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Archives of Gerontology and Geriatrics 44 (2007) 203–213
ARCHIVES OF GERONTOLOGY AND GERIATRICS
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Social support and family functioning on psychological symptoms in elderly Chinese

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Received 22 November 2005; received in revised form 5 May 2006; accepted 9 May 2006
Available online 18 July 2006

Abstract

The purpose of this study was to extend our knowledge about how social support and family functioning affect mental health, and to examine the buffering effects of support in the presence of health stressors. A random cluster sample of 507 elderly community people were surveyed with a structured questionnaire, which included the depression and anxiety subscale of the Chinese version of Symptom Checklist 90-R (SCL-90-R), Social Support Rating Scale (SSRS), Family Emotional Involvement and Criticism Scale (FEICS), Short Portable Mental Status Questionnaire (SPMSQ), and the Katz Activities of Daily Living Scale (KADL). Results revealed that women had more anxiety symptoms than men (mean = 3.49; 95% CI: 3.02–3.95 versus mean = 2.56; 95% CI: 2.27–2.85). Emotional support was more important than instrumental support for psychological symptoms. Family emotional involvement was inversely correlated to depression ($r = -0.19$) and anxiety ($r = -0.22$), while criticism was positively correlated to depression ($r = 0.29$) and anxiety ($r = 0.31$). Multivariate analysis revealed that women, impaired cognitive function, urban residents with chronic diseases, less emotional support, and more criticism from the family were associated with more depressive and anxiety symptoms. Family involvement had buffering effects on psychological symptoms for people with cognitive impairment and medical diseases. Our results imply that elderly people with mental symptoms and chronic medical diseases benefit more from family involvement.

Keywords: Depression; Elderly; Social support; Family function

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0167-4943/$ – see front matter
doi:10.1016/j.archger.2006.05.001

1. Introduction

1.1. Social support and depression

The relationship between social support and health has been recognized for many years. However, how social support affects mental health remains controversial. It was postulated that the direct or buffering effects of social support are depended on the type of stress and support (Cohen and Wills, 1985; Bisschop et al., 2004a,b). In the absence of stressful events, a broad social network may promote health. In the presence of significant stress, functional support may be important to ameliorate stresses (Penninx et al., 1997). A negative relationship between social support and depression was observed in cross-sectional (Zunzunegui et al., 2001; Harris et al., 2003) and prospective studies (Brummett et al., 2000; Schroevers et al., 2003) in Western countries, as well as in Chinese societies (Chi and Chou, 2001; Cornman et al., 2003; Yan and Sellick, 2004). However, measures of social support received were shown to correlate both positively (Hayes et al., 1998; Brummett et al., 2000) and negatively with levels of depression (Krause and Markides, 1990).

The relationship between support and depression varies, depending on the type of support involved. Some researchers found that instrumental support is more important than either informational or emotional support in predicting depression in older persons (Chi and Chou, 2001; Bisschop et al., 2004a,b).

1.2. Family support and depression

Family is an important source of support in aged people and should be a major social support variable in studies. However, very few studies compared the effects of support given by family members and other relatives. In one study, both family emotional involvement and criticism were positively related to symptoms of depression and had more powerful influences on health behavior than general social support. It was suggested a better understanding of family functioning and health can offer deeper explanations of the effects of social relationships on health (Franks et al., 1992).

1.3. Social support and anxiety

The relations between anxiety and social support receive less attention than depression in the literature. Like depression, anxiety was also negatively related to perceived social support in a group of Italian primary care providers (Grassi et al., 2000), and to emotional support in patients awaiting coronary artery bypass grafting (Koivula et al., 2002). However, social support did not directly relate to anxiety among patients suspected of breast cancer awaiting diagnosis (Drageset and Lindstrom, 2003). Since anxiety is a common mental disorder, how it is affected by social support is worthy of further notice.

1.4. Physical stresses and depression

The psychological impact of chronic physical diseases is well-known. People with chronic diseases, such as stroke, diabetes mellitus, myocardial infarction, and cancers, had

a higher prevalence of depression than people without chronic diseases (Palinkas et al., 1990; Bisschop et al., 2004a,b). Depression symptoms are also associated with number of chronic medical conditions (Back et al., 1998).

