J Cross Cult Gerontol (2015) 30:409–422
DOI 10.1007/s10823-015-9272-y

ORIGINAL ARTICLE

Depression and Psychosocial Risk Factors among Community-Dwelling Older Adults in Singapore

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Published online: 1 October 2015

Abstract Depression is the most common mental and emotional disorder that emerges in the late stages of life. It is closely associated with poor health, disability, mortality, and suicide. The study examines the risk factors of depression in late life, especially the psychosocial factors, among a sample comprising 162 community-dwelling Singaporean adults aged 65 years and above. An interview-based structured survey was conducted in multiple senior activity centers located in different parts of Singapore. Results from the hierarchical regression analysis show that 32.9 % of the variance in geriatric depression can be explained by the three psychosocial factors, among which loneliness, perceived social support, and the emotional regulation component of resilience are significantly associated with depression in older adults. Large-scale studies should be conducted to confirm the findings of the present study, and to further examine the predictive effects of these psychosocial factors on depression among older adults.

Keywords Ageing · Geriatric depression · Psychosocial factors · Regression model

Introduction

The demographic, structural, and social changes in recent decades have led to a significant increase in the percentage of older adults. Population aging generates an array of healthcare concerns, among which geriatric depression has drawn increasing attention from health professionals, social researchers, and policy makers (Cheng et al. 2009; Dean et al. 1992; Gan 2012; Kraaij et al. 2002a). Depression is perhaps the most common mental disorder of people in late life (Berkman et al. 1986; Blazer et al. 1987). According to a recent report (Barua et al. 2011) that reviewed published studies from 1955 to 2005, depression symptoms have developed in approximately 10.3 % of the aging population in the world. High prevalence of geriatric depression has been reported in countries, such as the United States (US)

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(2009), Britain (Mcdougall et al. 2007), Japan (Takahashi et al. 1998; Wada et al. 2004), and Malaysia (Imran et al. 2009). Depression in late life has been established as a risk factor of poor health (Han 2002) and disability (Lenze et al. 2001), and has been validated as closely associated with mortality and suicide (Mann 2002). Moreover, depression has been shown as a cause of the increase in utilization of medical services and the corresponding rise in expenses. Therefore, depression is becoming a burden to the healthcare system in many countries (Lee et al. 2012a, b; Snowden et al. 2008).

The development of geriatric depression is caused by various risk factors (e.g. Cummings et al. 2003; Jang et al. 2002; Kraaij et al. 2002b). Apart from biological factors (e.g., chronic physical illnesses), being female (Ma et al. 2008) and older (Beekman et al. 2000), and having a lower education background (Ladin 2008) and poor self-rated health conditions (Heok and Ho 2008) are causes of depression. A higher depression rate was found among older adults with low income (Angel et al. 2003; Areán et al. 2010) or low quality of life (Brenes 2007).

Psychosocial risk factors are also important predictors of late-life depression (Bruce 2002; Vink et al. 2008). Psychological resilience is one of the common psychosocial risk factors that had been studied comprehensively. It refers to the coping style that the elderly applies in relation to stress and depression. A few studies have demonstrated that active coping strategy and high psychological resilience positively affect depressive symptoms among the elderly (Bisschop et al. 2004; Denney 1995; Pierini and Stuifbergen 2010). de Beurs et al. (2001) demonstrated that the elderly tend to be more vulnerable to depression and anxiety if they solve everyday problems by passive coping.

Many studies have established the relationship between social support and geriatric depression (Lee et al. 2012a, b; Su et al. 2012; Verstraten et al. 2005). According to Antonucci (1991), a person's social network decreases over time in late life. Thus, the elderly receives less emotional support from social networking, which is likely to increase the risk of depression. Barg et al. (2006) found that high adequacy of social support that older adults receive corresponds to low depressive scores. Another community study in Hong Kong (Chi and Chou 2001) has substantiated the negative relationship between impaired social support and geriatric depression. Nevertheless, some studies have failed to find the predictive effect of social support on depression in late life (Alexopoulos et al. 1996; Murphy 1983). Therefore, more research efforts are required to clarify this relationship.

Loneliness is a negative feeling related to social isolation. The feeling of loneliness is common for elderly people in their late life as a result of the lack of close family ties (e.g., living alone), impaired social support, and loss of mobility in social activities. Loneliness is one of the strongest predictors of depression according to Singh and Misra (2009). The strong association between loneliness and geriatric depression was further confirmed in a large scale study of approximately 1000 older adults (Aylaz et al. 2012). The longitudinal study by Cacioppo et al. (2006) also supported the idea that loneliness is a significant risk factor of depression among the aging population. Depressive symptoms, such as anxiety and sadness, are highly identical with the symptoms of loneliness (Singh and Misra 2009). Therefore, depression inevitably accompanies loneliness in late life.

