原　著

Gender differential on the structural relationship between socioeconomic status, mental health and need for long-term care: A cross-sectional study among tibetan elderly

社会経済要因、精神的健康と要介護度との関連構造 ―チベット高齢者における横断調査

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ABSTRACT

Objective: The purpose of this study was to explore the structural relationship between socioeconomic status (SES), mental health and need for long-term care (NLTC), with the goal of providing useful information to prevent the NLTC. Method: 1,836 (39.8% of male, 60.2% of female) respondents were conducted in Lhasa and Shigatse city in Tibet from July to August in 2009. Descriptive analysis, factor analysis and structural equation modeling were performed to identify the association between SES, mental health and NLTC. Results: Positive correlation between SES and mental health was observed among the Tibetan elderly, while it was slightly stronger for the Tibetan female elderly. There is a negative correlation between mental health and the NLTC among the Tibetan elderly, and it was little stronger among the Tibetan male elderly. SES of the Tibetan elderly would not only have a direct impact on the NLTC, but also have an indirect impact on the NLTC through mental health, and both of the effects are negative. Conclusions: Slight gender differential were found on the structural association between SES, mental health and NLTC. The results highlight the importance of enhancing the individual's SES and their mental health.

抄　録

目的：本研究の目的は、社会経済要因、精神的健康と要介護度との関連構造を明らかにすることにより、要介護人口を減少するために活用される科学的エビデンスを提供することである。方法：2009 年の 7 月から 8 月まで、チベットのラサ市とシガツェ市にて調査を行った。1,836 人（男性 39.8%、女性 60.2%）の回答を収集した。記述分析、要因分析と構造方程式モデリングで社会経済要因、精神的健康と要介護度との関連構造を分析した。結果：チベット高齢者では、社会経済要因と精神的健康との正相関が明らかになり女性の正相関は、男性より強いことが示された。また、チベット高齢者では、精神的健康と要介護度との負の相関が明らかになり男性の負相関は、女性より強いことが示された。チベット高齢者の要介護度は、社会経済要因からの直接的な影響の他に、精神的健康を経由する間接的な効果が示され、直接効果と間接効果は共にマイナス効果になっていた。結論：本研究により社会経済要因、精神的健康と要介護度との関連構造が明らかになり、性別差異が示された。要介護予防のためには、個人の社

会経済要因と精神的健康の重要性が明らかになった。

Key words：SES, mental health, NLTC, gender differential, Tibetan elderly
キーワード：社会経済要因、精神的健康、要介護度、性別差異、チベット高齢者

1．Introduction

1.1 Population aging in China

United Nations defines the aged society as: if the population aged 60 years old and above accounts for more than 10% of the total population in a country (or region), or the population aged 65 years old or over accounts for 7% of the total population, the country or region could be recognized as entry of the aged society[1]. According to the report of the 1% population sampling survey which conducted in 2005 by the Nation Bureau of Statistics of China, there were 144.08 million older persons who aged 60 or over, accounting for 11.03 percent of the total Chinese population. As for the population aged 65 and more, the total number reached to 10,045 million, constituting 7.69 percent of the total population[2]. From this perspective, China has entered the aged society in 2005. Moreover, according to the data of the sixth national census of China in 2010, there were 177,648,705 older adults aged 60 years old or over, accounting for 13.26 percent of the total population (of which 118,831,709 aged 65 years or over and about 8.87 percent of the total population)[3]. It means, during these five years, the population aged 60 years or over has increased by about 3,356 people (the population aged 65 and above has increased by about 1,838 million). Such a number is equivalent to the total population of Canada in 2011[4]. As the aging trend proceed, researchers predict that the proportion of the elderly aged 65 years or more will reach 14.3 percent in 2025, and will further amount to 26 percent in 2050[5].