1.5. Study objectives

Previous studies rarely examined a broader source of support and different kinds of psychological consequences at the same time. The purpose of this study was to expand our knowledge about social support and mental health among the Chinese elderly, to examine the buffering effects of social support in the presence of chronic diseases and cognitive impairment, and to compare the effects of emotional and instrumental support on depression and anxiety symptoms.

2. Materials and methods

2.1. Study sample

The study population included people aged 65 years and above who resided in either an industrial city or a rural community in northern Taiwan. Six geographic areas (clusters) (three in the city and three in the rural community) were randomly selected. Eight hundred and sixty-five aged people living in the above six areas were identified from the population register and were eligible for this study. Those who were in very poor health condition, had difficulty conversing, admitted in nursing homes, or refused to respond were not included.

2.2. Instruments

Depression and anxiety symptoms were measured by the depression and anxiety subscale of the Chinese version of SCL-90-R (Derogatis et al., 1973). All of the depression and anxiety items were added separately to obtain a separate depression symptom score and an anxiety symptom score for further analysis.

Social support was measured by the SSRS, which assessed the perceived instrumental and emotional support (Lue et al., 1995). The SSRS was developed in Chinese and the theoretical construct of this scale was based on the concept of social support proposed by Cohen and Syme in 1985. The SSRS was a 20-item questionnaire rated by a 4-point Likert-type scale. Each subscale had 10 items and the possible score of each subscale ranged from 10 to 40. In the original study, the internal consistency (Cronbach's α) of the whole scale was 0.90 (Lue et al., 1995). Factor analysis revealed two factors that explained 43.5% of the total variance and corresponded to the two constructs of the SSRS (Lue et al., 1995). Internal consistency of the instrument subscale, the emotional subscale, and the total SSRS in the present study were 0.83, 0.89, and 0.94, respectively.

Family functioning was measured by a Chinese modification of the FEICS (Shields et al., 1992). It had 14 items, which measured the subscale intensity of emotional involvement (7 items) and perceived criticism (7 items) in a family. Psychometric analysis of the original scale revealed a Cronbach's α of 0.82 for the criticism subscale and 0.74 for

the family involvement subscale. Factor analysis of the Chinese scale revealed three factors, which explained 51.9% of the total variance (Lue et al., 1995). The Cronbach's α of the Chinese scale in the present study was 0.93.

Cognitive function was measured by the Chinese version of the SPMSQ (Pfeiffer, 1975). The psychometric properties of the Chinese version were reported in a previous study (Chiou et al., 1991). Physical function was assessed by a modified KADL (Alexander et al., 2000).

Information about the physical condition was collected through a medical interview with a health survey questionnaire, physical examination carried out by a physician, and laboratory tests. Questions asked in the health survey questionnaire included basic demographic data, medical history, and medications.

2.3. Statistical analysis

The distributions of dependent and independent variables were examined in the form of frequencies and means. For bivariate analyses, correlation analysis was used to examine the association between all continuous variables. Social support, family function, ADL, depression, and anxiety symptoms among different levels of mental functioning and elderly with different numbers of chronic disease were analyzed using ANOVA. For multivariate analyses, the General Linear Model (GLM) was used to examine the relationship between psychological symptoms and independent variables.

Furthermore, the direct effects of social and family functions on psychological symptoms were examined by the magnitude of the main effect of these variables on the model. Chronic medical diseases or cognitive impairment were treated as stressors in this study. In order to examine the stress-modifying effects of social support and family function on psychological symptoms, interaction terms were introduced into the multiple regression models in the presence of stressors. Significance of interactions was estimated by the magnitude of the multiplicative interaction between social support, family function, and the presence of stressors. All of the independent variables were placed into the model and interaction was added in a stepwise manner. Since there were two stressors and four support variables, we had 2×4 possible interaction terms. In the stepwise multiple regression, only statistically significant interactions were retained in the model.

