

A Structural Model of Relationships between Stressful Life Events and Older Adults' Loneliness: Religious Orientation as Mediator

Hassan Yaghoubi¹

¹ Azarbaijan Shahid Madani University, Tabriz, Iran

Corresponding author: Hassan Yaghoubi | yaghoubi.hassan@yahoo.com

Abstract

Background: Loneliness is an issue, among many, faced by older adults through stressful life events, which may lead them to unbalanced life.

Goals: This study aimed to construct a structural model of associations between stressful life events and older adults' loneliness, with religious orientation functioning as a mediator.

Methods: This correlational-descriptive survey involved participants over 60 nursing homes in Hamedan, who were selected by convenience sampling. The tools utilized in this study were the *Paykel Life Events Questionnaire*, the *Allport-Ross Religious Orientation Scale*, and the *Short Version of the Social and Emotional Loneliness Scale for Adults (SELSA-S)*. Data analysis was performed through statistical tests of path analysis and Pearson correlation coefficient.

Results: The sample is composed of 92 participants (40 females). Results showed that stressful life events and loneliness have significantly positive and negative relationships, respectively, to religious orientation. Moreover, religious orientation played a mediating role in the association pattern between stressful life events and loneliness.

Discussion: These results suggest that although stressful events perform an important role in older adults' loneliness, religious orientation as a mediating variable have a crucial place in reducing the loneliness in the old age.

Keywords: Older Adults, Loneliness, Religious orientation, Stressful life events.

Introduction

Poor mental health is connected to loneliness and social isolation in older adults (Levula, Wilson, & Harré, 2016). Based on the predictions, the number of these aged people will reach 2 (American) billion by 2050, constituting nearly 22 percent of the world's population (United Nations, 2015). The increase of health care costs and health treatment needs in different communities of various cultures and languages, whether rich or poor, can affect both the aging processes in the family and the country's overall health system (Zimmer et al., 2016). Loneliness has been categorized into several types. Based on internal and external factors, there may be considered three types of loneliness: a) situational loneliness, that is, loss of social relationships due to unexpected situations such as natural disasters, migration, or interpersonal conflicts, b) evolutionary or growth loneliness, caused by separation, poverty or disability, and c) internal loneliness, triggered by some personality factors, maladaptive coping skills, and self-esteem (Tiwari, 2013). Loneliness can also be divided into emotional loneliness and social loneliness. The former can be aroused by a sense of deprivation and loss of attachment to an important person such as

Received: 29 December 2019

Last revised: 29 January 2020

Accepted: 11 March 2020 spouse or sibling; the latter might be evoked through losing a social network that had been a relevant part of one's past (Grover et al., 2018). A longitudinal study in Ireland showed that loneliness was a significant mediating factor attributing to the social context and symptoms of depression (Santini et al., 2016). The pessimists to the social context usually felt more loneliness, leading them to more isolation from the social environment (Cacioppo & Cacioppo, 2018).

The prevalence of loneliness caused by stressful events in American society was reported as 17 percent (Mezuk et al., 2016). In that study, stressful experiences and associated factors inducing emotional changes were felt as profoundly stressful. Indeed, divorce, bereavement, job loss, and chronic disease can create trauma for the individual in his or her life (Zhao et al., 2015). It is notable that identifying psychological and social factors that underlie the processes of stressful events was a goal which researchers had been pursuing for more than two decades. The individuals deal with stressful incidents in alternative ways (Zhu et al., 2016). Some may deal adequately with the stressful experiences and surmount the feelings while others might face many psychological problems that could last months or even years.

Stressful events had negative impacts on mental health and welfare (Maercker et al., 2013). In fact, stressful life events can cause changes in the body through physiological mechanisms, which, in turn, may contribute to an increased sense of loneliness (Hawkley & Cacioppo, 2010; Schutter et al., 2017). The results of Majeno, Tsai, Hyun, McGregth and Fulligny (2018) showed that loneliness has a relationship to stressful life and sleep problems. Besides, Brown, Gallagher, and Criaven (2018) indicated that people who felt more lonely were most likely to experience stressful life events and to have high blood pressure. The research by Kovaleva et al. (2018) also confirmed the relationship between stressful events and loneliness.