1.2 Literature review

1.2.1 Relationship between socioeconomic status (SES) and need for long-term care (NLTC)

McKevitt et al. showed that, among the 1,251 UK elderly who caught the stroke, the elderly living in poverty-stricken areas reported a relatively higher unmet care needs than the other groups[6]. Hoi le et al. studied the determinants of the Vietnam elderly aged 60 years or over and the results showed that SES, such as education level, working status, household income affects the NLTC among the elderly respondents[7]. Laporte et al. found that the individual in the lower SES having a higher propensity and intensity of care needs among the Canada home-caring elderly[8]. A long-term study among the 35,926 Finnish elderly conducted by Martikainen et al. suggests that the elderly in a lower SES are more likely to use the LTC; and shows the impact of SES on the entry of institutional care is stronger on the women than men. It should be noted that the possibility of women into the pension agency receiving long-term care than men because of their age and the larger living alone have a higher likelihood[9].

1.2.2 Association between mental health and NLTC

Previous researches showed that the sick or frail populations, such as stroke patients[10], those with mental retardation[11] or the elderly with dementia[12] are suffering higher likelihood of mental illness (such as tension and depression), are in higher need for LTC. In addition to the general population, the researchers studied the veterans a lot. Sorrell and Durham found that the long-term care facilities which under the United States Department of Veterans Affairs cannot meet the needs of those veterans with cognitive decline and home caring service, the need to invest more resources in order to meet future caring needs of an increasing number of veterans is urgent[13]. Samuelsson et al. followed up the 192 elderly who received home care or institutional care in southern Sweden for 25 years and showed that among these older persons, 53 percent of them were

with dementia, 34 percent of them with more or less mental illness and only 12 percent of them were in normally mental conditions[14] .

1.2.3　Correlation between SES and mental health

Existing studies consistently showed that there is an negative relationship between SES and mental health, namely, the individuals with a lower SES had a higher possibility of suffering from mental health problems[15] . In other words, people with the lower SES had the higher likelihood of being with mental illness[16, 17] . Specifically, individuals with higher incomes, compared to those of lower income individuals, had a better mental health[18, 19] ; those who were in employment would in a better self-reported mental health than that of out of employment[20] . In addition, concerning the relationship between education and mental health, a study conducted among the Japanese population showed that there is a significant linear correlation between the education of the female and their mental health, while such an association does not exist in the Japanese male[21] .

1.3　Summary of the literature and the objective

In a word, the previous researches examined the relationship between SES and mental health is relatively at most, followed by the researches focused on the relationship between SES and NLTC, while the studies clarified the association between the mental health and NLTC was relatively least. However, to date, there is still no research clarified the relationship between SES, mental health and NLTC at the same time.

Based on the summary of the previous researches, the purpose of this study can be summarized as follow:

1）To what extent the NLTC of the Tibetan urban elderly is satisfied?

2）To explore the relationship between the SES, mental health and NLTC among the Tibetan urban elderly; and, whether there is gender differential on the associations above.

2.　Method

2.1　Hypotheses of the research

Based on the literature review and the objectives, the following hypotheses are proposed:

Hypothesis 1: There is a strong positive correlation between SES and mental health among the Tibet urban elderly. That is, a better socioeconomic status of a Tibet urban elderly would generally predict a better status of his mental health. Moreover, gender difference will be found.

Hypothesis 2: A negative relationship would be observed between mental health and NLTC among the Tibetan urban elderly, which means a better mental health of the Tibet urban elderly, will have the lower need for LTC. What is more, gender differential will be observed.

Hypothesis 3: SES could not only affect the NLTC directly, but also exert an indirect effect on the NLTC through the mental health. Here, the direct and indirect effects should be negative. Moreover, gender difference will be found.

2.2　Study location and subjects

Tibet Autonomous Region has one prefecture-level city, six regions and 73 counties. A prefecture-level city is also the capital of the Tibet Autonomous Region -Lhasa city. In addition, a county-level city -- Shigatse city is concluded in Shigatse region. Concretely, seven counties, one region (named Chengguan District, include seven sub-district offices and 28 community committee) is under the jurisdiction of Lhasa; while Shigatse city includes 10 townships, two sub-district offices (10 community committee). Data used in this study was collected from late July to late August in 2009, while subjects included in the survey was the urban elderly aged 60 years or over in the two cities of the Tibet Autonomous Region -- the city of Lhasa and Shigatse.

