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Research Article

A Systematic Review on Psychosocial Determinants of Elderly Subjective Wellbeing

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Abstract

The persistent increase in longevity has impelled social scientists to concentrate on the factors that can improve later life health and wellbeing. Extant literature indicates that filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality and religiosity are among those contributing factors for elderly subjective wellbeing. A systematic review was conducted to synthesize available evidence regarding the psychosocial determinants of elderly subjective wellbeing. Google Scholar, Science Direct and PubMed were searched for potentially relevant articles published from 2011 to 2017. Eighteen out of 216 full-text papers met the inclusion criteria and were critically appraised. The internal validity and quality of selected studies were assessed using STROBE and SIGN checklists. The findings of the current review suggest that filial responsibility, emotional regulation, self-esteem, attachment, and parent-adult child relationship quality were consistent determinants of elderly wellbeing; whereas findings on religiosity were equivocal. Further, self-esteem and emotional regulation emerged as significant cognitive-emotional underlying factors for the association between family relations and elderly wellbeing. In conclusion, despite methodological limitations of selected studies, this review was able to identify a number of psychosocial determinants of elderly subjective wellbeing. A comprehensive knowledge of these determining factors can contribute to a better understanding of empirical connections and identification of gaps in literature as well as directions for future studies.

Keywords: *Attachment, emotional regulation, filial responsibility, parent-adult child relationship quality, religiosity, self-esteem, subjective wellbeing*

1. Introduction

Globally, the population is graying rapidly due to declining fertility and mortality. According to the United Nations (2017) the global share of adults aged 60 and above is 13% of the total population.

The elderly people worldwide amounts to 962 million, and is projected to reach 2.1 billion in 2050, and 3.1 billion in 2100. This changing demography has triggered some physical and mental health challenges in aged individuals (Nunes et al., 2016). Life span development perspective states that older people age successfully if they are able to manage their sense of wellbeing using flexible adaptive strategies that optimize their personal functioning and wellbeing despite constraints in personal competence and external resources (Baltes & Baltes, 1999).

Many gerontological literature illustrated that subjective wellbeing contributes immensely to health in old age and longevity (Brummett et al., 2005; Koopmans, Geleijinse, Zitman & Giltay, 2010; Ju, Shin, Kim, Hyun & Park, 2012) and works as a protective agent against maladaptive functioning and is considered as an important ingredient for a happy life in old age (Myer & Diener, 1995). Therefore, one of the key errand for genontologists is to identify the predictors for health and quality of life in old age. Subjective wellbeing is an important index to measure quality of life and mental health of elderly (Peterson, Chatters, Taylor & Nguyen, 2014). Hence, the current study investigated the predictors of elderly wellbeing and their potential mechanism, to provide guidance to promote elderly wellbeing, identification of literature gaps and directions for future studies.

2. Literature Review

In positive psychology, subjective wellbeing is a prominent but complex construct made up of various dimensions (Augusto-Landa, Pulido-Martos & Lopez-Zafra, 2011). It refers to an individual's positive appraisal of his life and emotional reactions to an event (Diener, 1984; Diener, Lucas & Oishi, 2002). Fundamentally, subjective wellbeing is consisted of two related domains: the cognitive and affective. Cognitive domain of subjective wellbeing defined as cognitive judgment of satisfaction and fulfillment. The affective domain is characterized by positive and negative affect. Positive affect refers to positive mood such as joy, happiness and contentment whereas negative affect reflects negative emotional reactions such as sadness, guilt and shame. Particularly, subjective wellbeing refers to how individual feels and thinks about his life (Diener, Suh, Lucas & Smith, 1999).

Existing literature corroborated that various personal and contextual factors were strongly allied to elderly subjective wellbeing. For instance, elderly subjective wellbeing has been found to have a positive association with cognitive reappraisal (Rami, 2013), attachment security (Karreman & Vingerhoets, 2012), religion (Gull & Dawood, 2013; Lun & Bond, 2013), quality of parent-child relationship (Ward, 2008), coping strategies (Nunes et al., 2016), self-esteem (Pu et al., 2015), self-control (Tu & Yang, 2016), meaning in life (Ju et al., 2012), cognitive health (Banjare et al., 2015) and filial relations (Yunong, 2012). Contrary to this, perceived stress (Extremera & Rey, 2015), dysfunctional regulation (Carter & Walker, 2014) attachment insecurity (Kafetsios & Sideridis, 2006), relational equity and dissatisfaction (Reczek & Zhang, 2015) were inversely associated with elderly subjective wellbeing.

To date, insufficient attention has been paid to the psychosocial determinants of elderly subjective wellbeing. The majority of the earlier reviews and meta-analyses on elderly wellbeing aimed at identifying the risk factors for mental ill-health (Crewdson, 2016; Numbisi & Chepkirui, 2015; Cole & Dendukuri, 2003), with little emphasis on the determinants of positive wellbeing. In a recent review, Zimmer et al. (2016) identified religiosity and spirituality as significant modifiable factors that contribute towards mental health and longevity. However, not a single study has systematically reviewed filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality and religiosity in conjunction with elderly subjective wellbeing.