Singapore is one of the most rapidly aging societies in the world. The proportion of its older adults (aged 65 years and above) was more than 9 % in 2010 (Department of Statistics, Ministry of Trade and Industry, Republic of Singapore 2010) and will reach 19 % in 2030 (Ministry of Community Development Youth and Sports 2006). Depression is highly prevalent in the country's community-living older adults (Soh et al. 2009). Thus, identifying the key risk factors of geriatric depression in Singapore is important. Although the biological factors of

depression have been examined in several studies conducted in Singapore (Feng et al. 2008; Ho et al. 2008; Niti et al. 2007), less attention was paid on the psychosocial factors. The findings from Tan and Wong (2008) demonstrated that elder Singaporeans suffer greatly from loneliness and depression despite their good physical health. Geriatric depression in Singapore is caused more by psychosocial rather than biological factors. Hence, the current study determines the psychosocial risk factors of geriatric depression in Singapore and examines the extent to which they associate with depression in a sample of community-dwelling older adults.

Methodology

Sampling Process

A cross-sectional survey was conducted from August to October 2013 among community-dwelling senior citizens in Singapore. Based on the definition of "Senior Citizen" by the Ministry of Community Development, Youth and Sports (2005), we only included older adults aged 65 years or above. Moreover, the study excluded those with serious psychiatric illnesses, such as severe dementia, which may affect a participant's self-report and preclude accurate screening for depression. The participants were recruited from three senior activity centers located in different parts of Singapore to increase the representativeness of the samples. These centers are non-profit, voluntary welfare institutes that regularly provide recreational and social activities for senior citizens living nearby. The following senior activity centers were chosen based on geographical locations: (i) Caregiving Welfare Association located in southwestern Singapore (49 participants), (ii) Cheng San Community Club located in northern Singapore (67 participants), and (iii) TOUCH Senior Activity Center located in eastern Singapore (46 participants). A researcher identified and approached the possible participants through the help of the nursing staff from the centers.

The literacy and visual problems of the elderly were considered. The study adopted the face-to-face interview survey method and used a structured questionnaire. Participation was voluntary. Each participant was asked to sign a consent form. Ethical approval was obtained from the University's Institute Review Board (IRB2013-05-008). A total of 162 older adults from three senior activity centers were included in the survey. Each interview survey lasted from 15 to 30 min, and the participants were paid for completing the study.

Measurement Instruments

The instrument contains several parts, which measure the different variables in the study. Although the original instrument was in English, we also provided an alternative Chinese version, considering that many of the Singaporean elderly are of Chinese descent. The first part of the instrument was used to collect demographic data, including age, gender, education, and living arrangements. Three additional questions were measured by Likert scales on their perceived income adequacy (1 = extremely inadequate, 2 = inadequate, 3 = adequate, 4 = extremely adequate and can save money) and self-report life quality (1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent).

Depression status among the older adults was measured by the geriatric depression scale (GDS), which was first introduced by Yesavage et al. (1983). GDS is specifically developed

for use in geriatric patients, and contains fewer somatic items (Sharp and Lipsky 2002). Versions in different languages have been tested and used widely (Garrad et al. 1998; Whooley et al. 2000). The original 30-item GDS questionnaire is time consuming and challenging for older adults. Thus, a short form of GDS with 15 items (GDS-15) was used in the study. The validity and reliability of GDS-15 have been supported through both clinical practice and research. GDS-15 is highly correlated with the original scale in differentiating depressed from non-depressed adults (Sheikh and Yesavage 1986). Possible scores in GDS-15 range from 0 to 15. A score of 5 or more indicates a tendency toward depression. The Chinese-version of GDS-15 was adopted from the work of Cheng and Chan (2004). The internal consistency of the GDS-15 is 0.80 in the current study.

