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Comparison of social determinants of depressive symptoms among elderly Chinese in Guangzhou, Hong Kong, and Taipei

ORIGINAL ARTICLE

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ABSTRACT

Background. Studies comparing the social determinants of depressive symptoms of ageing Chinese subjects in different socio-cultural contexts are limited. To facilitate development of prevention strategies, this study aimed to examine and compare the role of social determinants of depression in elderly Chinese subjects in Guangzhou, Hong Kong, and Taipei.

Methods. A mixed purposive and random sample of 891 Chinese (aged ≥ 65 years) in Guangzhou, Hong Kong, and Taipei were included. Depressive symptoms were measured by the Chinese version of the 15-item Geriatric Depression Scale. Correlates of physical health and various socio-demographic variables (including residency, age, gender, marital status, living arrangement, education level, financial adequacy, self-rated financial adequacy, social support variables, and employment status) were examined using hierarchical multiple regression analysis.

Results. Although the elderly in Hong Kong reported more depressive symptoms than their counterparts in Guangzhou and Taipei, location was not a significant correlate. Having poorer physical health, inadequate financial support, not having a confidant, and not having someone to provide care when ill or disabled—all correlated significantly with more depressive symptoms.

Conclusions. The differences in depressive symptoms in the 3 cities were likely due to variation in socio-cultural factors and support systems.

Key words: cultural diversity; depression; social environment

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INTRODUCTION

Depression is a common mental health problem faced by many elderly persons worldwide. In North America, it affects 10%¹ to 15%^{2–5} of the elderly population. In Chinese societies of suburban Taipei,⁶ Beijing,⁷ and Hong Kong,^{8,9} prevalence of depressive symptoms in older people could range from 5% to 30%. 22% of the world's populations are Chinese.¹⁰ They reside in different social, economic, and political systems in different parts of the world, including Mainland China, Hong Kong, Taiwan, Singapore,

and many other Asian countries as well as western countries (USA, Canada, Australia, and the United Kingdom).

Variations in socio-cultural and economic factors may account for the differences in reported depression rates. Studies comparing the social determinants on depressive symptoms among ageing Chinese in different socio-cultural contexts are limited. To facilitate development of prevention strategies, this study aimed to examine and compare the roles of social determinants of depression in

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elderly Chinese subjects in Guangzhou, Hong Kong, and Taipei.

Economic status or variables related to income or financial status are reported to be significant determinants of depression among older Chinese in Hong Kong⁹ and Beijing.⁷ Health was another significant factor for their depressive symptoms in China, Hong Kong and Taiwan,^{7,9} as were socio-demographics (gender, age, marital status, and education level).^{6-8,11} These findings are consistent with the general elderly population.³ These studies have provided evidence about the effects of various social determinants and health factors on the depressive symptoms of older Chinese. However, each study used different measurement tools and predictors, making comparison across the 3 regions difficult. Our study used the same depression screening measurement,^{12,13} and the key research question was "What are the differences in the social determinants and their effects on depressive symptoms in elderly Chinese subjects in Guangzhou, Hong Kong, and Taipei?"

METHODS

The original data for this study were obtained through a large-scale cross-sectional survey on older Chinese aged 55 years and older in Guangzhou, Hong Kong, and Taipei. The objective of that survey was to examine health and well being of ageing Chinese in different Chinese societies.

Sampling

The sample in Guangzhou was obtained using a purposive non-probability sampling strategy. Five of the 8 major residential districts in Guangzhou representing a broad range of socio-economic neighbourhoods were selected. Interviewers were trained university students from social science disciplines. Potentially eligible participants were invited to take part in a face-to-face interview to answer a structured questionnaire. Sample selection was based on gender and age distribution of older adults aged 55 years and older. As a result, 728 eligible participants were identified. Among them, 500 participants completed the face-to-face interview, representing a response rate of 68.7%.

The sample in Hong Kong was obtained using

a stratified proportional random sampling strategy. The local telephone directory was used to form the sampling frame. Eligible participants were identified through telephone contact made to the randomly selected telephone numbers. The sample was stratified according to the population distribution in the location of residency, age, and gender of the target population (reported in the 2001 census).¹⁴ Participants matched the population distribution according to the age and gender. As a result, 2324 eligible participants were identified through telephone screening. Among them, 504 participants completed the telephone survey, representing a success rate of 21.7%. The low success rate was probably due to many older people in Hong Kong being cautious of solicitation by strangers, lest they become victims of scams or commercial fraud.