Another major factor concerning the feeling of loneliness is religious orientation. Many scholars believe that devoutness and religious orientations of a person in his or her aging can play central roles in anticipating the quality of future life and reducing psychological problems; these features (devoutness and religious orientation) can also be appropriate coping alternatives when there were no family connections or in case of weak relationships between family members (Levin, 2012). Some studies have found that faith and religion have such significant impacts on physical and psychological health (Krause & Hayward, 2014) that the higher levels of religious orientations can bring about many positive results such as higher psychological welfare, and even lower avoidable mortality and longer life expectancy (Krause & Hayward, 2014). Actually, religious orientation seems to function as a protective layer against the weakening performance in older adults (Sowa et al., 2016). Ojembe and Ebe Kalu (2018) argued that expanding social relationships or engaging in religious activities have the effect of reducing loneliness among older adults. Also, research from Ciobanu and Fokkema (2017) and Askari, Mohammadi, Radmehr, and Jahangir (2018) found that devoutness was associated with a low sense of loneliness in older adults. And devoutness and the belief of not being alone, accompanied by God, is associated, among older adults, to not feeling lonely or fearing less the death (Graneheim & Lundman, 2010).

In summary, religious orientation can serve as a protective layer in the relationship between stressful life events and older adults' loneliness. Consequently, in light of the findings, this study sought to answer the question of whether the religious orientation may have a moderating role in the association between stressful events and older adults' loneliness. In this regard, the conceptual model of this research is been presented in Figure 1 (based in Schirmer and Michailakis, 2016).



Figure 1. The conceptual model (based on Schirmer and Michailakis, 2016)

Methods

Research Design and Participants

The research was implemented through a descriptive– correlational method. The statistical population consisted of participants residing in the nursing homes of Hamadan, selected using availability sampling. They were chosen based on their case numbers. The criteria of entry were a) being over 60 years old, b) having complete acquiescence in participating in the study, c) suffering from no mental disorders and mental problems such as Alzheimer's, and d) experiencing no serious physical illnesses, based on their medical records.

Instruments

The following instruments were used for collecting data.

Paykel Life Events Questionnaire: the questionnaire developed by Paykel, Prusoff, and Uhlenhuth (1971) entails 69 major life events which marked the examinable events that an individual has experienced over the past two years or earlier. Besides, it determines the mental pressure at that time, scoring from 0 to 20. Compared to other ones, this questionnaire is a more effective instrument in terms of content validity and universality (Paykel, Prusoff, & Uhlenhuth, 1971). This has been confirmed through its performance across a variety of groups. The test-retest reliability was implemented by Hakimi et al. (2011, as cited in Ghasemi-Navab, Moatamedy, & Sohrabi, 2015) on a 30-participant sample, resulting in r = .79 for life events and r = .82 for stressfulness. Ghasemi Navab et al. (2015) obtained a test-retest reliability coefficient of r = .71and r = .76 for events and stressfulness, respectively. In our study, Cronbach's alpha for major life events was α = .72.

<u>Allport-Ross Religious Orientation Scale</u>: This questionnaire was designed by Allport and Ross (1967), containing 21 items that measure internal and external religious orientations. Early studies illustrated that the correlation between external and internal orientations was r = 0.21 (Allport & Ross, 1967). Among the 21 items, sentences 1 to 12 measure the external religious orientation while sentences 13 to 21 indicate the internal religion orientation, based on a Likert-type scale. This questionnaire was translated and standardized by Janbozorghi (2007) and has been applied to a variety of studies; its internal consistency was confirmed as $\alpha = .71$, and the test-retest reliability was r = .74 (Ghaderi, 2011). In our study, Cronbach's alpha for internal and external religious orientations was $\alpha = .76$ and $\alpha = .80$, respectively.