2.3　Sampling method

As for the sampling method, firstly, we collected the list of all community committees in Lhasa and Shigatse, including 28 communities in the former city and 10 in the latter city. These 38 communities

are then arranged from more to less in accordance with the number of the population. Thirdly, out of 9 from 28 communities in Lhasa, out of 4 from 10 communities in the city of Shigatse, with a total of 13 communities were selected at random by using cluster sampling method. The aged persons who were 60 years old and above from these 13 communities were all concluded as the participants of this study. Specifically, there were 1437 older persons in Lhasa, and 571 older adults in Shigatse, with a total number of 2,008 elderly people in these 13 communities of two cities. We aimed to collected data from these 2008 older persons and issued one questionnaire to each older person, eventually, a total of 1836 questionnaires were effectively recovered, with the valid response rate of 91.4%.

This study employed both the staffs of the community committee and the college students whose mother language is Tibetan as the questionnaire investigator. All of them can expertly use both the Tibetan and Chinese, and switch these two languages easily, in order to ensure that the language translation had no impact on the authenticity and correctness of the questionnaire. Meanwhile, before the start of the survey, investigators were conducted a unified training to increase their knowledge and understanding about the purpose and contents of the survey, the structure of the questionnaire and skills and mastery on conducting a survey. During the survey, the investigator mainly conducted the face-to-face questionnaire survey in households, and recorded truthfully in accordance with the responses and answers of the elderly. In some communities, the respondents were gathered together to fill in the questionnaire.

2.4　Measurement of the variables

The indicators of SES, in the present study, are education and household income. The answers for education includes: ① illiterate; ② elementary school; ③ junior middle school ; ④ senior middle school; ⑤ vocational college and above. Options for the household incomes are: ① less than 1,000 RMB(147 USD, as the average exchange rate of the year 2009;

the same below); ② 1,000–2,999 RMB(147–440 USD); ③ 3,000–5,999 RMB(441–881 USD); ④ 6,000 RMB(881 USD) and above.

The indicators for the mental health used in this study are from the "Three Health Factors", which was created by Prof. Hoshi and concluded a total of nine indicators to evaluate the mental health, physical health and social health separately[22–25]. The "Three Health Factors" index system was firstly originated from the analysis of the database about the health conditions of the Tokyo elderly, and was also found to be equally applicable to evaluate the elderly from other cities in Japan, such as the Hanno city, Saitama Prefecture[26]. Concretely, as for the indicators of mental health, three questions are included: 1）How about your health condition this year? 2）Is your health status as good as last year? 3）Are you satisfied with your current lives? In the present study, 1）and 3）will be used as the two indicators of mental health.

As stated previous, the quantitative studies focused on the LTC issues were relatively few in China; although the empirical researches studied the LTC issues were relatively more, the indicators for the NLTC were different from one to another. In this study, three questions will be used to measure the need for LTC: 1）the caring time of the first care provider; 2）the caring time of the second care provider; 3）the caring time of the third care provider. The same options are given to these three questions, namely: ① care just when needed; ② 2–3 hours per day; ③ half day per day; ④ almost all day long; ⑤ others.

2.5　Statistical approach

SPSS 17.0 was employed to present the basic distribution of the socioeconomic status, mental health and the need for LTC of the Tibetan elderly, specifically, about their absolute numbers and percentage.

Amos version 17.0 statistical software package for Windows was used to perform the SEM, in order to obtain the maximum-likelihood estimates of model

parameters and provide goodness-of-fit indices. In other words, whether the structural relationship between socioeconomic status, mental health and the need for LTC among the Tibetan elderly is corresponded with the hypotheses stated previously will be clarified through the Amos.

Assessment of the model fitness calculates how the proposed model might be consistent with the empirical data. Maximum-likelihood estimation is used to estimate the best-fitting model in this study. χ^2 test, TLI, IFI, CFI and RMSEA were reported for the model fitness. The model are regarded to be good fitted when TLI>0.90[27] ; IFI value close to 1[28] ; CFI value >0.90[29] and RMSEA<0.05[30] .