The sampling method used in Taipei was similar to that used in Hong Kong. As a result, 5580 telephone numbers were screened and 786 eligible participants were identified. Among them, 500 participants completed the questionnaire, representing a response rate of 63.6%.

Only participants aged 65 years and older were included in the analysis. Therefore, the final sample included 891 elderly Chinese from the 3 cities.

Data collection

Data collection was conducted by trained interviewers who were graduate students in social science disciplines in each of the cities. Telephone interviews were used in Hong Kong and Taipei, whereas face-to-face interviews were used in Guangzhou (where a comprehensive telephone directory was lacking). The interviews took place between November 2002 and January 2003.

Measures

The structured questionnaire covered a wide range of topics (demographics, psychosocial characteristics, and health status). Interviews were conducted mainly in Mandarin in Taipei, Cantonese in Hong Kong, and Cantonese and Mandarin in Guangzhou. The written forms of the questions were the same. Only variables related to depressive symptoms and socio-demographic variables were included in this analysis.

A revised Chinese version of the 15-item Geriatric Depression Scale (GDS) was used for measuring depressive symptoms. It was translated and adapted to better fit the cultural context of elderly Chinese.^{12,13} For each of the items representing depressive symptoms, scores were assigned to positive answers. A total score of ≤ 4 was considered 'normal', 5 to 9 'mild depression', and ≥ 10 'moderate-to-severe depression'. The use of the GDS in telephone interviews has been reported to have good reliability and validity.^{15,16}

Age, gender, marital status, living arrangement, education level, self-rated financial adequacy, social support, and employment status were the socio-demographic variables. Marital status was grouped as either married or unmarried, which included the never married, divorced, separated, or widowed. Living arrangement was grouped as either living alone or with someone. Education level had 4 ordinal groups (no formal education, primary education, secondary education, and post-secondary and above).

Self-rated financial adequacy measured the financial status of the participants, using an ordinal 4-point Likert scale from very inadequate (score of 1) to very adequate (score of 4). Income variable was not used, as the dollar amount would not accurately reflect the financial status of the participants, because of differences in income structure and standard of living across the 3 cities. To measure social support, participants were asked to indicate whether they had a confidant and whether they would have someone to provide care for them when ill or disabled. A score of one was assigned to an answer of yes and a score of zero to an answer of no. Employment status of the participants was grouped into not working, working part time, and working full time.

Data analysis

Bivariate statistical tests such as Chi squared test and one-way analysis of variance were used to compare differences in socio-demographics of the elderly in the 3 cities, as were health status variables (including physical health and the number of depressive symptoms).

To examine the effect of the correlates of the number of depressive symptoms on the full sample, hierarchical multiple regression analysis using the

enter method was conducted, using the physical health variable first, followed by other socio-demographic variables. To examine differences in correlates for depressive symptoms of the elderly in the 3 cities, separate hierarchical regression analyses (using the enter method) were conducted for each subsample, entering the physical health first, followed by a block of other socio-demographic factors.

RESULTS

Socio-demographics of the participants

With respect to most socio-demographic factors, there were significant differences between the participants in the 3 cities (**TABLE 1**). The participants in Guangzhou, Hong Kong and Taipei were not significantly different in terms of age. In Hong Kong, 54.3% of the elderly were married, compared to 63.1% in Taipei and 79.9% in Guangzhou. A higher proportion of elderly persons lived alone in Hong Kong (23.7%) than in Guangzhou (6.8%) and Taipei (6.5%). In terms of education, the elderly in Guangzhou reported the highest proportion with a secondary and post-secondary or higher level of education. On the contrary, the elderly in Hong Kong were more likely to report having no formal education and having the lowest self-rated financial adequacy. Only 52.6% of Hong Kong older adults reported having a confidant, compared to 70.5% in Guangzhou and 75.1% in Taipei. In Guangzhou and Taipei, 93.9% and 92.9% of the elderly, respectively, reported having someone to provide care for them when ill or disabled, whereas the corresponding figure for Hong Kong was 70.1%. Significant differences in employment among the 3 groups were also found, although most of these elderly were not working. The proportions working full time (6.1%) and part time (1.1%) were highest in Taipei, and the respective rates were lowest in Guangzhou (0.4% and 0.4%).