Short Version of the Social and Loneliness Questionnaire (SELSA-S): This questionnaire was developed by de DiTommaso, Brannen, and Best (2004), encompassing 15 items and three five-item loneliness subscales of romantic, family, and social. Each item embraced a Likert scale ranging from strongly disagree (1) to strongly agree (5). Items 14 and 15 are scored in reverse: the higher scores in each subscale, the greater sense of loneliness in that dimension. The designers of this questionnaire reported that Cronbach's alpha ranged from α = .87 to α = .90 (Salimi, Joukar, & Nekpour, 2009). In our study, Cronbach's alpha for the loneliness subscales of romantic, family, social, and loneliness were α = .84, α = .71, α = .77, and α = .88, respectively.

All questionnaires were filled in individually and by self-administration, except for those who were not able to fill in the questionnaire (structured interviews with the same standardized questionnaire).

Statistical analysis

Data analysis was performed with IBM/SPSS version 22.0. Significant statistic was considered at the α -level of .05. A path analysis was carried out to test the mediating role of religious orientation in the relationship between stressful life events and loneliness, using SmartPLS 2 software.

Ethical issues

This study has been approved by the Ethics Committee of Hamadan University of Medical Sciences (code: IR.UMSHA.REC.1395.589). Participants provided full consent before enrollment in the study and had complete freedom to leave the research position.

Results

Overall, 92 respondents participate in the study (52 males and 40 females). Average age was 64.3, ranging from 60 to 82 years old. The residency in the nursing home varied between 2 to 9 years. In terms of education level, 53 were illiterate (57%), received no education. Regarding marital status, the sample included 49 widows/widowers, 3 singles, 21 married, and 19 divorced.

The means and standard deviations of stressful life events, religious orientation, and loneliness were 28.50 ± 5.01 , 56.55 ± 6.09 , and 38.84 ± 6.96 , respectively, as illustrated in Table 1. The correlation coefficients between stressful life events, religious orientation, and loneliness are presented in Table 2. As shown, there was a positive relationship between stressful life events and the components of loneliness while the former having a negative relationship to the components of religious orientation (p<0.05). Also, between the components of loneliness and religious orientation lied a negative relationship (p<0.05).

Figures 1 and 2, and Table 3 show the results of the main hypothesis, employing the path analysis method. Figure 1 represents the standard coefficient (R) and a suggested mediation role between religious orientation, stressful life events, and loneliness. Table 3 indicates standard coefficients and *t*-values.

As indicated in Figure 2, the β coefficient for stressful life events and the internal and external religious orientations resulted in -0.359 and -0.371, respectively. The β coefficients for internal religious orientation and loneliness were -0.374, and -0.360 for the external religious orientation and loneliness. In other words, a one-unit-increase in the stressful life events variable results in 0.359 and 0.371 units reduction from internal and external religious orientations, respectively (as the estimated coefficients are negative). The standard coefficients for internal and external religious orientations on loneliness are -0.374 and -0.360, respectively.

To put it differently, the increase of one unit in the internal and external religious orientations variables can, respectively, lead to 0.374 and 0.360 units decrease in the loneliness of subjects.



Figure 2. Predicting model for loneliness based on stressful life events and religious orientation (β coefficients and *t*-indexes are shown)

Also, the *t*-indexes for the direct path between stressful life events and internal religious orientation was 4.340, and 5.092 for stressful life events and external religious orientation. Furthermore, the *t*-indexes for the line from internal religious orientation and loneliness, and the line between external religious orientation and loneliness were estimated at 2.585 and 2.668, respectively. These values are significant because the indexes were higher than 1.960; only the *t*-index for the path for the stressful life events and loneliness was non-significant, as it was lower than 1.960.