3. Results

3.1. Descriptive data

A total of 507 elderly subjects who fulfilled the inclusion criteria of our study completed the health examination and questionnaire interview, and were included in the final analysis. Of these, 395 lived in the city and 112 lived in the rural community. Most of the subjects were male (63.3%), with one or more chronic medical condition (66.5%), and had no cognitive impairment (89.2%). Twenty-eight percent of the subjects were cigarette smokers and 23.7% were alcohol drinkers. The subjects generally had good daily activity function (mean score = 20.59 ± 2.20), few symptoms of depression or anxiety (mean scores = 4.59 ± 4.14 and 3.06 ± 2.85, respectively), high instrumental support

Table 1
Descriptive statistics of study variables

Category	*N* (%)	Mean ± S.D.	Range
Age (years)		72.26 (4.70)	65–92
64–69	173 (34.1)		
70–74	190 (37.5)		
75–79	107 (21.1)		
≥80	37 (7.3)		
Gender			
Male	321 (63.3)		
Female	186 (36.7)		
Location			
Rural	112 (22.1)		
Urban	395 (77.9)		
Chronic diseases		1.15 (1.17)	0–7
0	170 (33.5)		
1	191 (37.7)		
≥2	146 (28.8)		
Cognitive function (SPMSQ)		9.15 (1.42)	1–10
None	452 (89.2)		
Mild	37 (7.3)		
Moderate to severe	18 (3.6)		
Health-related behaviors			
Smoking	142 (28.0)		
Drinking	120 (23.7)		
ADL		20.59 ± 2.20	7–21
Depression		4.59 ± 4.14	0–23
Anxiety		3.06 ± 2.85	0–16
Instrumental support		31.50 ± 5.59	11–40
Emotional support		32.29 ± 5.90	15–40
Family intimacy		32.06 ± 6.32	9–45
Criticism		7.25 ± 2.93	5–22

(mean score = 31.50 ± 5.59), high emotional support (mean score = 32.29 ± 5.90), strong family involvement (mean score = 32.06 ± 6.32), and low criticism (mean score = 7.25 ± 2.93) (Table 1). The female to male ratio was 0.51 for the city sample and 0.89 for the rural community sample.

3.2. Gender differences

Gender differences were observed in the bivariate analysis. Older women had more anxiety symptoms (mean = 3.49; 95% CI: 3.02–3.95) than older men (mean = 2.56; 95% CI: 2.27–2.85) but there were no difference in depressive symptoms. Older women also had poorer cognitive function (mean = 8.81; 95% CI: 8.58–9.04) than older men (mean = 9.25; 95% CI: 9.09–9.43) and the difference was borderline significant. However, there were no gender-related differences in ADL, social support, or family functioning.

3.3. Bivariate analyses

Table 2 shows the correlation matrix of all continuous variables, including depression. Depression and anxiety symptoms were highly correlated with each other ($r = 0.71$). Instrumental and emotional support were highly correlated ($r = 0.88$) and inversely correlated with depression ($r = -0.27$ and -0.29, respectively) and anxiety symptoms ($r = -0.26$ and -0.33, respectively). Both were positively correlated with cognitive function ($r = 0.20$ and 0.21, respectively).

Family involvement had a weak inverse correlation with depression and anxiety symptoms ($r = -0.19$ and -0.22, respectively), a weak positive correlation with cognitive function ($r = 0.16$), but a strong positive correlation with instrumental and emotional support ($r = 0.51$ and 0.59, respectively). Criticism was positively correlated with depression and anxiety symptoms ($r = 0.29$ and 0.31, respectively) but inversely correlated with instrumental support, emotional support, and family involvement ($r = -0.36$, -0.32, and -0.20, respectively).