Hence, the prime goal of the current review was to examine the best available evidences in order to explore filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality, religiosity and their association with elderly wellbeing. The secondary aim was to critically appraise the existing literature to identify gaps and underlying pathways of association among constructs affecting the elderly subjective wellbeing.

3. Method

This systematic review was conducted to critically appraise all papers for their internal validity

through STrengthening the Reporting of Observational Studies in Epidemiology (STROBE, Von Elm et al., 2008) statements and Scottish Intercollegiate Guidelines Network (SIGN, 2001) checklist. The SIGN is a suitable checklist for judging the quality of case-control and cohort studies; while STROBE provides guidelines for observational and cross-sectional designs.

3.1 Search strategy

A thorough search of three databases, Google Scholar, Science Direct and PubMed was conducted for potentially relevant articles published from 2011 to May 2017. The keywords used for searching different constructs were: 1) "elderly*" OR "aged parents*" OR "older adults*" 2) "filial responsibility*" OR " filial piety*" OR "filial obligation*" OR "filial support*" 3) "self-esteem*" OR "self-concept*" 4) "emotional regulation*" OR "affect regulation*" OR "emotional dysregulation*" 5) "attachment*" OR " attachment styles*" OR "attachment anxiety*" OR "attachment avoidance*" OR "attachment security*" OR "attachment insecurity*" 6) "quality of parent-child relationship*" OR "parent-child relationship*" 7) "religiosity*" OR "spirituality*" 8) "subjective well-being*" OR "positive affect*" OR "negative affect" OR "life satisfaction" OR "well-being*" OR "wellbeing*" OR "quality of life*"OR "depression*" OR "anxiety*" OR "distress*" OR "stress*". All these terms were sought out within titles and abstracts to ensure that a large number of data can be retrieved.

3.2 Inclusion and exclusion criteria

Studies were included in the present review if they met the following inclusion criteria: (a) consisted a sample of older adults with a mean age of 60 and above; (b) analyzed elderly subjective wellbeing as an outcome variable; (c) assessed filial responsibility, self-esteem, emotional regulation, attachment, relationship quality or religiosity as a predictor in the analysis; (d) cross sectional/comparative, cohort/longitudinal, qualitative ,or quantitative research design; and (e) published in a peer reviewed full-text journal from 2011 to 2017. On the other hand, studies were excluded from the review if they: (a) were theoretical papers that did not analyze a specific sample; (b) were published in a language other than English; and (c) did not investigate the direct relationship of filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality, and religiosity with elderly subjective wellbeing. Other studies which used experimental designs or a sample of lesbians, gays, non-humans, or immigrants were also excluded from the review because of their non-generalizability to the current sample.

3.3 Assessment of study quality

Study quality was assessed by two investigators. The data was critically analyzed for their quality and relevance. The initial screening of research articles was done by the author and counterchecked by the other. The main researcher extracted all data from three databases on the bases of the criteria discussed in Figure. A.1. In case of a disagreement about the inclusion of articles in the review, reassessments were done until an agreement was reached. The current review revealed that the studies which fulfilled the majority of the methodological requirements had a +++ or good quality scoring; while those with a few methodological issues had a ++ score indicating a moderate level of quality. On the other hand, studies which did not fulfill majority of the criteria were regarded as having a + score or weak methodology (see Appendix A).

3.4 Critical appraisal

Critical evaluations regarding quality and internal validity were estimated by various questions such as: 1) Are research questions and objectives well stated? 2) Is the sample representative of the population? 3) How adequate are the research procedures? 4) How well are the results discussed? 5) Are the results sufficiently linked to the research questions and objectives? Detailed descriptions of the research design, country, sampling technique, sample size, mean age, measures and results of selected studies are presented in Table A.1.

4. Results

The search identified 102,869 papers that investigated the relationship between filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality, and religiosity with elderly wellbeing. At initial stage, the titles and abstracts of these articles were screened based on the criteria for inclusion. Correspondingly, 234 papers qualified for inclusion in the review based on their abstract; although, only 216 of these were fully accessible. Finally, after thoroughly screening the full-text papers, only 18 were selected for the final review as they involved all relevant variables. During the selection of papers, no attempt was made to review grey or unpublished materials. In other words, 216 papers were excluded since they did not meet the above mentioned criteria (see Figure. A.1). Among the excluded studies, 85% were not relevant, 4% were duplicates, and 11% were not fully accessible.