Table 3 suggests a negative and significant relationship between stressful life events and internal religious orientation (r = -0.359, t = 4.340). Stressful life events also were significantly and negatively related to the external religious orientation (r = -0.371, t = 5.092); nevertheless, they experienced no significant relationship to loneliness (r = 0.953, t =0.099). Both internal and external religious orientations were negatively and significantly correlated with loneliness (r = -0.374, t = 2.585; r = -0.360, t = 2.668, respectively). Besides, the mediating roles of either internal religious orientation (-0.359 * -0.374 = 0.134) or external religious orientation (-0.360 * -0.371 = 0.133) in the relation between stressful life events and loneliness were significant.

Variables		Mean	Standard deviation	Possible range
Paykel Life Events Questionnaire total score		28.50	5.01	19-72
Allport-Ross Religious Orientation Scale total score (ROS)		56.55	6.09	25-81
Short Version of the Social and Loneliness Questionnaire (SELSA-S)		38.84	6.96	17-66
total score				
	Romantic loneliness	9.26	6.07	8-19
SELSA-S Loneliness components	Family loneliness	14.46	3.28	7-23
	Social loneliness	15.10	2.89	10-22
ROS Religious orientation components	External orientation	34.92	3.06	14-43
	Internal orientation	21.63	4.04	11-39

Table 1. Means and standard deviations for stressful life events, religious orientation, and loneliness.

Table 2. Correlation coefficients between stressful life events, religious orientation, and loneliness.

Stressful life events	Romantic	Family	Social	External
(total score)	loneliness	loneliness	loneliness	orientation
.212*				
.226*	.213*			
.198*	.255*	.469**		
381**	244*	199*	417**	
362**	219*	263**	215*	.465**
	Stressful life events (total score) .212* .226* .198* 381** 362**	Stressful life events (total score) Romantic loneliness .212* .226* .213* .198* .255* .255* 381** 244* 362**	Stressful life events (total score) Romantic loneliness Family loneliness .212* .226* .213* .198* .255* .469** 381** 244* 199* 362** .219* 263**	Stressful life events (total score) Romantic loneliness Family loneliness Social loneliness .212* .212* .213* .226* .213* .198* .255* .469** .469** 381** 244* 199* 417** 362** 219* 263** 215*

*p<0.01** p<0.05**

Table 3. Structural model implementation results

Research hypotheses	Standard coefficient (R)	t–value	Result
Stressful life events → internal religious orientation	359	4.340	Significant
Stressful life events \rightarrow external religious orientation	371	5.092	Significant
Stressful life events → loneliness	.099	0.953	Insignificant
Internal religious orientation $ ightarrow$ loneliness	374	2.585	Significant
External religious orientation $ ightarrow$ loneliness	360	2.668	Significant

Table 4. Direct and indirect inter-effects of research variables

	Effects		
Direction	Direct effect	indirect effect	Total effect
Stressful life events \rightarrow internal religious orientation	359	0.000	359
Stressful life events \rightarrow external religious orientation	371	0.000	371
Stressful life events \rightarrow loneliness ^a	.099	134*	233
Stressful life events \rightarrow loneliness ^b	.099	133*	232
Internal religious orientation $ ightarrow$ loneliness	374	0.000	374
External religious orientation $ ightarrow$ loneliness	360	0.000	360

a) Through internal religious orientation ; b) through external religious orientation ; *p <0.05; **p <0.01

Table 4 shows the direct and indirect effects (mediated by religious orientation) of stressful life events on loneliness. As can be seen, the indirect effects have a higher place of significance. The indirect effects of stressful life events on loneliness through internal and external religious orientations were calculated as -0.134 and -0.133, respectively. Consequently, loneliness can be indirectly predicted by probing into the stressful life events.