Although elderly subjects with cognitive impairment had more symptoms of depression (mean = 6.16; 95% CI: 4.37–7.96 versus mean = 4.42; 95% CI: 3.83–4.64) and anxiety (mean = 3.56; 95% CI: 2.59–4.53 versus mean = 2.81; 95% CI: 2.56–3.07) than subjects without cognitive impairment, these differences were not statistically significant. Elderly subjects with cognitive impairment received less instrumental (mean = 29.06; 95% CI: 27.38–30.74 versus mean = 31.79; 95% CI: 31.26–32.31) and emotional support (mean = 29.80; 95% CI: 27.96–31.64 versus mean = 32.59; 95% CI: 32.03–33.14) than subjects with normal cognitive function. Elderly people with chronic medical diseases had more symptoms of depression (mean = 5.05; 95% CI: 4.56–5.55 versus mean = 3.66; 95% CI: 3.05–4.26) and anxiety (mean = 3.32; 95% CI: 2.98–3.65 versus mean = 2.55; 95% CI: 2.19–2.92) than subjects without chronic medical diseases. Instrumental support, emotional support, and family function did not differ between subjects with and those without chronic medical disease.

Table 2
Correlation between depression and anxiety symptoms and other variables

Variables		1	2	3	4	5	6	7	8
1	Age	–							
2	Depression	0.03	–						
3	Anxiety	−0.02	0.71**	–					
4	ADL	−0.08	0.03	0.04	–				
5	Cognitive	−0.21**	−0.05	−0.11*	0.09	–			
6	Instrument	−0.06	−0.27**	−0.26**	−0.02	0.20**	–		
7	Emotion	−0.05	−0.29**	−0.33**	−0.03	0.21**	0.88**	–	
8	Intimacy	0.04	−0.19**	−0.22**	0.02	0.13**	0.51**	0.59**	–
9	Criticism	0.01	0.29**	0.31**	−0.08	0.01	−0.36**	−0.32**	−0.20**

Instrument: instrumental support; emotion: emotional support; cognitive: cognitive function.
* $p < 0.05$.
** $p < 0.01$.

3.4. Multivariate analyses

Table 3 shows the results of the multivariate analysis of the data with the GLM. We used depression as the dependent variable in model 1. Female subjects and those with chronic medical disease or cognitive impairment were at higher risk for depression. Emotional support had direct protective effects on depression, whereas criticism from family members had direct detrimental effects. Additional emotional support modified the stress of cognitive impairment on depression. Family involvement also buffered the effects of chronic disease on depression.

In model 2, anxiety was used as the dependent variable. Similar to model 1, gender, cognitive function, and chronic medical diseases were related to anxiety symptoms. Location of the subjects' residence, which was not related to depression in model 1, was associated with anxiety in the second model. Elderly subjects who lived in an urban area had more anxiety symptoms than did those living in a rural community. Emotional support and criticism were correlated to anxiety, as with depression, but to a lesser magnitude. Social support has no stress-modifying effect on anxiety. However, family involvement had a weak stress-modifying effect on the two stressors.

Table 3
Regression models for depression and anxiety symptoms in community elderly people

Dependent variable	Model 1: depression		Model 2: anxiety	
	B	S.E.	*B*	S.E.
Intercept	11.984	4.581**	9.086	2.843**
Age	0.003	0.044	−0.021	0.026
Gender (female = 0)	−1.761	0.435***	−1.141	0.256***
Location (urban = 0)	−1.156	0.621	−0.853	0.353*
ADL	0.043	0.101	0.045	0.069
Cognitive (normal = 0)				
Impaired	8.602	3.227**	4.387	2.068*
Diseases (no = 0)				
Yes	5.406	2.231*	3.067	1.398*
Instrument	−0.003	0.083	0.052	0.051
Emotion	−0.227	0.084**	−0.196	0.052***
Intimacy	−0.039	0.046	−0.032	0.030
Criticism	0.273	0.082**	0.172	0.049***
Cognitive × emotion	−0.247	0.101*		
Cognitive × intimacy			−0.144	0.066*
Diseases × intimacy	−0.135	0.067*	−0.086	0.042*
Model statistics				
Overall model *F*; d.f.	9.296; 12		9.919; 12	
p-Value	<0.001		<0.001	
Adjusted R^2	0.229		0.220	

B: parameter estimate; S.E.: standard error of estimate; instrument: instrumental support; emotion: emotional support; cognitive: cognitive function; diseases: chronic diseases.