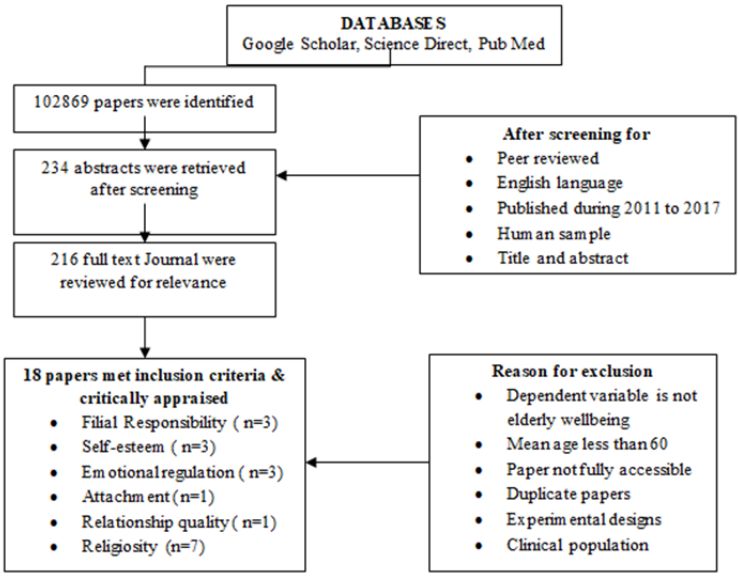

Fig. A.1. Flow diagram for article selection

The current systematic review identified 185 (85%) papers out of 216 that were considered as not relevant because of the following reasons: 1) did not investigate the direct or indirect association between elderly subjective wellbeing and the predictor variables of interest in the study; 2) analyzed a sample with a mean age that was below 60 years; 3) the outcome variable studied was not elderly wellbeing; 4) used experimental, randomized control or quasi experimental designs; and 5) studied a clinical sample.

5. Discussion

All peer reviewed articles that investigated the direct and indirect associations of filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality and religiosity with elderly subjective wellbeing were critically reviewed.

5.1 Filial responsibility and elderly subjective wellbeing

Filial responsibility of adult children to their aged parents is considered as one of the fundamental practices of Eastern culture that exerts a strong impact on elderly wellbeing. Findings based on longitudinal studies indicated that filial responsibility characterized by structural and functional

support from an adult child was associated with a better quality of life (Ju et al., 2016) and low moral (Takagi & Saito, 2012). In line with this, a cross-sectional study by Yunong (2012) found that filial support was significantly positively linked to subjective wellbeing of Chinese older adults. The above-mentioned studies also recognized demographical differences and found that being male, younger adults, having a higher educational level, household income and wealth were significant predictors of better quality of life (Yunong, 2012, Ju et al., 2016). Similarly, marital status and financial aid from an adult child were found to be potential buffering factors between unsatisfactory relationships and quality of life (Ju et al., 2016).

Overall, longitudinal and cross-sectional accounts provided evidence that different dimensions of filial responsibility of adult children to their aged parents were consistently linked to elderly wellbeing across different Eastern cultures. However, little agreement exists on the operationalization and measurement of filial responsibility and wellbeing. Specifically, these studies only looked at a single dimension of filial responsibility and wellbeing. Moreover, while these studies provide useful information on the direct association between filial responsibility and wellbeing, they failed to investigate the underlying mechanisms that link these two variables. Hence, further exploration on the mediating processes by which filial responsibility affects wellbeing are needed.

5.2 Self-esteem and elderly subjective wellbeing

From existing literature, only three studies which examined the direct and indirect associations of self-esteem to wellbeing among elderly individuals met the inclusion criteria of this systematic review. For instance, Wiesmann and Hannich, (2014) found that self-esteem mediated the relationship between physical health and both positive and negative aspects of wellbeing among German elderly. Likewise, in a study by Shao et al. (2013), meaning in life was found to be associated with higher self-esteem and better subjective wellbeing. In contrast, insecure attachment dimensions were linked to low self-esteem, which resulted in poor subjective wellbeing among older adults (Zhang et al., 2016). Based on current empirical evidence, a general consensus exists on the definition and measurement of self-esteem. Findings from this review highlighted self-esteem as a significant underlying psychological resource for the associations between a number of independent variables and elderly wellbeing. Nonetheless, further studies need to be carried out in order to establish whether self-esteem is an influential mechanism that links family relations and subjective wellbeing.

5.3 Emotional regulation and elderly subjective wellbeing

In old age, individuals regulate their emotions using different adaptive and maladaptive strategies that elicit both positive and negative effects on elderly health and wellbeing. Studies have demonstrated that successful regulation of emotions leads to better outcomes; while difficulties in emotional regulation are associated with poor wellbeing and vulnerability. For example, Nolen-Hoeksema and Aldao (2011) found that maladaptive but not adaptive regulatory strategies were associated with higher levels of depression among American elderly. A related study in Spain by Fernández-Fernández et al. (2013) established that lower activity involvement predicted negative outcomes for older adults when rumination was high. Moreover, Prakash et al., (2015) found that emotional regulation acts as a coping mechanism between dispositional mindfulness and perceived stress. Prevailing studies have identified the mediating and moderating roles of emotional regulation in Western samples, which warrant further exploration in non-Western samples. Furthermore, while emotional regulation is characterized by both adaptive and maladaptive strategies, the majority of the studies on elderly wellbeing investigated only either of these approaches in regulating emotions. As such, further research is needed to simultaneously examine in one study both forms of emotional regulation strategies as determinants of elderly wellbeing.