Discussion and Conclusions

This research was carried out to construct a structural analysis model of relationships between stressful life events and older adults' loneliness, with the mediating role of religious orientation. We have surveyed a sample of 60+ years old individuals, living in nursing homes. According to the results, stressful life events were negatively and significantly correlated to both internal and external religious orientations; stressful life events, however, had no direct significant relationship with loneliness. Also, internal and external religious orientations were negatively and significantly related to loneliness. Furthermore, the mediating role of these two religious orientations between stressful life events and loneliness were confirmed. In terms of stressful life events and loneliness relationships, these results were consistent with the findings of Hawkley and Cacioppo (2010), Schutter et al. (2017), Majeno et al. (2018), Brown et al. (2018), and Kovaleva et al. (2018). Also, in terms of religious orientation and loneliness relationships, results were in line with Ciobanu and Fokkema (2017) and Askari et al. (2018).

In recent decades, scholars tended to examine more and more the sense of loneliness in older adults (Wang, Mann, Lloyd-Evans, Ma, & Johnson, 2018). Approximately 10 percent of older adults suffer from chronic loneliness and 7 percent from social isolation (Harvey & Walsh, 2016). Data collected from western countries indicated that although loneliness was common in all groups, it was more prevalent in older adults (Yang & Victor, 2011). The prevalence of loneliness among old people (60+ years old) in western societies was reported in the range of 11.5% to 43% (Loboprabhu & Molinari, 2012). It has been argued that as older adults grew older, they play a more passive role in society, hence the feeling of loneliness may be increased (Jylhä, 2004). Loneliness can lead to depression (Bodner & Bergman, 2016), lower social functions (Theeke et al., 2016), and avoidable mortality (Perissinotto, Cenzer, & Covinsky, 2012). In older adults, loneliness was associated with many negative consequences such as early death (Rico-Uribe et al., 2016; Steptoe, Shankar, Demakakos, & Wardle, 2013). Factors such as femininity, low educational level, low

income, and rural habitation were more likely to be connected to the loneliness (Cohen-Mansfield, Hazan, Lerman, & Shalom, 2016).

For the non-significant direct effect of stressful life events on older adults' loneliness, as found in our data, it may be hypothesized that aged people become less vulnerable to stressful life events due to the collection of difficulties and troubles they have experienced throughout lifespan. These previous experiences may promote a sense of tense and stressful situations as transient and unstable events. Experience and maturity about how to cope with stressful life events may therefore act as a buffer. Religious orientations, on the other hand, may provide a way of answering potential questions, arising from anxiety, about the meaning of life, the importance of individuals in the world, and what happens in the afterlife. Also, participating in religious communities of those who share common beliefs can provide selfconfidence in dealing with uncertainty (Brashears, 2010). It has been found that aged religious people reported lower isolation, greater social participation, and closer family relationships compared to those who didn't engage themselves in any social religious practices (Moreira-Almeida, 2013). For older adults who live alone, taking part in religious activities may preclude themselves feeling loneliness, dying alone, and having no confidants, due to the vast social networking or social support (Koenig, 2009). Actually, religious orientations can be metaphorized as a cushion or backrest. Religious beliefs may reduce the impacts of adverse life events such as illness, work difficulties, or hospitalization. Regarding this, Huguelet and Koenig (2009) stated that religion, as a source of calmness, helped aged patients relieve the deficiency of positive situations as well as providing a sense of purposefulness and meaningfulness in their lives.

The results of this study illustrated that religious orientation and religious practices can be a momentous factor in decreasing older adults' loneliness. Religion can also be considered as a protective layer and a supportive factor against stressful events and related psychological and physical consequences.

Declaration of conflicting interests

This research was conducted without the financial support of a particular institution and had no connection with the author's interests.

Acknowledgments

The administrator and staff of Nursing Home in Hamadan, who were cooperative in implementing this research, and all resident elders who were patiently accommodating the research process are gratefully acknowledged. Hereby, we appreciate all the people who helped in conducting this study.