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

4. Discussion

Depression is generally believed to be more common in aged people than in younger individuals. However, there are considerable inconsistencies among studies concerning the effect of age on depression (Barefoot et al., 2001). In our study, we did not find any change in the depressive and anxiety symptoms with age in people 65 years or older in either the bivariate or the multivariate analyses. According to medical literature and our data, circumstances that occur with age, rather than age itself, may be a modifier of emotional symptoms.

Many previous investigators have reported an increased risk of depression and anxiety in women. Our sample also revealed a significant increase in depressive symptoms among elderly women. Genetic and environmental factors were proposed as possible causes of this gender difference (Schoevers et al., 2000). In our sample, there was no significant difference in the number of medical diseases, ADL, social support, or family functioning between men and women. Environmental vulnerability could not explain the increased risk of depression and anxiety in elderly women in our sample.

Our results support the finding that emotional support is more important than instrumental support as a protective factor of psychological symptoms. Both instrumental and emotional supports were associated with psychological symptoms, but the magnitude was greater in the association with emotional support. This result contradicted those of previous studies, which showed that instrumental support was a better predictor of psychological symptoms than emotional support (Chi and Chou, 2001). In a cross-sectional study, the relationship between instrumental support and psychological symptoms could have been confounded by the presence of stressors, such as medical diseases. Sick people might have received more instrumental support than healthy subjects. Also, people with medical diseases might have had a higher risk of psychological symptoms. Although people with medical diseases had more symptoms of depression and anxiety in our study, there was no correlation between medical diseases and instrumental and emotional support.

Cognitive impairment was related to instrumental and emotional support but not to depressive and anxiety symptoms. Therefore, the relationship between social support and psychological symptoms did not seem to be confounded by the presence of cognitive impairment.

High mean scores on instrumental support, emotional support, and family intimacy indicated the possibility of a ceiling effect on these variables and might have caused higher correlations among these variables than they should be. We should expanse the range of response or change to the other response scales in the future studies.

In the multivariate analysis, the lack of a protective effect of instrumental support on psychological symptoms might have been due to the multicolinearity problem. When two variables are highly correlated with each other (e.g. $r > 0.7$), such as the correlation between instrumental and emotional support in this study, entering both variables into the equation will diminish the likelihood that either variable attains significance. In this study, although instrumental and emotion support were correlated to depression and anxiety in bivariate analysis, only one of them could be retained in the multivariate regression model.

Family is an important source of support for elderly people, especially for the Chinese, who emphasize the family system and collectivism in their culture. Our study revealed an

inverse relationship between psychological symptoms and family involvement. Elderly people who perceived more family involvement reported less psychological distress. This result was contrary to Frank's observations in which more family involvement was related to higher psychological distress. Over-involvement might be justified in the collectivism ideation present in Chinese culture. In our study, criticism among family members had a stronger influence on symptoms of depression and anxiety than did social support.

Family quality was likewise found to be a significant predictor of positive and negative effects among elderly Chinese women in Hong Kong (Siu and Phillips, 2002). These results correspond to our culture, in which family is the priority of the elderly. Keeping the family in harmony is the most important goal for the Chinese, especially for people of older generations. There is a Chinese saying, ''Everything flourishes in a harmonious family.'' This sentiment might explain why the effect of criticism was more obvious than all other factors.

Our study also revealed a strong direct effect between social and family support, and psychological symptoms. We found a moderate buffering effect between family involvement and psychological symptoms in the subjects' ability to cope with cognitive impairment and chronic medical diseases. Our findings were consistent with Cohen's notion that both types of social support can occur simultaneously, depending on the kind of support received and the stressfulness of the situation (Cohen and Wills, 1985). Because our study excluded people with poor health, the buffering effect might be less obvious in this low-stress population.

Differences in health status between urban residents and rural residents have been reported for a long time. However, whether urban residents are healthier than rural residents is controversial. In our study, the location of the subjects' residence became a significant factor in model 2. Elderly people who lived in rural community had significantly less anxiety as compared with elderly people living in an urban community. Generally, an urban living environment has more sources of stress than does a rural environment, and living in an urban community may be more difficult for elderly people with less coping ability (Gale, 1993). Also, people who have poorer health may be more likely to move to a rural community.