5.4 Attachment and elderly subjective wellbeing

The link between adult attachment and wellbeing is well-established in literature, but with less

emphasis on the elderly population. The thorough review found a single cross-sectional study that examined different attachment styles in relation to positive and negative affect in later stages of life. Specifically, Merz and Consedine (2012) found that secure and dismissive attachment styles were positively associated with elderly wellbeing, while fearful/avoidant attachment yielded negatively associations. Furthermore, gender, age, education, illness symptoms, attachment styles and ethnicity significantly explained 26% of the variance in wellbeing. Though the findings of the said study were consistent with theoretical and empirical evidence, further investigations are still needed to identify individual differences in adult attachment with respect to elderly wellbeing in non-Western cultures.

5.5 Parent-adult child relationship quality and elderly subjective wellbeing

Relationship quality is one of the central and prominent determinants of elderly subjective wellbeing. But the majority of studies investigated the association between relationship quality and wellbeing from the adult child's perspective. The extensive literature search found only one study that examined the positive and negative dimensions of parent-adult child relationships in association with psychological distress among American aged parents. The results confirmed that at the base level, both social support and strain were significantly associated with psychological distress but not over time. In addition, equity and dissatisfaction remained significant predictors of psychological distress prospectively (Reczek & Zhang, 2015). Their study also showed that mothers had higher psychological distress than fathers when they experienced greater levels of parental dissatisfaction at the base level. Overall, there is a scarcity of correlational and longitudinal studies that address quality of parent-adult child relationship and elderly wellbeing in non-Western samples.

5.6 Religiosity and elderly subjective wellbeing

Religiosity plays a salient role in the lives of elderly individuals as it acts as a protective shield against the trajectories of ill-being (Momtaz et al., 2012). Correlational studies have highlighted the role of religiosity and spirituality in the development of a number of positive and negative outcomes among the elderly. For instance, Rote et al. (2012) found that religiosity characterized by religious attendance was inversely associated with loneliness among American elderly via social support and social integration. In a related study, Marquine et al. (2016) found spirituality as a key factor that influenced life satisfaction among Hispanic and non-Hispanic Whites. In addition, their study revealed that private religious practices and personality did not exert significant impact on the link between ethnicity and life satisfaction.

Similarly, prospective studies in the United States also underscored the protective role of religion against negative outcomes. For example, Ronneberg et al. (2016) found that non-depressed individuals at baseline who frequently attended religious services were less likely to be depressed at 2 years follow up. In addition, depressed elderly individuals at baseline showed less depression after two years follow up when they were more engaged in private prayers. Accordingly, Sun et al. (2012) found that different dimensions of religiosity influenced depression differently. After controlling for health, demographic and social resources, the findings of their study revealed that religious attendance predicted lower depression at baseline level; while intrinsic religiosity demonstrated a slight increase in depression over the period of four years. In contrast, non-organizational religiosity was found to be uncorrelated to depression.

Prospective and cross-sectional studies have likewise highlighted the role of religious practices and beliefs in improving wellbeing among the elderly. However, studies also demonstrated the null associations between religiosity and wellbeing. For example, Pokorski and Warzecha (2011) investigated the effect of religiosity on affective distress among older Catholic believers in Poland. Their findings indicated moderate levels of religious activities and commitment; nonetheless, no significant differences in religiosity between depressed and non-depressed samples were generated.

Studies have also examined the link between religiosity and wellbeing among elderly

individuals cross-culturally. For example, Coleman et al. (2011) found that country, age, gender, physical limitation, social support and strength of religious beliefs were protective factors against depression. In addition, lower levels of religious/spiritual beliefs were found to be associated with higher depression among Bulgarians than Romanians in a cross-sectional study. However, these patterns remained constant after a 1 year follow up study among Bulgarian older adults. These findings were supported by a study conducted on Malaysian older adults' sample, where 17% of the variance in psychological wellbeing was accounted by demographics, chronic medical condition and religiosity (Momtaz et al., 2012). Specifically, chronic medical condition, intrinsic and extrinsic religiosity were found to be stronger predictors of psychological wellbeing.

The reviewed studies showed incoherent associations between religiosity and elderly wellbeing across cultures. In addition, the majority of the studies emphasized the negative rather than the positive outcomes of religiosity in older samples. As such, this warrants further exploration. Religiosity is a difficult construct to examine as it has multiple dimensions and there is a lack of consensus on its definition. The majority of studies defined religiosity as religious attendance practical religiosity or prayer. On the other hand, very few have concentrated on the intrinsic aspects of religiosity in association with elderly wellbeing. In order to get deeper insights into this construct, it is important to consider both the intrinsic and extrinsic dimensions of religiosity in relation to elderly wellbeing.