3. Results

3.1　Characteristics of the subjects

Table 1 shows the need for LTC of the Tibetan urban elderly. Among the total number of the 1,836 elderly included in the survey, 1,310 of them are from Lhasa, with the remaining of 526 are from Shigatse. Of those who were surveyed, more than half are female (60.2%). On the age distribution, 58.7% of the subjects are aged from 60 to 69. As for the nationality, 99.0% of the participants are Tibetan elderly. Perhaps it is related to the environmental

factors in Tibet, such as the high altitude and the highland climate, which forces the elderly of other nationalities (Han nationality or other nationalities) to return to the Eastern China (or their hometown other than Tibet) after their retirement.

3.2　NLTC of the Tibetan elderly

3.2.1　The primary provider of the six basic needs for LTC

Table 2 presents the distribution of the primary providers of the six basic needs for LTC. We could acknowledge the important role of the family members on caring the elderly based on information in the table.

Spouse is always the most important primary care provider on any type of these six basic caring needs. On the item of being cared when sick, 38.2 percent of it was provided by the spouse, accounting for the relatively highest proportion among all the providers. As one kind of the informal care providers, although the proportion of its provision to the cash or things decreased to 19.2 percent, but still play the most important role.

Son takes the secondary role on satisfying the needs of "Cared when sick" (20.1%), "Cash or things" (19.2%) and "Discuss important things"

Table 1. Characteristic of the Subjects

				n(%)
		Lahsa	**Shigatse**	**Total**
Gender	Male	528(40.3)	203(38.6)	731(39.8)
	Female	782(59.7)	323(61.4)	1,105(60.2)
Age	60-69	749(57.2)	329(62.5)	1,078(58.7)
	70-79	432(33.0)	157(29.8)	589(32.1)
	MoreThan80	129(9.8)	40(7.6)	169(9.2)
Nationality	Tibetan	1,292(98.6)	526(100.0)	1,818(99.0)
	Han	8(0.6)	0(.0)	8(0.4)
	Hui	7(0.5)	0(.0)	7(0.4)
	Menba	2(0.2)	0(.0)	2(0.1)
	Naxi	1(0.1)	0(.0)	1(0.1)
Total		1,310(100.0)	526(100.0)	1,836(100.0)

(17.3%) for the elderly. These percentages are lower than the spouse's, but higher than the daughter's, in spite of the gap on percentage between sons and daughters is not large on these three items (20.1% vs 17.9%; 19.2% vs 16.2%; 17.3% vs 15.9%).

Comparing with the son, daughter plays a more important role on satisfying the needs of "Housework" (19.4%), "Talk heartily" (17.4%), "Going outside together" (15.7%). Particularly, the gap on the provision of "Housework" (19.4% vs 13.4%) is significantly greater than that of "Talk heartily" (17.4% vs 16.3%) and "Going outside together" (15.7% vs 13.1%).

Compared to these three main informal care providers, the role of other care providers as the primary provider (such as the Brothers or sisters, other relatives) is relatively lower among all of the respondents.

3.2.2 The satisfaction of the six basic needs for LTC

Among these six basic needs for LTC, including "Cared when sick", "Housework", "Cash or things", "Talk heartily", "Discuss important things" and "Going outside together", the percentage of their being "always" satisfied was 71.2%, 60.1%, 40.5%,

54.7%, 58.2%, 55.8% respectively (Table 3). Therefore, except "Cash or things", more than half of other five kinds of needs for LTC could be "always" satisfied.

Although the percentage of the need for "Cash or things" being "always" satisfied was lower than half (27.0%), but in term of being "Frequently" satisfied, its proportion is the highest. As for other five kinds of needs for LTC, including the "Cared when sick", "Housework", "Talk heartily", "Discuss important things" and "Going out together", their proportion was 19.3%, 21.6%, 24.4%, 21.6%, 20.4% separately.

As could be seen from the Table 3, comparing with the needs could be "Always" and "Frequently" satisfied, the remaining four ones, namely "Sometimes", "Seldom", "Never" and "Not needed" separately, their proportion is relatively low. To some extents, this represents the satisfaction of the six basic needs for LTC is in relatively good condition among the Tibetan elderly.