One major limitation was sample size, which was especially small for elderly people living in a rural community and which included only people living in the northern part of the country. Because of the inclusion criteria, people with poor health were excluded from the study. Since older people with poorer health conditions might have more psychological symptoms, it might have obscured or underestimated the relationship between physical function and psychological symptoms. In the rural population, the female to male ratio was 0.84, which was very similar to the ratio of the study sample (0.89). However, the female to male ratio of the city sample (0.51) was much lower than the ratio of city elderly population (0.97). An explanation for this discrepancy could not obtained from our data.

Elderly people experience many health stressors, and there are many different ways to measure these stressors. In this study, only cognitive function and the number of chronic medical diseases were examined. Further studies using different stressors as variables and different measurement methods are warranted.

Multicolinearity is a problem affecting almost all multivariate analyses, which affects the stability of the β weights (Nunnally and Berstein, 1994). The result of this study should be interpreted with caution.

5. Conclusions

Social support had a direct effect on depression and anxiety symptoms. Family interaction, especially criticism, had a more important effect on psychological symptoms. Emotional support had a stronger effect on psychological symptoms than did instrumental support. Elderly people with poor mental function and more chronic medical diseases benefited more from family involvement.

Acknowledgements

This study was supported by a grant from the Health Department of Taiwan. The authors wish to thank all of the people who assisted them in this study.

References

Alexander, N.B., Guire, K.E., Thelen, D.G., Ashton-Miller, J.A., Schultz, A.B., Grunawalt, J.C., Giordani, B., 2000. Self-reported walking ability predicts functional mobility performance in frail older adults. J. Am. Geriatr. Soc. 48, 1408–1413.

Back, S.A., Goodwin, J.S., Markides, K.S., 1998. The association between chronic diseases and depressive symptomatology in older Mexican Americans. J. Gerontol. A Biol. Sci. Med. Sci. 53, M188–M194.

Barefoot, J.C., Mortensen, E.L., Helms, M.J., Avlund, K., Schroll, M., 2001. A longitudinal study of gender differences in depressive symptoms from age 50 to 80. Psychol. Aging 16, 342–345.

Bisschop, M.I., Kriegsman, D.M., Beekman, A.T., Deeg, D.J., 2004a. Chronic diseases and depression: the modifying role of psychosocial resources. Soc. Sci. Med. 59, 721–733.

Bisschop, M.I., Kriegsman, D.M., Beekman, A.T., Deeg, D.J., Beekman, A.T.F., van Tilburg, W., 2004b. The longitudinal relation between chronic diseases and depression in older persons in the community: the Longitudinal Aging Study Amsterdam. J. Clin. Epidemiol. 57, 187–194.

Brummett, B.H., Barefoot, J.C., Siegler, I.C., Steffens, D.C., 2000. Relation of subjective and received social support to clinical and self-report assessments of depressive symptoms in an elderly population. J. Affect. Disord. 61, 41–50.

Chi, I., Chou, K.L., 2001. Social support and depression among elderly Chinese people in Hong Kong. Int. J. Aging Hum. Dev. 52, 231–252.

Chiou, Y.F., Chang, C.J., Yeh, T.L., 1991. The prevalence of cognitive impairment and depressive symptoms among the aged in Peimen village: questionnaire survey. Chin. Psychiatr. 5 (3), 123–131.

Cohen, S., Syme, S.L., 1985. Social Support and Health. Academic Press, Orlando.

Cohen, S., Wills, T.A., 1985. Stress, social support, and the buffering hypothesis. Psychol. Bull. 98, 310–357.

Cornman, J.C., Goldman, N., Glei, D.A., Weinstein, M., Chang, M.C., 2003. Social ties and perceived support: two dimensions of social relationships and health among the elderly in Taiwan. J. Aging Health 15, 616–644.

Derogatis, L.R., Lipman, R.S., Covi, L., 1973. SCL-90: an outpatient psychiatric rating scale: preliminary report. Psychopharmacol. Bull. 9, 13–28.

