routine services in the same centre for older people. Additionally, participants were from one centre, and consisted mostly of older women, so the generalisability of the findings is limited. The primary researcher was involved in the research, so blinding during outcome measures was not feasible. The primary researcher was mindful of this limitation, and had advised participants to be objective in their responses so that they would not just provide socially desirable responses.

6.6 SUGGESTIONS FOR FUTURE RESEARCH

Several suggestions for future studies were identified:

(1) SOC scales have been used in studies of older people. The psychometric properties of SOC scales, when used for older people, should be examined more closely.

(2) from the descriptive qualitative study, older people living only with an older spouse, and those living with an unrelated older person, appeared to have unique needs. Qualitative studies that examine these subgroups in detail would provide greater insights into their experience.

(3) the use of technological gadgets in smart homes is becoming more common, as governments spend public resources to make homes safer for older people. Their efficacy and acceptability require more evaluation.

(4) the feasibility RCT has demonstrated that the intervention programme was acceptable to older people, and some beneficial outcomes were achieved. A large, multi-centre trial to evaluate the effects of REAP on SOC, QoL, resilience, activation and self-care abilities among older community-dwellers is suggested. With a larger sample size, and the use of stratified sampling strategy based on key demographical variables such as ethnicity, SES and household status, a more similar control group can be assured and compared in a trial. Longer-term effects should also be evaluated. Social and health government bodies should consider funding larger trials for interventions that demonstrate promising outcomes.

(5) the participants in the REAP were limited to older people, mostly older women. The potential benefits to older men, older married couples, older residents in aged-care facilities or from varying socio-economic and ethnic backgrounds, caregivers and family members were not explored. Further studies are necessary.

(6) SACs, located in the public housing estates, serve as recreational centres for older people living in the community. They are ideal sites for further research to explore evidence-based interventional programmes developed specifically to promote healthy ageing.

6.7 PRACTICE AND POLICY IMPLICATIONS OF THE STUDY

Health and QoL of older community-dwellers are associated with SOC and GRRs. Social and healthcare professionals should identify older people with poor health and QoL early, so that measures can be taken to improve the GRRs available to them and strengthen their SOC.

Some older people are particularly at risk: those living in public rental apartments (lower SES), living alone, with limiting physical conditions or those who were less satisfied with their perceived social support. These subgroups would require more individualised social support and opportunities for continued employment, if feasible. Strategies such as bringing services and SACs closer to their precincts, assisted transportation to the centres and utilisation of some older people as helpers in the programme or in general maintenance at the centres may promote their engagement with society, and support continued self-reliance.

Public health policies should explore strategies to promote the GRRs and SOC for older people who are still enjoying relatively good health and QoL. The effort to promote healthy ageing would complement ageing-in-the-right-place. Older people chose to live independently for certain valid reasons. To facilitate older people' independence, healthcare professionals must respect their values and facilitate expansion of social networks and access to community resources. Housing authorities would need to implement policies to make homes safer with smart technologies, and to help family members live in close proximity to their older relatives.

Nurses, as well as other social and healthcare professionals, should assess the needs of older people. Intervention programmes that are underpinned by a health-promotion theoretical framework (such as REAP) should be developed, implemented and evaluated on a larger scale. Physical activity may be incorporated in each of the 24 REAP activities, in order to improve its effects on the 'physical' domain of QoL.

A salutogenic approach that enhances SOC is important. With stronger SOC, older people might perceive themselves as active and resourceful people, capable of self-care (Sidell, 2007). Such active internalisation of personal and external resources has an effective salutary factor, and the older people would probably attain better long-term health and QoL. It would also save limited healthcare resources. With stronger resilience, older people may become better at using various resources to help them cope with stress. The health-promotion approach can be adopted as a primary strategy for older people in the community.

7 Conclusions

The integrative review revealed that few international studies had examined health and QoL based on the salutogenesis theory, and none had done so in Asia. As all but one were cross-sectional studies, experimental study was clearly absent. There is a need for further insights into how the constructs of SOC and GRRs interplay with health and QoL among older people. The existing evidence shows that while SOC correlated with QoL and various aspects of health, its relationship with physical health was weaker. SOC was also found to be associated with the various GRRs (e.g., psychological dispositions, cognitive and self-care abilities, coping style, social roles and social support, material resources and physical activity). This suggests the importance of external and internal resources to SOC as an orientation to cope with life stresses. There is also a need to bridge what was known about salutogenesis, and programmes that could be implemented to enhance older people's health and QoL.

The functional health and QoL of older people who lived independently or with an unrelated older person in public rental apartments were poorer compared to those who lived in purchased public apartments. They were socially lonely, and were at higher risk of depression. While they had few people to turn to for help, they were satisfied with what they received. The needs of these groups of older people should be explored further, so that they can be better supported to age-in-the-right-place.

Older community-dwellers who lived independently or with an unrelated older person encountered several challenges in their daily living. Deteriorating physical health can affect psychosocial and spiritual health. With dwindling social networks, older people perceived themselves as passive recipients of community services. They relied on external assistance and internal strengths and values. Their limited understanding of dependent and end-of-life care added to their concerns about death. Knowledge, skills and opportunities to expand their understanding, discussion of the various determinants of health, and available resources to help them cope are indicated, in order to help older people become more autonomous, activated and informed.

Salutogenesis is an appropriate theoretical framework for an interventional programme for older people. The REAP was found to be effective in enhancing the comprehensibility and manageability aspects of SOC, and in improving the psychological domain of QoL. This 24-activity health-promoting programme, conducted over 12 weeks, was feasible and acceptable to the older community-dwellers. The REAP should be further studied at a larger scale across different centres, cultures and countries. This salutogenesis-based programme, to facilitate ageing-in-the-right-place in the community, is promising in its ability to enhance healthy ageing and QoL.

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Khoon Kiat Tan

Enhancing Health Resources Among Older People in the Community Using a Salutogenesis-Based Intervention Programme

Older people desire to remain independent and healthy. Salutogenesis was demonstrated to be a useful theory to facilitate healthy ageing in the community. The Resource Enhancement and Activation Programme had helped the older community-dwellers to comprehend the challenges of daily living, perceive that resources were available, and experience a more favourable psychological domain of quality of life. It was feasible and acceptable to the older community-dwellers. A large trial is indicated to evaluate older people across more diverse demographical background.

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