5.7 Limitations of the systematic review

The present systematic review is not free of limitations. The most important limitation lies in the fact that only accessible databases were included in the systematic review. It is possible that other databases have relevant studies which might provide enormous information regarding the predictor variables of interest in association to elderly subjective wellbeing. Second, the researchers used different search terms for each variable, which may have limited the scope of literature that was reviewed. The present review was restricted to peer reviewed articles, therefore, grey literature, conference papers, theoretical and conceptual papers were not included which may affect the generalizability of the findings across literatures. Finally, the researchers only reviewed the direct and indirect effects of a few psychosocial determinants of elderly subjective wellbeing. In view of this, other potential risk and protective factors for elderly subjective wellbeing warrant further exploration.

6. Conclusion and Recommendations

In a nutshell, the current systematic review provided comprehensive details about the different psychosocial determinants of elderly subjective wellbeing across various study designs and data collection methods. Both cross-sectional and longitudinal research indicated some interesting findings. A common observation was the inconsistent operationalization and measurement of filial responsibility, emotional regulation, attachment, parent-adult child relationship, religiosity and elderly wellbeing. Hence, results should be interpreted with causation. In defining elderly wellbeing, researchers often used negative indicators such as depression, anxiety, stress, loneliness, moral, psychological distress and negative affect rather than positive constructs like quality of life, life satisfaction, happiness and positive affect. Additionally, a few studies measured subjective wellbeing using a single item rather than multiple-item scales. The present review also found that the majority of the studies were conducted on Western samples and rarely on non-Western samples except for filial responsibility construct. Further, the thorough literature search identified a wide range of studies that cross-sectionally examined elderly subjective wellbeing, which prevented drawing conclusions on cause and effect relationships. Another observation was the limited number of studies that investigated the underlying pathways between certain predictor variables and elderly subjective wellbeing. As a result, the present researchers were unable to formulate reliable conclusions. Undoubtedly, family relations (i.e., filial responsibility) are the most consistent and prominent determinants of elderly subjective wellbeing. Nonetheless, such relationship may be mediated by some cognitive-emotional factors that have not been discussed in extant literature.

The review showed that self-esteem and emotional regulation could be potential mediators of the association between filial responsibility and elderly subjective wellbeing. Such findings require further in-depth exploration.

Bearing in mind the knowledge and methodological gaps, the current review recommends future studies to use more precise, validated and culturally relevant measures of elderly subjective wellbeing in relation to filial responsibility, self-esteem, emotional regulation, attachment, parent-adult child relationship quality and religiosity. Based on current knowledge, more studies are required to investigate underlying pathways of the cognitive-emotional factors that are affecting elderly wellbeing in order to draw sound conclusions.

7. Authors' Contributions

SMUH is the main author of the current systematic review. TAH is the corresponding author and she instructed author at each step of article writing, screening and synthesis of the literature. SAH and RI provided the guidance related to the improvement of the manuscript.

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Appendix A

Evaluation of research paper reviewed

Studies	Title/abstract; Introduction; Background/ rational; Objectives	Method; Study design, Settings, Participants, Measurements, Bias, Sample size, Statistical methods	Results; Participants' descriptive data, Outcome data, Main results, Other analysis	Discussion: Key results, Limitation, Interpretation, Generalizability
Filial Responsibility				
Ju et al, 2016	++	++	++	++
Takagi & Saito, 2012	++	++	++	++
Yunong, 2012	+++	++	++	+++
Self-esteem				
Zhang et al., 2016	+++	++	+++	++
Wiesmann & Hannich, 2014	+++	++	++	+++
Shao et al., 2013	+	++	++	+
Emotional regulation				
Prakash, Hussain, & Schirda, 2015	++	++	++	++
Nolen- Hoeksema & Aldao, 2011	+++	++	++	++
Fernández-Fernández et al., 2013	++	++	++	++
Attachment				
Merz, & Consedine, 2012	++	++	++	++
Quality of parent-adult child relationship				
Reczek & Zhang, 2015	++	++	++	++
Religiosity				
Ronneberg et al., 2016	++	++	++	++
Marquine et al., 2016	++	++	++	++
Momtaz et al., 2012	+++	++	+++	++
Rote et al., 2012	++	++	++	+
Coleman et al., 2011	++	+	++	+
Pokorski & Warzecha, 2011	+	+	++	+
Sun et al., 2012	++	++	++	++

Note: + Weak; ++ moderate; +++ good

Table A.1: Description of elderly subjective wellbeing studies that have been critically reviewed