The psychological resilience of participants was measured by the resilience appraisal scale ((RAS; Johnson et al. 2010). It contains 12 questions through which participants indicate the degree of applicability of each statement to them using a five-point Likert scale ("strongly disagree" to "strongly agree"). The RAS consists of three parts of coping skills, namely, social support, emotion coping, and situation coping, which evaluate the perceived abilities in social support seeking (SSS), emotional regulation (ER), and problem solving (PS; Johnson et al. 2010). The total RAS score ranges from 12 to 60, with a higher score indicating higher perceived psychological resilience. Given that no prior study on the development and examination of the Chinese version of RAS was found, three Chinese doctoral students of information and communication were asked to translate the original versions of the English scales into Chinese. Back translations of the instruments were conducted to ensure the accuracy of each item and to decrease discrepancies between the English and Chinese versions. In current study, high Cronbach's Alpha was obtained in total RAS (0.88), as well as in the three subscales of SSS (0.80), ER (0.85), and PS (0.86).

Social support of the participants was assessed by the Duke Social Support Index (DSSI), which was developed for the NIMH epidemiologic catchment area program (Landerman et al. 1989). The original DSSI is a 35-item instrument designed to assess subjective social support among the elderly populations. A 10-item DSSI (DSSI-10) was applied to measure two important constructs related to social support, namely, social satisfaction and social interaction. The same consideration was given to the physical and emotional exhaustion of older participants. The possible DSSI-10 score ranges from 10 to 30. Higher scores indicate a higher level of perceived social support among participants. The validity of DSSI-10 was tested using a large, weighted sample from the 2010 Arizona Health Survey data (n = 8215), which proved the acceptability of the scale in measuring social support among the general population (Wardian et al. 2012). The reliability and validity of the Chinese version of DSSI-10 have been established previously as well (Zhang et al. 2012). The total internal consistency of DSSI is 0.77 in the study.

The University of California Los Angeles (UCLA) Loneliness Scale (Russell 1996) was applied to assess the degree of the loneliness in the present study. The scale is commonly used for measuring loneliness of respondents, including older adults. It offers a more complete measurement of loneliness because it measures both emotional and social loneliness (Adams et al. 2004). Given that the initial 20-item scale is too long and too complex, Hays and DiMatteo (1987) developed a short form of the scale. The short UCLA Loneliness Scale (ULS-8) consists of eight items that were selected according to an exploratory factor analysis result. The scale has high internal consistency and high correlation with the original scale and other related measures (Hays and DiMatteo 1987). The ULS-8 was revised to suit the elderly participants. The scale employs a four-point Likert scale with values ranging from "never" to

"always." The total score of ULS-8 ranges from 8 to 32. No cut-off score was identified to define loneliness; however, a higher score on this scale indicates more intense feelings of loneliness. The Chinese version of the ULS-8 was developed for use in the present study based on previous work (Chou et al. 2005; Zhou et al. 2012). The ULS-8 scale has a high internal consistency of 0.82 in this study.

Data Analysis

IBM SPSS Statistics version 21 was used to analyze the collected data. A descriptive analysis of variables was conducted to illustrate the means, median, and standard deviation of the continuous variables, and the frequencies and percentages of the categorical variables. Correlational statistics were employed to investigate the relationship between each study variable. Subsequently, hierarchical regression analysis (Cohen et al. 2003) was performed to ascertain the predictors of depression among the participants. Three blocks were included in the regression analysis to determine the relative impact of each psychosocial factor on the final dependent variable. Demographic variables were entered in the first block, followed by the perceived income and life quality in the second block. The last block involved the three main psychosocial predictors, namely, RAS, DSSI-10, and ULS-8. The significant level used in the study was 0.05, with a one-sided p value. An additional hierarchical regression was further run with RAS separating into three subscales, to evaluate the individual impacts of SSS, ER, and PS.

Results

The mean age of participants is 72.19 (SD = 6.23). Most of them are female (75.9 %), with low education (74.1 % received primary school or no formal education), and are living with their spouses and/or children (78.4 %). Except for the gender distribution, the ratios of education level and living arrangement approximate those released by a government report on elderly status in 2009 (2009), which indicates the high representativeness of the sample in the study. Table 1 illustrates the descriptive statistics of demographic and psychosocial variables of the participants. The participants have a mean GDS-15 score of 3.66 (SD = 3.28), which indicates a minor degree of depression. Using the cut-off score of ≥5, the prevalence rate of geriatric depression in the study is estimated to be 34.6 %. Participants generally have high psychological resilience and perceived social support, with a mean score of 46.49 (SD = 6.30) in RAS, and a mean score of 22.63 (SD = 4.03) in DSSI-10. A general low level of loneliness is evidenced by a mean ULS-8 score of 14.43 (SD = 4.97).