There was no significant difference in terms of physical health (i.e. physical component score [PCS]) reported by the 3 cities. However, Hong Kong older adults reported significantly more depressive symptoms according to the Chinese version of the 15-item GDS.

Correlates of depressive symptoms

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TABLE 1
Descriptive statistics of study variables in the 3 cities

Variable	All cases (n=891)	Guangzhou (n=278)	Hong Kong (n=304)	Taipei (n=309)	Test statistics
Mean±SD age (years)	73.0±6.0	72.5±6.1	72.8±5.8	73.5±6.0	F=1.33
Being male (%)	50.1	52.5	46.4	51.5	$\chi^2=2.558$
Being married (%)	65.3	79.9	54.3	63.1	$\chi^2=42.966^*$
Living alone (%)	12.1	6.8	23.7	5.5	$\chi^2=70.4^*$
Education (%)					$\chi^2=72.196^\dagger$
No formal education	25.2	18.2	32.5	24.2	
Primary	33.2	21.2	40.1	37.4	
Secondary	29.0	40.5	21.9	25.6	
Post-secondary or above	12.6	20.1	5.6	12.8	
Mean±SD self-rated financial adequacy score	2.5±0.6	2.6±0.7	2.5±0.5	2.8±0.6	F=16.288 [†]
Having a confidant (%)	66.0	70.5	52.6	75.1	$\chi^2=38.075^\dagger$
Having someone to provide care when ill or disabled (%)	85.4	93.9	70.1	92.9	$\chi^2=87.297^\dagger$
Employment status (%)					$\chi^2=23.296^\dagger$
Not working	96.4	99.3	97.7	92.6	
Working full time	2.7	0.4	1.3	6.1	
Working part time	0.9	0.4	1.0	1.3	
Mean±SD physical component score	45.3±9.9	45.2±9.2	44.5±9.3	46.1±11.1	F=1.961
Mean±SD no. of depressive symptoms	3.2±3.4	3.0±3.4	3.8±3.2	2.8±3.6	F=7.885 [†]

* p<0.01

† p<0.001

depressive symptoms in the full sample (n=891) were examined using the hierarchical regression analysis (**TABLE 2**). Physical health is an important factor in depression.^{17,18} It was entered in the first model so that its effect could be controlled. Physical health was a significant factor of the number of depressive symptoms. Those who reported a less favourable physical health (i.e. lower PCS scores) also reported a higher number of depressive symptoms. This single variable explained over 21.5% of the variance in number of depressive symptoms.

In the second model, the socio-demographic variables including location, age, gender, marital status, living arrangement, education level, financial adequacy, self-rated financial adequacy, social support variables, and employment status were entered. After adding these variables, the negative effect of physical health remained significant. In addition, self-rated financial adequacy and 2 social support variables (not having a confidant, and not having someone to provide care when ill or disabled) were identified as significant correlates of more depressive symptoms. Adding the socio-

demographic variables increased the variance that could be explained by only 7.6%. The full model explained only about 28.2% of the variance in the number of depressive symptoms. Among the various correlates, the effect of physical health was strongest, with a standardised regression coefficient of -0.399, followed by the 2 social support variables.

Although the elderly in Hong Kong reported significantly more depressive symptoms than their counterparts in Guangzhou and Taipei, location was not a significant correlate when controlled for other confounding factors. This indicated that differences in the number of depressive symptoms among the elderly in the 3 cities could be due to other factors.