Study	Country	Design/population /sampling technique	Sample characteristics	Measures	Results
Filial responsibility					
Ju at al 2016	Korea	Longitudinal study Community dwellers Not mentioned	Sample: 3274 Gender: 59.4% Female Age range: 65 and above	QOL: Visual analog scale (VAS, Dijkers, 2003) Relationship satisfaction (one question developed by researcher) Financial aid was measured by asking the respondents "whether they received financial support from offspring or not".	Highly unsatisfying relationship β= -21.93*** Not receive regular financial aid - β =0.92** Moderating effect Highly unsatisfying relationship with offspring, a lack of financial aid from offspring, and those that lived alone showed the most drastic decrease in QoL β =-23.46***
Takagi & Saito, 2012	Japan	Longitudinal study Community dwellers Multistage sampling	Sample: 4,226 Gender; 54% female Mean age: 75 years	Philadelphia Geriatric Center (PGC) Morale Scale (Lawton,1975; Liang et al.1987) Structural support was measured through personal characteristics and living arrangements Functional support was measured by asking "weather respondent receive financial, instrumental and emotional support from adult children" Expectations about filial piety was measure through 4 point likert type question " A child is expected to support and take care of aged parents, as the child should feel a sense of gratitude to the parents for raising him/her"	Emotional support POR=0.44* Number of support POR=0.86* Moderating effect Filial attitudes×widowhood POR=1.20* Filial attitudes×receiving emotional support POR=1.25*
Yunong, 2012	China	Cross sectional Community dweller Convenience sampling	Sample:279 Hukoos 292 non-Hukoos Gender: 52.4% female Hokou: 55.5% female non-Hukou Mean age: 72.63 Hukou 73.05 non-Hukou	Satisfaction with Life Scale (SWLS, Diener et al. 1985) Lubben Social Network Scale (LSNS-6; Lubben & Gironda 2003) Satisfaction with family support was measured one question on 5 point likert scale Filial support (Gollius Scale, 1999) Filial discrepancy (Gollius Scale, 1999) Family harmony was measured one question on 5 point likert scale "weather family is harmonious" Financial strain (Chou & Chi, 2002)	**Hukou** Satisfaction with family support β =0.15* Family harmony β= 0.09 Filial support β =0.28*** Filial discrepancy β= 0.15* **Non-Hukou** Satisfaction with family support β= 0.11 Family harmony β= 0.21*** Filial support β= 0.26*** Filial discrepancy β= 0.05
Self-esteem					
Zhang et al., 2016	China	Cross sectional Community dweller Not mentioned	Sample:319 Gender: 50% female Mean age: 67.34	The Experiences in Close Relationship Scale (Brennan et al., 1998) Parents-Adult Children Social Support Scale (Wang, Shen, & Tong, 2005) The Rosenberg Self-Esteem Scale (Rosenberg, 1986) Memorial University of Newfoundland Scale of Happiness (MUNSH, Kozma & Stones, 1980)	Attachment anxiety β = −.49** Attachment avoidance β = −.35** Attachment anxiety to self-esteem β = −.13 Attachment avoidance to self-esteem β=−.09 Indirect effect AX & ACS estimate −.10 CI: −.17 to−.03 AV & ACS estimate −.08 CI: −.15 to−.02 AV & RSE estimate −.07 CI: −.11 to−.02 Measurement model χ2 (97, N = 319) = 222.847; RMSEA = .064; CFI = .94.
Wiesmann & Hannich, 2014	Germany	Cross sectional Community dweller Convenience sampling	Sample:387 Gender: 27 % male Mean age:73.8	SF-36 Physical Health survey (Bullinger, 1995) Medical vulnerability (Wiesmann et al.2009) Sense of Coherence scale (Antonovsky, 1987) Mental health SF-36 (Bullinger, 1995), PGCMS (Lawton, 1975) Geriatric Depression Scale(Sheikh &Yesavage, 1986)	Psychological resources r=.35*** Locus of control r=.45*** Physical health r =.34*** Measurement model χ^2 (29, n = 374) = 115.77, p<.001, RMSEA = 0.09 ,CI; 0.07 to 0.11 SRMR = 0.04, and CFI = 0.96