Bivariate correlations were employed to examine the association between all the study variables before testing the effect of each psychosocial factor on geriatric depression. The results of correlations are shown in Table 2. Four demographic variables, namely, age, gender, education, and living arrangement have no significant relationship with the psychosocial variables. However, both perceived income adequacy and life quality are significantly associated with psychological resilience, social support, loneliness, and depression. The three main psychosocial factors (psychological resilience, social support, and loneliness) are significantly correlated with each other ($p < 0.01$).

A hierarchical regression model was run to examine the degree to which these risk factors are truly associated with depression. Table 3 summarizes the results of this hierarchical

Table 1 Descriptive statistics of demographic and psychosocial variables of senior participants

Characteristic	Mean (*SD*)
Demographic characteristics	
Age	72.19 (6.23)
Gender, n(%)	
Male	38 (23.5)
Female	123 (75.9)
Education level, n(%)	
Primary school or below	120 (74.1)
Secondly school or above	41 (25.3)
Living arrangement, n(%)	
Alone	34 (21.0)
Living with others	127 (78.4)
Perceived income adequacy	1.75 (0.51)
Perceived life quality	3.08 (0.81)
Psychosocial characteristics	
Depression (GDS-15)	3.66 (3.28)
Psychological resilience (RAS)	46.49 (6.30)
Perceived social support (DSSI-10)	22.63 (4.03)
Loneliness (ULS-8)	14.43 (4.97)

DSSI-10 10-item Duke Social Support Index; *GDS-15* 15-item Geriatric Depression Scale; *RAS* Resilience Appraisal Scale; *ULS-8* 8-item University of California Los Angeles (UCLA) Loneliness Scale; *SD* Standard Deviation

regression analysis. The demographic variables in Block 1 present a total of 1.4 % ($p = 0.718$) of the variance of the final dependent variable. Perceived income adequacy and life quality account for an additional 11.2 % ($p < 0.001$) of the variance in the second block. None of the variables in Block 1 and 2 has statistically significant associations with depression in later life

Table 2 Bivariate correlation matrix of the study variables

	1	2	3	4	5	6	7	8	9	10
1. Age	–									
2. Gender	0.05	–								
3. Education	−0.14	0.22**	–							
4. Living arrangement	−0.11	0.15	0.12	–						
5. Perceived income adequacy	0.01	−0.01	0.07	0.04	–					
6. Perceived life quality	−0.01	−0.02	−0.09	0.07	0.41**	–				
7. RAS	−0.05	−0.08	−0.03	0.09	0.23**	0.34**	–			
8. DSSI-10	−0.08	−0.13	−0.02	0.08	0.17*	0.17*	0.56**	–		
9. ULS-8	0.01	0.10	−0.03	−0.03	−0.28**	−0.26**	−0.59**	−0.50**	–	
10. GDS-15	0.04	0.01	−0.10	−0.11	−0.32**	−0.25**	−0.51**	−0.48**	0.61**	–

DSSI-10 10-item Duke Social Support Index; *GDS-15* 15-item Geriatric Depression Scale; *RAS* Resilience Appraisal Scale; *ULS-8* 8-item University of California Los Angeles (UCLA) Loneliness Scale. Statistical significance indicated by *$p < 0.05$; **$p < 0.01$

Table 3 Regression analysis predicting geriatric depression ($N = 162$)

	β	ΔR^2 (%)	R^2 (%)
Block 1			
Age	−0.01		
Gender	−0.05		
Education	−0.02		
Living arrangement	−0.05	1.4	1.4
Block 2			
Perceived income adequate	−0.13		
Perceived life quality	−0.03	11.2***	12.5
Block 3			
RAS	−0.13		
DSSI-10	−0.18*		
ULS-8	0.41***	32.9***	45.4

DSSI-10 10-item Duke Social Support Index; *RAS* Resilience Appraisal Scale; *ULS-8* 8-item University of California Los Angeles (UCLA) Loneliness Scale. Standardized β from the last step of the regression equation (with all the predictors in the model). Statistical significance indicated by *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

despite the result that shows perceived income adequacy as the biggest coefficient among these variables ($\beta = -0.13$, $p = 0.067$). Among the three main psychosocial factors, loneliness has the strongest association with geriatric depression in the model ($\beta = 0.41$, $p < 0.001$), demonstrating that the older adults who feel a higher degree of loneliness tend to become more depressed. A strong negative association between perceived social support and geriatric depression is revealed ($\beta = -0.18$, $p < 0.05$). The elder participants who reported higher perceived social support feel less depression than those who reported lower perceived social support. Nevertheless, no statistically significant association is found between psychological resilience and geriatric depression in the study ($\beta = -0.13$, $p = 0.128$). The three main psychosocial factors account for an additional 32.9 % ($p < 0.001$) of the variance of geriatric depression. The entire regression model shows a total of 45.4 % of the variance of depression.