3.3 Gender differential on the structural relationship between SES, mental health and NLTC among the Tibetan urban elderly

3.3.1 Factor analysis

Table 4 shows the results of the factor analysis of the corresponding variables. After the principal

Table 2. Distribution of the first care provider of the six basic needs for LTC

						n (%)
	Cared when sick	Housework	Cash or things	Talk heartily	Discuss important things	Going outside together
Spouse	701(38.2)	493(26.9)	363(19.8)	621(33.8)	613(33.4)	522(28.4)
Son	369(20.1)	246(13.4)	353(19.2)	299(16.3)	317(17.3)	241(13.1)
Daughter	328(17.9)	356(19.4)	297(16.2)	320(17.4)	292(15.9)	288(15.7)
Grandson (daughter)	18(1.0)	35(1.9)	18(1.0)	26(1.5)	25(1.4)	31(1.7)
Brothers or sisters	35(1.9)	31(1.7)	31(1.7)	30(1.6)	34(1.8)	34(1.9)
Other relatives	40(2.2)	33(1.8)	49(2.7)	41(2.2)	37(2.0)	28(1.5)
Others	80(4.3)	207(11.2)	64(3.4)	47(2.6)	48(2.6)	143(7.8)
Not answered	265(14.4)	435(23.7)	661(36.0)	452(24.6)	470(25.6)	549(29.9)
Total	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)

Table 3. The satisfaction of the six basic needs for LTC

n (%)

	Cared when sick	Housework	Cash or things	Talk heartily	Discuss important things	Going outside together
Always	1,307(71.2)	1,104(60.1)	743(40.5)	1,005(54.7)	1,068(58.2)	1,025(55.8)
Frequently	354(19.3)	396(21.6)	496(27.0)	448(24.4)	396(21.6)	374(20.4)
Sometimes	58(3.2)	93(5.1)	146(8.0)	134(7.3)	107(5.8)	116(6.3)
Seldom	42(2.3)	45(2.5)	61(3.3)	54(2.9)	52(2.8)	59(3.2)
Never	31(1.7)	39(2.1)	85(4.6)	44(2.4)	45(2.5)	50(2.7)
Not needed	44(2.4)	159(8.7)	305(16.6)	151(8.2)	168(9.2)	212(11.5)
Total	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)	1,836(100.0)

Table 4. Factor Analysis of Observed Variables

	Component		
	Need For LTC	Mental Health	SES
Caring time of 3rd care provider	.958	-.122	-.110
Caring time of 2nd care provider	.958	-.121	-.094
Caring time of 1st care provider	.914	-.095	-.065
Life satisfaction	-.056	.823	.216
Subjective health	-.172	.821	.042
Education	-.085	.027	.851
Household income	-.095	.240	.790
Cumulative %	38.850	59.535	79.850
Cronbach's Alpha Reliability Statistics	.935	.614	.593

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

component analysis by using orthogonal rotation, the seven variables, including "Caring time of the third care provider", "Caring time of the second care provider", "Caring time of the first care provider", "Life satisfaction, "Subjective health", "Education", "Household income", were divided into three main factors with a cumulative contribution rate of 79.850%.

Here, we named these three main factors as "need for LTC" (including three variables: Caring time of the third care provider, Caring time of the second care provider and Caring time of the first care provider), "mental health" (including two variables: Life satisfaction, Subjective health) and

"Socioeconomic status" (including two variables: Education, Household income).

3.3.2　Fitness of the hypothetical model

The model fitness indices were shown in Figure 1 and Figure 2. The calculated value of CFI, TLI and IFI were 0.992, 0.984 and 0.992 respectively. All of them were higher than the recommended level, with the absolute value of 0.9. The calculated value of the RMSEA was 0.040, which was lower than the recommended level of 0.05. All of these indices indicated the hypothetical model fit the empirical data ideally.

Concerning the p-value of the chi-square test

in this study, the relatively large numbers of the participants concluded in this study resulting in a small value of it (with the value of p<0.001). Consequently, it would not be used as the fitness indices in this study, although it was reported as other researchers did.