To further examine these other correlates, separate hierarchical multiple regression analyses were conducted for the elderly in each city (**TABLE 2**). In Guangzhou, physical health was negatively correlated to more depressive symptom, both when the physical health variable was entered into the regression alone and with other socio-demographic variables. Additional significant correlates identified

TABLE 2
Determinants of the number of depressive symptoms using hierarchical multiple regression analysis

Variable	All cases (n=891)		Guangzhou (n=278)		Hong Kong (n=304)		Taipei (n=309)	
	Model 1		Model 2		Model 1		Model 2	
	β							
Physical component score	-0.465 [‡]	-0.399 [‡]	-0.395 [‡]	-0.317 [‡]	-0.252 [‡]	-0.208 [†]	-0.662 [‡]	-0.596 [‡]
Location (reference: Guangzhou)								
Hong Kong	-	0.040	-	-	-	-	-	-
Taipei	-	0.016	-	-	-	-	-	-
Age	-	0.022	-	0.013	-	0.035	-	-0.026
Being male (reference: female)	-	-0.016	-	-0.009	-	0.002	-	-0.038
Being married (reference: single)	-	0.038	-	-0.015	-	0.043	-	0.053
Living alone (reference: living with someone)	-	-0.018	-	-0.057	-	0.020	-	-0.023
Education (reference: no formal education)	-	0.011	-	0.053	-	-0.054	-	-0.006
Self-rated financial adequacy	-	-0.083 [‡]	-	-0.223 [‡]	-	-0.162 [†]	-	-0.147 [†]
Having a confidant	-	-0.112 [‡]	-	-0.114 [*]	-	-0.043	-	-0.149 [†]
Having someone to provide care when ill or disabled	-	-0.114 [‡]	-	-0.163 [‡]	-	-0.090	-	-0.109 [*]
Employment status (reference: not working)								
Working full time	-	-0.017	-	-0.020	-	-0.017	-	-0.010
Working part time	-	0.033	-	-0.043	-	-0.072	-	-0.052
R ² change	0.216 [‡]	0.076 [‡]	0.156 [‡]	0.098 [‡]	0.063 [‡]	0.054	0.438 [‡]	0.072 [‡]
R ²	0.216	0.292	0.156	0.254	0.063	0.118	0.438	0.510
Adjusted R ²	0.215	0.282	0.153	0.223	0.060	0.084	0.436	0.492

* p<0.05

† p<0.01

‡ p<0.001

were self-rated financial adequacy and the 2 social support variables. When controlled for physical health and other confounding socio-demographic factors, lower self-rated financial adequacy, not having a confidant, and not having someone to provide care when ill or disabled correlated significantly with more depressive symptoms.

In Taipei, the results of the hierarchical multiple regression analysis followed the same pattern as in Guangzhou. Physical health was negatively correlated to more depressive symptom. When adjusted for the effects of physical health and other confounding socio-demographic factors, lower self-rated financial adequacy, not having a confidant, and not having someone to provide care also correlated significantly with more depressive symptoms.

In Hong Kong, physical health was also a

significant factor. When adjusted for physical health and other socio-demographic confounders, only lower self-rated financial adequacy correlated significantly with more depressive symptoms.

When comparing the effects of the significant correlates on the number of depressive symptoms of the elderly in the 3 cities, physical health had the greatest impact, represented by a very large standardised regression coefficient (-0.596). The effects of self-rated financial adequacy and having someone to provide were strongest in the Guangzhou sample.

Among the final regression models for the 3 subsamples, the model for Taipei explained the highest proportion of the variance (49.2%) in number of depressive symptoms. The model for Hong Kong explained the least (8.4%), indicating

the potential effects of other unknown correlates or factors associated with depression.

DISCUSSION

This study measures depressive symptoms of elderly Chinese in 3 cities, using the same depression measure to enable a more appropriate comparison.

The elderly in Hong Kong had more depressive symptoms than their counterparts in Guangzhou and Taiwan. On average, they had almost one more depressive symptom, and marginal differences were quite substantial.

In the multiple regression analysis of the full sample, socio-demographic factors were more significant than location in affecting the number of depressive symptoms. Previous studies on depression in elderly populations have shown that socio-demographics are often significant in this respect. Marital status, living arrangements, education level, financial status, and social support are the commonly identified correlates of depression. Elderly people who are married are less likely to be depressed.^{19,20} Elderly people who live alone are more likely to be depressed,^{21,22} probably owing to less access to social support.²³⁻²⁵ This highlights the positive effect of social support in reducing depression.²⁶ Elderly people who have lower education levels tend to report more depressive symptoms.²⁷ Less favourable financial status and lower incomes are common correlates of more depression.²⁸ In our study, the elderly in Hong Kong were more likely to be unmarried, live alone, have no formal education, be the least adequate financially, be the least likely to have a confidant, and be the least likely to have someone to provide care.