An additional hierarchical regression model was run to evaluate the individual impacts of the three types of resilience, i.e., social support seeking (SSS), emotional regulation (ER), and problem solving (PS). In this regression model, the composite measure of RAS was replaced with its three components as separate independent variables. From Table 4, it is interesting to find that emotional regulation has significant negative association with depression in older adults ($\beta = -0.18$, $p < 0.05$), while other two components of resilience did not have. This additional regression model accounts for a slightly higher total variance (47.4 %) of depression than the original model described above.

Discussion

This research is one of the few epidemiological studies that determined and examined the psychosocial factors of depression of community-dwelling seniors in Singapore. Previous studies have reported high prevalence of geriatric depression in some countries or regions in East Asia: 27.5 to 37.7 % in Taiwan (e.g. Chong et al. 2001; Tsai et al. 2005), 36 % in Hong Kong (see Woo et al. 1994), 16.6 to 33 % in Korea (e.g. Kim et al. 2002; Lee and Hong 2002),

Table 4 Additional regression analysis with three separated subscales of RAS ($N = 162$)

	β	ΔR^2 (%)	R^2 (%)
Block 1			
Age	−0.01		
Gender	−0.06		
Education	−0.03		
Living arrangement	−0.05	1.4	1.4
Block 2			
Perceived income adequate	−0.15*		
Perceived life quality	−0.05	11.2***	12.5
Block 3			
SSS	0.09		
ER	−0.18*		
PS	−0.02		
DSSI-10	−0.23**		
ULS-8	0.42***	34.9***	47.4

DSSI-10 10-item Duke Social Support Index; *ER* Emotional Regulation; *PS* Problem Solving; *RAS* Resilience Appraisal Scale; *SSS* Social Support Seeking; *ULS-8* 8-item University of California Los Angeles (UCLA) Loneliness Scale. Standardized β from the last step of the regression equation (with all the predictors in the model). Statistical significance indicated by *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

and 30.3 to 33.5 % in Japan (e.g. Wada et al. 2005, 2004). Given that these countries generally share a similar cultural and socioeconomic background with Singapore, the results of the current study suggest how high depression may develop among older adults across countries and regions.

All the demographic variables were found to be insignificant factors of geriatric depression in the regression model, suggesting that older adults suffer from depression even when they are highly educated, have better income, or are enjoying a high quality of life. A similar phenomenon has been reported in other regions like the US, Netherlands, Japan, and Hong Kong (Cheng et al. 2009; Chou and Chi 2000; Dean et al. 1992). The results highlight the shift of focus from the demographic factors to the more "internal" factors of geriatric depression, that is, psychosocial factors. Moreover, living arrangement was not significantly associated with resilience, social support, and depression in late life. Although family was often emphasized as a key source of emotional support for older adults under the rubric of the Asian family ideology (Teo et al. 2006), findings from the study suggest possible changes in the nature and characteristics of older adults' dependency on the family. Thang (2015) has explained this trend in a recent report by indicating that the Singaporean older adults who live alone may be compensated with the closer relationships with non-family social network that includes neighbors and friends, who can play essential supporting roles similar to those of their own family members. This trend may be particularly obvious in a community-based environment, where older adults often engage in frequent social interaction and obtain support from non-family networks.

Considering that the high percentage of variance in depression (32.9 %) can be explained by three psychosocial factors, the present findings suggest that these psychosocial factors may become a salient influence on the experience of depressive symptomatology among the older adults in this current context. According to preliminary analyses, loneliness was strongly

related to depressive symptoms that emerge among older Singaporean adults. This positive correlation between loneliness and depression in late life is in accordance with the findings obtained in another study in Singapore (Lim and Kua 2011), as well as other parts of Asia (Azam et al. 2013; Kim et al. 2009; Singh and Misra 2009). Moreover, the possible casual links between loneliness and geriatric depression was examined in a cross-sectional and longitudinal study conducted by Cacioppo et al. (2006). Although the co-occurrence of loneliness and depressive symptoms has long been noted in previous literature, the high coefficient ($\beta = 0.41$, $p < 0.001$) found in the current study implies that loneliness could be the most important risk factor of depression in late life. Thus, the study has a practical implication, that is, loneliness should be targeted in the treatment of depression among community-dwelling older adults.