Drageset, S., Lindstrom, T.C., 2003. The mental health of women with suspected breast cancer: the relationship between social support, anxiety, coping and defence in maintaining mental health. J. Psychiatr. Ment. Health Nurs. 10, 401–409.

Franks, P., Campbell, T.L., Shields, C.G., 1992. Social relationships and health: the relative roles of family functioning and social support. Soc. Sci. Med. 3, 779–788.

Gale, B.J., 1993. Psychosocial health needs of older women: urban versus rural comparisons. Arch. Psychiatr. Nurs. 7, 99–105.

Grassi, L., Rasconi, G., Pedriali, A., Corridoni, A., Bevilacqua, M., 2000. Soc. support and psychological distress in primary care attendants. Psychother. Psychosom. 69, 95–100.

Harris, T., Cook, D.G., Victor, C., Rink, E., Mann, A.H., Shah, S., DeWilde, S., Beighton, C., 2003. Predictors of depressive symptoms in older people: a survey of two general practice populations. Age Ageing 32, 510–518.

Hayes, J.C., Landerman, L.R., George, L.K., Flint, E.P., Koenig, H.G., Land, K.C., Blazer, D.G., 1998. Social correlates of the dimensions of depression in the elderly. J. Gerontol. Psychol. Sci. 53B, 31–39.

Koivula, M., Paunonen-Ilmonen, M., Tarkka, M.T., Tarkka, M., Laippala, P., 2002. Social support and its relation to fear and anxiety in patients awaiting coronary artery bypass grafting. J. Clin. Nurs. 11, 622–633.

Krause, N., Markides, K., 1990. Measuring social support among older adults. Int. J. Aging Hum. Dev. 30, 37–53.

Lue, B.H., Leung, K.K., Fan-Jiang, C.S., Chen, H.J., 1995. A study of social support, family interaction in relation to mental health. Chin. J. Fam. Med. 15, 173–182.

Nunnally, J.C., Berstein, I.H., 1994. Psychometric Theory. McGraw-Hill, New York.

Palinkas, L.A., Wingard, D.L., Barrett-Connor, E., 1990. Chronic illness and depression symptoms in the elderly: a population-based study. J. Chin. Epidemiol. 43, 1131–1141.

Penninx, B.W., van Tilburg, T., Deeg, D.J., Kriegsman, D.M., Boeke, A.J., Eijk, J.T., 1997. Direct and buffer effects of social support and personal coping resources in individuals with arthritis. Soc. Sci. Med. 44, 393–402.

Pfeiffer, E., 1975. A Short Portable Mental Status Questionnaire for the assessment of organic brain deficit in elderly patients. J. Am. Geriatr. Soc. 23, 433–441.

Schoevers, R.A., Beekman, A.T., Deeg, D.J., Geerlings, M.I., Jonker, C., Van Tilburg, W., 2000. Risk factors for depression in later life; results of a prospective community based study (AMSTEL). J. Affect. Disord. 59, 127–137.

Schroevers, M.J., Ranchor, A.V., Sanderman, R., 2003. The role of social support and self-esteem in the presence and course of depressive symptoms: a comparison of cancer patients and individuals from the general population. Soc. Sci. Med. 57, 375–385.

Shields, C.G., Franks, P., Harp, J.J., McDaniel, S.H., Campbell, T.L., 1992. Development of the family emotional involvement and criticism scale: a self-report scale to measure expressed emotion. J. Marital Fam. Ther. 18, 395–407.

Siu, O.L., Phillips, D.R., 2002. A study of family support, friendship, and psychological well-being among older women in Hong Kong. Int. J. Aging Hum. Dev. 55, 299–319.

Yan, H., Sellick, K., 2004. Symptoms, psychological distress, social support, and quality of life of Chinese patients newly diagnosed with gastrointestinal cancer. Cancer Nurs. 27, 389–399.

Zunzunegui, M.V., Beland, F., Otero, A., 2001. Support from children, living arrangements, self-rated health and depressive symptoms of older people in Spain. Int. J. Epidemiol. 30, 1090–1099.