				The Generalized Self-Efficacy Scale, (Schwarzer &Jerusalem 1995) Self-Esteem Scale (Rosenberg , 1965)	
Shao et al., 2013	China	Cross sectional Community dweller Convenience sampling	Sample:232 Gender: 55% male Mean age:70.29	Meaning in Life Scale (Wu, 2009) The Self-Mastery Scale (Pearlin & Schooler, 1978) The Self-Esteem Scale (Rosenberg, 1965) The subjective well-being questionnaire (Diener et al., 1995)	Existential vacuum=β = 0.27*** Death acceptance β = 0.10* Mastery β = 0.30*** Meditational effect Existential vacuum through mastery =β = 0.33*** Existential vacuum and self-esteem β = 0.37*** Life control through mastery β = 0.53*** Suffer acceptance through self-esteem β = 0.18*** Death acceptance though mastery β = 0.12*** Mastery through self-esteem β = 0.38*** Measurement model χ^2/df = 1.546 (χ^2 = 17.011, df = 11), GFI = 0.983, NFI = 0.985, IFI = 0.995, TLI = 0.983, CFI = 0.995, RMSEA = 0.051.
Emotional regulation					
Prakash, Hussain, & Schirda, 2015	USA	Cross sectional Community dweller Convenience sampling	Sample: 98 Gender:64% female Mean age: 65.40 older	Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) The Perceived Stress Scale (PSS; Cohen et al., 1983) The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) Cognitive control (Miyake et al. 2000)	**Older sample** Mindfulness r=0.31** ER r=-0.56** Mindfulness and composite emotional regulation r=0.33** Direct effect: -0.044 Indirect effect: Point estimate -0.193 CI: -0.410 to -0.062
Nolen-Hoeksema & Aldao, 2011	USA	Cross sectional Community dweller Random sampling	Sample: 1312 Gender: 53% female Age range: 65–75 older	The Beck Depression Inventory (BDI-SF; Beck & Beck, 1972) Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991) COPE inventory (Carver, et al., 1989) Suppression was measure through four question developed by researcher	**Rumination among women** Older r=0.61* **Rumination among men** Older r=0.31* **Suppression among women** Older r=0.44* **Suppression among men** Older r=0.46*
Fernández-Fernández, et al., 2013	Spain	Cross sectional Community dweller Convenience sampling	Sample: 311 sample Gender: 71% female Mean age: 71.27	CES-D (Radloff, 1977) Response Styles Questionnaire, the Ruminative Responses Scale (RRS-Brief Version; Jackson and Nolen-Hoeksema, 1998) Leisure time satisfaction (LTS, Stevens et al., 2004).	**Main effect** Leisure β= −0.39** Rumination β= 0.49** **Interaction effect** Leisure ×Rumination β=−0.11*
Attachment					
Merz & Consedine, 2012	USA	Cross sectional Community dweller Stratified cluster sampling	Sample: 1,118 Gender: 62% Female Mean age: 74	Wellbeing: Differential Emotions Scale (DES; Izard, 1971) Attachment: Relationship Scales Questionnaire (RSQ; Bartholomew & Horowitz, 1991) Functional impairment & illness symptoms: is measured through Comprehensive Assessment and Referral Evaluation (CARE, Golden et al.,1984).	**Main effect** Secure β = 11*** Dismissive β = .10*** Avoidant/fearful β = -.27*** **Interaction effect** English Caribbean×dismissive β = .10* English Caribbean×ambivalent/fearful β = .09*
Parent-adult child relationship Quality					
Reczek & Zhang, 2015	USA	Longitudinal study Community dwellers Multistage stratified sampling	Sample: 1692 Gender: 60.5% female Mean age: 68 years at 4th wave	Psychological distress: CES-D scale Child social support: measured through two likert type questions developed by ACL researchers	Social support b= -3.953*** whereas rate of change over time is non-significant Child Strain b= -0.172 * whereas rate of change in model 2

				Strain: measured through two likert type questions developed by ACL researchers Parental Dissatisfaction: measured through three likert type questions developed by ACL researchers Equity: measured through one likert type questions developed by ACL researchers	& 3over time is non- significant Parental Dissatisfaction b= -0.189** Relationship equity W2 b= 0.758*** b=0.666*** **Interacting effect** Gender×parental dissatisfaction b= 0.284*
Religiosity					
Ronneberg et al., 2016	USA	Cross sectional Community dweller Random sampling	Sample: 252 (126 Hispanics & 126 non-Hispanic Whites) Gender: 57.9% male Mean age: 73 in both samples	Satisfaction with Life Scale (SWLS, Diener et al. 1985) Physical health: 36-Item Short Form (MOS SF-36; Ware, Jr & Sherbourne, 1992) Cognitive Failures Questionnaire (Broadbent, Cooper, FitzGerald, & Parkes, 1982) Patient Health Questionnaire 9-Item Version (PHQ-9; Kroenke, Spitzer, & Williams, 2001) MacArthur Scale of Subjective Social Status (Adler et al., 2000) Duke Social Support Index-Social Interactions subscale (Blazer, Hybels, & Hughes, 1990) Emotional Support Scale (Seeman, Berkman, Blazer, & Rowe, 1994). Santa Clara Brief Compassion Scale (Hwang, Plante, & Lackey, 2008), Life Orientation Test-Revised (Scheier, Carver, & Bridges, 1994) Connor-Davidson Resilience Scale (Campbell-Sills & Stein, 2007) Multidimensional Individual and Interpersonal Resilience Measure (Martin et al., 2014) Personal Mastery Scale (Pearlin, Mullan, Semple, & Skaff, 1990) Religiosity: Brief Multi-Dimensional Measure of Religiousness/Spirituality (Fetzer Institute/National Institute on Aging Working Group, 1999)	Daily spiritual experiences r = −0.23** Private religious practices r = −0.14* Compassion r = 0.20** Multivariate analysis: F (4, 217) = 5.29*** Adj R2 = 0.07 Meditational analysis: Daily spirituality (a1 × b1, −2.9 × −0.20 = 0.59, and its 95% CI (0.19 to 1.15) obtained by bootstrapping did not include 0, indicating that it was statistically significant. In contrast, the paths through religious practices (a2 × b2 = −.41, 95% CI= − 0.92 to 0.002) and compassion (a3 × b3 = 0.19, 95% CI = − 0.02 to 0.49) were not significant.
Marquine et al., 2016	USA	Longitudinal Community dweller Not mentioned	Sample: 7,732 Gender: 58.8% Mean age: 68.12	Center of Epidemiological Studies Depression scale (CESD-8, Steffick, 2000) Intrinsic & non-organizational religiosity: Leave-Behind Questionnaire Religious affiliation, organizational religiosity, presence of both friends and relatives in one's congregation, rate the importance of religiosity: are measured with five questions developed by researcher.	Depressed elderly at baseline Jewish affiliation OR = 2.05* More frequent engagement in private Prayer OR = 0.93* Non-depressed at baseline High service attendance OR = 0.65** Low/no service attendance were 25% less likely to become depressed OR = 0.75*
Momtaz et al., 2012	Malaysia	Cross-sectional Community dweller Multistage stratified sampling	Sample: 1415 Gender: 51% female Mean age:70 years	Chronic medical conditions was measured by16 chronic conditions The revised Intrinsic/Extrinsic Religiosity scale measure religiosity (Gorsuch & McPherson, 1989) Psychological wellbeing: (WHO-5 Well-Being Index, Bech, OlseN, Kjoller, & Rasmussen, 2006)	Chronic medical condition; β = -0.12** Personal religiosity: β = 0.20** Social religiosity: β = 0.07** Moderator CMC×Personal religiosity: β = 0.06* CMC× Social religiosity: β = 0.07**
Rote et al., 2012	USA	Cross sectional Community dweller Probability sampling	Sample: 2165 Gender: 52% female Mean age:69.10 years	Religious Attendance was measured through one question developed by researcher Social integration was measured with original social integration	Religious attendance with Social integration: OR= 0.69* Religious attendance with Social Support: OR= 0.07** Religious attendance with