Recent studies explored the effects of social activities (Hong et al. 2009) and social networks (Chan et al. 2010) on depression among older adults in Singapore and found that both social activities and social networks are significant indicators of social support. By investigating the direct effect of social support on depression among senior Singaporeans, the present study has extended the findings of previous studies. The strong negative association between perceived social support and geriatric depression found in the study is consistent with those found in the context of other Asian (Chi and Chou 2001; Ibrahim et al. 2013; Su et al. 2012) and western societies (Barg et al. 2006; George et al. 1989; Hay et al. 2001). However, the specific types of social support that matter may be different despite the established idea that social support is a key influencing factor in both Asian and western societies. Studies in the west found that the support from friends is a strong factor (Dean et al. 1990), whereas studies in Asian culture argued that support from family is the main psychological factor that promotes the mental well-being of older adults (Chi and Chou 2001). Therefore, specifying the different kinds of social support is important in establishing the link between social support and geriatric depression in different cultural contexts. Furthermore, the relationship between social support and geriatric depression may vary because of the changes in the nature and characteristics of older adults' dependency on social network in Asia (Thang 2015). Therefore, as suggested by Han et al. (2007), heterogeneity within the effects of different social support on depression among Asian aging population needs to be considered.

Unlike loneliness and social support, psychological resilience was not established as significantly associated with late-life depression in the original regression model. This result is not consistent with the findings of other studies (Bisschop et al. 2004; Denney 1995; Schure et al. 2013). Nevertheless, the bivariate correlation between resilience and depression was significant ($r = -0.51$, $p < 0.01$) in Table 2. The significant association resilience and depression disappeared when they were integrated into the regression model together with the other demographic and psychosocial factors. Areán and Reynolds (2005) suggested that the common psychosocial factors for late-life depression, such as resilience and social support, are often intertwined. Resilience was highly correlated with social support ($r = 0.56$, $p < 0.01$) and loneliness ($r = -0.59$, $p < 0.01$). Thus, the impact of resilience on geriatric depression can be affected by the presence of these two psychosocial factors.

On the other hand, results from the additional regression model has supported that one particular component of resilience, emotional regulation, was significantly associated with geriatric depression. Different socioeconomic contexts would result in variances in the types of resilience (Janevic and Connell 2001; Rokach et al. 2004). Considering cultural diversities as important factors with respect to resilience and its relationship with depression is essential. Previous studies have highlighted that older adults in Chinese culture are more likely to apply

emotional resilience to cope with stressful events, due to the influence of Confucian philosophy (Inoguchi and Doh 2009). Given that Singapore has a dominant percentage of Chinese population, the results implied that the variance in depression could possibly be accounted solely by emotional resilience. However, large-scale studies are needed to verify the findings of the current study and to investigate the impact of the different resilience components on geriatric depression in different cultures.

The study has several limitations. The number of participants and involved senior activities centers was small, which was brought about by the limitations in time and human resource during the conduct of the one-on-one interview survey. Although the gender distribution in the sample became another bias, the other demographic characteristics of the sample were highly similar to those documented in a recent Singaporean government report (2009). Moreover, the differences among the student assistants involved in the interview survey, in terms of personalities and languages used, could have served as a confounding factor that influenced the responses of the senior participants. Finally, the cross-sectional survey used in the study failed to examine the causal effects of the psychosocial factors on geriatric depression. Thus, other study designs (i.e., longitudinal study) will be helpful in clarifying the predictive effects of these risk factors on late life depression.

Conclusion

The present study investigated the association between depression and psychosocial factors through a cross-sectional survey conducted among 162 community-dwelling older adults in Singapore. A total of 32.9 % of the variance of geriatric depression was explained by resilience, social support, and loneliness. No demographic variables were determined as significant risk factors. Loneliness was confirmed as the key significant factor, followed by perceived social support. However, the impact of psychological resilience on geriatric depression was not supported. The study has contributed empirical knowledge to gerontology literature by determining the degree to which these psychosocial factors associate with geriatric depression in the context of Singapore. Future work that uses a larger sample size is needed to confirm the findings of the present study and to examine the predictive effects of these psychosocial factors on depression among older adults.

Acknowledgments This research is supported by a) Tsao Family Fund under Wee Kim Wee School of Communication and Information, Nanyang Technological University; as well as b) Singapore National Research Foundation under its International Research Centre @ Singapore Funding Initiative and administered by the IDM Programme Office.

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