3.3.3　Gender difference on the relationship between mental health and NLTC

The gender difference on the relationship between mental health and NLTC among the Tibetan elderly was presented in Table 5, Figure 1 and Figure 2. Mental health exerted negative and direct effect onto the NLTC both for the Tibetan male elderly and female elderly. Concretely, the total standardized effect of mental health onto the NLTC was slightly stronger for the Tibetan male elderly (with the value of -0.250) than their female counterparts (with

the value of -0.203), although both of the effect were fairly weak.

3.3.4　Gender difference on the association between SES and NLTC

As illustrated in Table 5, Figure 1 and Figure 2, SES could not only influence the NLTC directly, but also exerted the indirect effect onto the NLTC both for the Tibetan male elderly and Tibetan female elderly. Specifically, the direct standardized effect from SES upon the NLTC was -0.172 for the Tibetan male elderly and -0.136 for the Tibetan female elderly, while the indirect standardized effect was -0.122 for the male and -0.112 for the female.

It means both the direct and indirect effect from SES upon the NLTC was slightly stronger among the Tibetan male elderly than their female counterparts. Consequently, the total standardized effect was also

Table 5 Structural relationship between SES, Mental Health and NLTC by gender among the Tibetan elderly

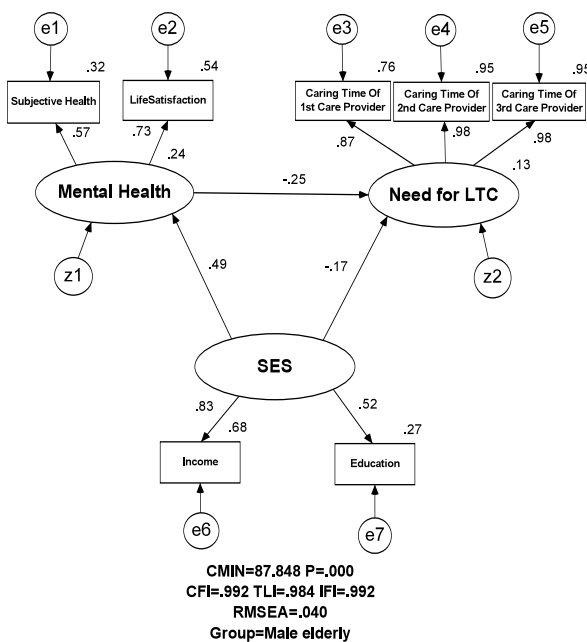| Variable	Direct		Indirect		Total	
	Men	Women	Men	Women	Men	Women
SES ⟶ NLTC	-0.172	-0.136	-0.122	-0.112	-0.294	-0.248
Mental Health ⟶ NLTC	-0.250	-0.203	-	-	-0.250	-0.203
SES ⟶ Mental Health	0.489	0.552	-	-	0.489	0.552

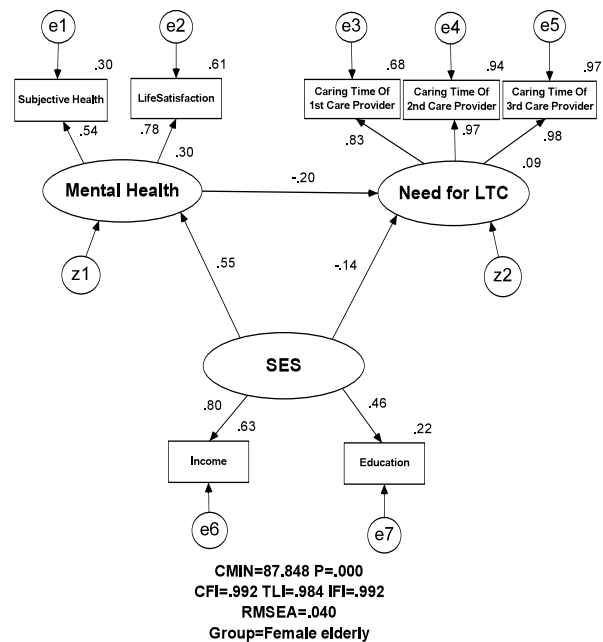Figure 1 Structural relationship between the SES, mental health and NLTC among the Tibetan male elderly

Figure 2 Structural relationship between the SES, mental health and NLTC among the Tibetan female elderly

slightly stronger among the Tibetan male elderly (with a coefficient of -0.294) than the female ones (with a coefficient of -0.248).