				measure and 2 questions developed by researcher. Social support: two questions developed by researchers. Revised University of California, Los Angeles Loneliness Scale (R-UCLA, Cornwell & Waite, 2009a ; Hughes at al.,, 2004 ; Russell et al.,1980). Epidemiologic Studies Depression Scale (CES-D, Kohout, et al., 1993).	loneliness: OR= − 0.0004 Social integration with loneliness: OR= − 0.003 Social support with loneliness: OR= − 0.11*** Meditational effect (Sobel test) Religious attendance on loneliness through social integration: z = − 2.16* religious attendance on social support through social integration z = 2.11* religious attendance on loneliness through social support z = − 3.23** Social integration on loneliness through social support z = − 3.44**
Coleman et al., 2011	Romania & Bulgaria	Cross sectional and longitudinal for Bulgarian sample Community dweller Not mentioned	Sample: 320 Gender: 52% female Mean age: 72 approximately Follow up with Bulgarian sample Sample: 58	Depression: Hospital Anxiety and Depression Scale (Flint & Rifat, 1995). The Royal Free Interview for Religious and Spiritual Beliefs (King, et al 2001) Physical limitations: Medical Outcomes Study Short Form (MOS SF36; Ware & Sherbourne, 1992) The MOS Social Support Survey (MOS SSS; Sherbourne & Stewart, 1991) Geriatric Depression Scale (GDS, Sheikh & Yesavage, 1986) Beliefs and Values Scale (King et al., 2005) Multidimensional Measure of Religiousness/ Spirituality (Fetzer Institute/National Institute on Aging Working Group, 1999)	Physical limitation β = 0.30*** Social support β = -0.26*** Strength of belief β = -0.11** Country×Strength β = -0.17 Follow up with Bulgarian sample religious/spiritual coping in 2007 r= 0.33* religious/spiritual coping in 2008 r=0.12
Pokorski & Warzecha, 2011	Poland	Cross-sectional Community dweller Not mentioned	Sample size 34 Gender: 76% female Age range: 59-86	Center for Epidemiologic studies Depression scale (CES-D, Weissman, 1977) Penn state Worry Questionnaire (PSWQ, Meyer et al., 1990) General Health Questionnaire (GHQ-12, Goldber, 1979) Coping Inventory for stressful situations (CISS, Endler & Parker, 1999), Religious Commitment scale (RCs, Golan, 1992)	GHQ-12 & CED-D r= .63*** PSWQ & CED-D r=.61*** Religious commitment & CED-D r= -.03 Religious commitment in non-depressive r=-.21
Sun et al., 2012	USA	Longitudinal Community dweller Stratified random sampling	Sample: 1,000 Gender: 50% female Mean age:75	The Geriatric Depression Scale (GDS; Sheikh & Yesavage, 1986) The Duke University Religion Index (Koenig at al.,1997b) Social support subscale of the Arthritis Impact Measure (AIM, Ren et al., 1999)	At baseline level Religious attendance :B = −.15** Prayer: B= .021 IR: B= −.013 Quadratic effects IR: B = −.021** Prayer: B=. 001 Religious attendance: B= 006

POR: proportional odd ratio, OR; odd ratio