References

- Askari, M. A., Mohammadi, H., Radmehr, H., & Jahangir, A. H. (2018). The effect of spiritual-religious psychotherapy on enhancing the quality of life and reducing symptoms of anxiety and depression among older adults. *Journal of Research on Religion & Health, 4*(2).
- Allport, G. W., & Ross, M. J. (1967). Personal Religious Orientation and Prejudice. Journal of Personality and Social Psychology, 5, 432-443. http://dx.doi.org/10.1037/h0021212
- Bodner, E., & Bergman, Y. S. (2016). Loneliness and depressive symptoms among older adults: The moderating role of subjective life expectancy. *Psychiatry Research, 237*, 78-82. https://doi.org/10.1016/j.psychres.2016.01.074
- Brashears, M. E. (2010). Anomia and the sacred canopy: Testing a network theory. *Social Networks, 32*(3), 187-196. https://doi.org/10.1016/j.socnet.2009.12.003
- Brown, E. G., Gallagher, S., & Creaven, A. M. (2018). Loneliness and acute stress reactivity: A systematic review of psychophysiological studies. *Psychophysiology*, *55*(5), e13031. https://doi.org/10.1111/psyp.13031
- Cacioppo, J. T., & Cacioppo, S. (2018). Loneliness in the modern age: an evolutionary theory of loneliness (ETL). In Advances in Experimental Social Psychology (Vol. 58, pp. 127-197): Elsevier. https://doi.org/10.1016/bs.aesp.2018.03.003
- Ciobanu, R. O., & Fokkema, T. (2017). The role of religion in protecting older Romanian migrants from loneliness. *Journal of Ethnic and Migration Studies, 43*(2), 199-217. https://doi.org/10.1080/1369183x.2016.1238905
- Cohen-Mansfield, J., Hazan, H., Lerman, Y., & Shalom, V. (2016). Correlates and predictors of loneliness in older-adults: a review of quantitative results informed by qualitative insights. *International Psychogeriatrics, 28*(4), 557-576. https://doi.org/10.1017/s1041610215001532
- DiTommaso, E., Brannen, C., & Best, L. A. (2004). Measurement and Validity Characteristics of the Short Version of the Social and Emotional Loneliness Scale for Adults. *Educational and*

Psychological Measurement, 64(1), 99–119. https://doi.org/ 10.1177/0013164403258450