Financial adequacy was one of the most important factors associated with fewer depressive symptoms among the elderly. This is consistent with previous research on depression in elderly Chinese²⁹ and elderly populations in western societies.^{30,31} Despite the socio-cultural variations in the 3 cities, being financially adequate was a common protective factor against depressive symptoms in these elderly Chinese populations.

The effect of the 2 social support variables was

significant to the overall sample and the samples from Guangzhou and Taipei. Having a confidant and having someone to provide care for them in times of need were significantly correlated to fewer depressive symptoms, indicating the importance of social support in protecting the elderly from depression.²¹ The effect of these 2 variables was not significant in the Hong Kong sample. Further research is needed to gain more in-depth understanding of the effects of social support on Hong Kong elderly persons. It is also important to examine the effects of other social support indicators (the amount and types of support or assistance received) in relation to one's health condition or care needs.

The proportion of variance in the number of depressive symptoms explained by the various models was mostly under 30%, except for the Taiwan sample. The proportion of variance explained for the Hong Kong sample was even less than 10%. This means that there are other unknown factors that may affect the number of depressive symptoms. Thus, factors such as inter-generational relationships, family relations, life stress, life circumstance, personality, and individual coping capacity and strategy were not included in this study. Structural and macro-social factors (such as the economy, the political system, social values and beliefs, social exclusion, and social capital) could also play an important role in depressive symptoms of the elderly.

Although only a few significant correlates of depressive symptoms were identified in this study, the findings point to possible prevention and intervention. As financial status is an important factor, programmes and support to ease the financial strains may have a role. The elderly in Hong Kong reported the lowest level of financial adequacy, compared to those in Guangzhou and Taipei, possibly because the cost of living is much higher. Moreover, the retirement income security system in Hong Kong is not as well developed as in the other 2 cities. Therefore, efforts to ensure a reasonable level of income/financial security may help prevent depression in the elderly.

Having a confidant and having someone to provide care were significant factors for avoiding depressive symptoms in the elderly. Therefore, social programmes should be developed to facilitate stronger social networks for them. Social networks

of the elderly may shrink owing to loss of loved ones and significant others such as spouses, friends, or peers. For widows or widowers, the loss of their life companions (usually also their confidant) could be devastating. As their social circle gets smaller due to death and illnesses, making new friends, building a larger social network, and re-gaining a confidant could be a challenge. Although Chinese culture emphasises the familial obligation of younger generations to provide care for their elderly parents or grandparents, changes in social conditions, values, and beliefs, and other economic circumstances may make the fulfilment of such responsibilities difficult. Many older Chinese also prefer to avoid depending too much on their adult children, as they are aware of the multiple commitments and stresses younger generations face. These trends further complicate matters for elderly persons who are not financially well off, as maintaining or being part of a social network often involves social gatherings or functions that many of them simply cannot afford.³² Thus, as a measure to prevent depressive symptoms, strategies/programmes should be developed to facilitate social networking, strengthening of social interactions, and helping socially isolated elderly to re-establish a social life and re-establish confidants in whom they can trust.

For many elderly Chinese, particularly those who are socially isolated and do not have a strong social support network, their concern about not having someone to provide care when ill or disabled can also be related to inadequacy of the health care and the community care system. Except for Hong Kong, the other 2 cities have a better and more comprehensive universal health care coverage system for the elderly. Building a more comprehensive health care and community care system could be useful to supplement the shrinking social support network for such subjects.

Limitations of this study should be taken into consideration when interpreting its findings. The non-randomisation of the Guangzhou sample means the findings cannot be generalised to the entire elderly population in Guangzhou or to other cities in China. The low response rate in Hong Kong probably diminishes its reliability as representative all the elderly population. The response rate in Taipei was only moderate, and the findings may not apply to other regions of Taiwan. Resorting to telephones

for data collection may have excluded persons not having or using telephones, not at home, and subjects with unlisted numbers. In Guangzhou, face-to-face interviews were used for data collection. The difference in data collection methods may have affected the results, particularly with respect to how depressive symptoms were reported. Future research should entail representative random samples from more locations, strategies to enhance response rate, and a more consistent data collection methods.

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