- Ghasemi-Navab, A., Moatamedy, A., & Sohrabi, F. (2015). Predicting Relationship with God, Based on the Life Events, Spiritual Intelligence and Life Line Drawing in Elders. *Journal* of Health and Care, 17(1), 57-69.
- Ghaderi, D. (2011). The Survey of Relationship Between Religious Orientation and Happiness Among older adults Man and Woman in Tehran. *Salmand: Iranian Journal of Ageing*, 5(4), 64-71.
- Graneheim, U. H., & Lundman, B. (2010). Experiences of loneliness among the very old: The Umeå 85+ project. *Aging & Mental Health*, 14(4), 433-438. https://doi.org/10.1080/ 13607860903586078
- Grover, S., Avasthi, A., Sahoo, S., Lakdawala, B., Dan, A., Nebhinani, N., . . . Kedare, J. (2018). Relationship of loneliness and social connectedness with depression in elderly: A multicentric study under the aegis of Indian Association for Geriatric Mental Health. *Journal of Geriatric Mental Health*, 5(2), 99. https://doi.org/10.4103/jgmh.jgmh_26_18
- Harvey, B., & Walsh, K. (2016). Loneliness and Ageing: Ireland, North and South. *Dublin: Institute of Public Health in Ireland*.
- Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, 40(2), 218-227. https://doi.org/10.1007/s12160-010-9210-8
- Huguelet, P., & Koenig, H. G. (2009). *Religion and spirituality in psychiatry*: Cambridge University Press. https://doi.org/ 10.1017/cbo9780511576843
- Janbozorgi, M. (2007). Religious orientation and mental health. *Journal of Research in Medical Sciences*, *31*(4), 345-350.
- Jylhä, M. (2004). Old age and loneliness: cross-sectional and longitudinal analyses in the Tampere Longitudinal Study on Aging. *Canadian Journal on Aging/La Revue Canadienne du Vieillissement, 23*(2), 157-168. https://doi.org/10.1353/ cja.2004.0023
- Koenig, H. G. (2009). Research on religion, spirituality, and mental health: A review. *The Canadian Journal of Psychiatry*, 54(5), 283-291.
- Kovaleva, M., Spangler, S., Clevenger, C., & Hepburn, K. (2018). Chronic stress, social isolation, and perceived loneliness in dementia caregivers. *Journal of Psychosocial Nursing and Mental Health Services*, 56(10), 36-43. https://doi.org/ 10.3928/02793695-20180329-04
- Krause, N., & Hayward, R. D. (2014). Hostility, religious involvement, gratitude, and self-rated health in late life. *Research on Aging*, *36*(6), 731-752. https://doi.org/10.1177/016402751 35 19113
- Levin, J. (2012). Religion and physical health among older Israeli Jews: findings from the SHARE-Israel study. *Israel Medical Association Journal*, *14*(10), 595-601.
- Levula, A., Wilson, A., & Harré, M. (2016). The association between social network factors and mental health at different life stages. *Quality of Life Research*, 25(7), 1725-1733. https://doi.org/10.1007/s11136-015-1200-7
- Loboprabhu, S., & Molinari, V. (2012). Severe loneliness in community-dwelling aging adults with mental illness. *Journal of Psychiatric Practice*, *18*(1), 20-28. https://doi.org/10.1097/ 01.pra.0000410984.15852.59
- Maercker, A., Brewin, C. R., Bryant, R. A., Cloitre, M., Reed, G. M., van Ommeren, M., . . . Llosa, A. E. (2013). Proposals for

mental disorders specifically associated with stress in the International Classification of Diseases-11. *The Lancet, 381*(9878), 1683-1685. https://doi.org/10.1016/s0140-6736(12)62191-6

- Majeno, A., Tsai, K. M., Huynh, V. W., McCreath, H., & Fuligni, A. J. (2018). Discrimination and sleep difficulties during adolescence: the mediating roles of loneliness and perceived stress. *Journal of youth and adolescence*, 47(1), 135-147. https://doi.org/10.1007/s10964-017-0755-8
- Mezuk, B., Choi, M., DeSantis, A. S., Rapp, S. R., Roux, A. V. D., & Seeman, T. (2016). Loneliness, depression, and inflammation: evidence from the multi-ethnic study of atherosclerosis. *PloS one, 11*(7), e0158056. https://doi.org/10.1371/journal.pone.0158056
- Moreira-Almeida, A. (2013). Religion and health: the more we know the more we need to know. *World Psychiatry*, *12*(1), 37. https://doi.org/10.1002/wps.20009
- Ojembe, B. U., & Ebe Kalu, M. (2018). Describing reasons for loneliness among older people in Nigeria. *Journal of Gerontological Social Work*, 61(6), 640-658. https://doi.org/10.1080/01634372.2018.1487495
- Paykel, E.S., Prusoff, B.A., & Uhlenhuth, E.H. (1971). Scaling of life events. *Archives of General Psychiatry*. 25(4), 340–347. https://doi:10.1001/archpsyc.1971.01750160052010
- Perissinotto, C. M., Cenzer, I. S., & Covinsky, K. E. (2012). Loneliness in older persons: a predictor of functional decline and death. Archives of Internal Medicine, 172(14), 1078-1084. https://doi.org/10.1001/archinternmed.2012.1993
- Rico-Uribe, L. A., Caballero, F. F., Olaya, B., Tobiasz-Adamczyk, B., Koskinen, S., Leonardi, M., ... Miret, M. (2016). Loneliness, social networks, and health: a cross-sectional study in three countries. *PloS one*, *11*(1), e0145264. https://doi.org/10.1371/journal.pone.0145264
- Salimi, A., Joukar, B., & Nekpour, R. (2009). Internet communications in life: analyzing the role of perceived social support and loneliness in using the internet. *Journal of Psychological Studies*, *5*(3), 81-102.
- Santini, Z. I., Fiori, K. L., Feeney, J., Tyrovolas, S., Haro, J. M., & Koyanagi, A. (2016). Social relationships, loneliness, and mental health among older men and women in Ireland: A prospective community-based study. *Journal of affective disorders, 204*, 59-69. https://doi.org/10.1016/j.jad.2016.06. 032
- Schirmer, W., & Michailakis, D. (2016). Loneliness among older people as a social problem: the perspectives of medicine, religion and economy. *Ageing & Society, 36*(8), 1559-1579. https://doi.org/10.1017/s0144686x15000999
- Schutter, N., Holwerda, T., Stek, M., Dekker, J., Rhebergen, D., & Comijs, H. (2017). Loneliness in older adults is associated

with diminished cortisol output. *Journal of Psychosomatic Research*, *95*, 19-25. https://doi.org/10.1016/j.jpsychores. 2017.02.002

- Sowa, A., Golinowska, S., Deeg, D., Principi, A., Casanova, G., Schulmann, K., . . . Gelenkamp, H. (2016). Predictors of religious participation of older Europeans in good and poor health. *European Journal of Ageing*, *13*(2), 145-157. https://doi.org/10.1007/s10433-016-0367-2
- Steptoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences*, 110(15), 5797-5801. https://doi.org/10.1073/pnas. 1219686110
- Theeke, L. A., Mallow, J. A., Moore, J., McBurney, A., Rellick, S., & VanGilder, R. (2016). Effectiveness of LISTEN on loneliness, neuroimmunological stress response, psychosocial functioning, quality of life, and physical health measures of chronic illness. *International Journal of Nursing Sciences*, 3(3), 242-251. https://doi.org/10.1016/j.ijnss.2016.08.004
- Tiwari, S. C. (2013). Loneliness: A disease? *Indian journal of psychiatry, 55*(4), 320. https://doi.org/10.4103/0019-5545. 120536
- United Nations. (2015). World population prospects: The 2015 revision. *United Nations Department of Economic and Social Affffairs*, 33(2), 1-66.
- Wang, J., Mann, F., Lloyd-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: a systematic review. *BMC psychiatry*, 18(1), 156. https://doi.org/ 10.1186/s12888-018-1736-5
- Yang, K., & Victor, C. (2011). Age and loneliness in 25 European nations. *Ageing & Society, 31*(8), 1368-1388. https://doi.org/10.1017/s0144686x1000139x
- Zhao, Y., Kershaw, T., Ettinger, A. S., Higgins, C., Lu, M. C., & Chao, S. M. (2015). Association between life event stressors and low birth weight in African American and White populations: findings from the 2007 and 2010 Los Angeles Mommy and Baby (LAMB) surveys. *Maternal and Child Health Journal*, 19(10), 2195-2205. https://doi.org/10.1007/s10995-015-1734-x
- Zhu, H., Luo, X., Cai, T., He, J., Lu, Y., & Wu, S. (2016). Life event stress and binge eating among adolescents: the roles of early maladaptive schemas and impulsivity. *Stress and Health*, *32*(4), 395-401. https://doi.org/10.1002/smi.2634
- Zimmer, Z., Jagger, C., Chiu, C.-T., Ofstedal, M. B., Rojo, F., & Saito, Y. (2016). Spirituality, religiosity, aging and health in global perspective: A review. *SSM-population health, 2*, 373-381. https://doi.org/10.1016/j.ssmph.2016.04.009