3.3.5 Gender difference on the correlation between SES and mental health

The correlation between SES and mental health was presented in Table 5, Figure 1 and Figure 2. Positive and relatively strong effect exerted from the SES onto mental health was observed both for the Tibetan male elderly and female elderly. While the association between SES and mental health was founded to be slightly stronger among the Tibetan female elderly (with the value of 0.552) than their male counterparts (with the value of 0.489).

3.3.6 Critical Ratios for Differences between Parameters

Critical Ratios for Differences between Parameters (CRdiff) indicates the ratios between the parameters difference and the estimated standard error of this difference. The CRdiff value squared is an approximation for how much the chi-square test would increase if one imposed the constraint on the model parameters. The CRdiff tests can be applied when testing equality constraints between two previously free parameters. If |CRdiff|<1.96, the test is statistically non-significant (a =0.05), which means that two parameters are equal and cannot reject the hypothesis that the two variances are equal in the population.

In this study, the CRdiff value for the relationship between SES and NLTC, between mental health and NLTC among the Tibetan male and female elderly were 9.755 and 2.250 separately. As for the association between SES and mental health among the Tibetan male and female elderly, its CRdiff value was 2.720. All of these three CRdiff values are greater than 1.96, indicating that the difference on the three above relationships between Tibetan male and female elderly was statistically significant.

3.4 Discussion
3.4.1 Relationship between mental health and NLTC

Negative correlation between mental health and the need for LTC is the most important finding of this study; because there are only few researches explored the relationship between mental health and the NLTC and no existing studies had examined the gender differential on the association. Many existing studies had mainly investigated the NLTC of the elderly who suffered from physical disability, such as Wolfe et al. conducted a 10-year follow-up study on the NLTC of the stroke patients in south London of UK[10] . Among the few studies involving the relationship between mental health and the NLTC, researchers just introduced the distribution of NLTC of the elderly, without exploring the relationship between mental health and need for LTC. Such as, Kim et al. studied the NLTC of the patients with dementia[12] ; Reid et al. investigated the influencing factors of the mental disorders and the NLTC by the adult patients[11] . In addition, the study also explains why there were 53 percent of the patients with dementia, 34 percent with mental health problems and only 12 percent were in good mental health among the patients who were using the home care and institutional nursing care services in one study, this is because there is a negative correlation between mental health and the NLTC.

3.4.2 Correlation between SES and NLTC

Negative correlation was observed between SES and the NLTC among the Tibetan elderly, which means that the higher of the individual's socioeconomic status, the less of his need for LTC; while for those with lower socioeconomic status, their need for LTC is higher. Hoi le et al. conducted a survey on the 2,240 Vietnamese elderly aged 60 years or over and found out that the socioeconomic status of the elderly (such as education, household income) could affect their needs for LTC[7] , the results of his study were almost same to this study. The results of this study also explained the residents of Ontario, Canada, whose socioeconomic status were lower tended to have a higher intention of being cared and use caring services more frequently[8] . In

addition, to a certain extent, the results also explicate why those from the underdeveloped areas reported more unmet care needs among the 1,251 British stroke patients[6].

3.4.3 Association between SES and mental health

The relationship between SES and mental health was found to be positive among the Tibetan elderly. The result indicates that the higher level of the one's socioeconomic status, the better status of his mental health; while for those with lower socioeconomic status, their mental health are worse. Positive correlation between socioeconomic status and mental health is the same to the results of the previous studies: 1) people with lower socioeconomic status tend to experience more mental health problems[15]; 2) individuals from the higher socioeconomic status groups are more likely to have a better mental health[16, 17].

3.4.4 Structural relationship between SES, mental health and NLTC

Using the structural equation modeling, this study explored the relationship among socioeconomic status, mental health and the need for LTC. As shown in the results, the socioeconomic status could not only have a direct impact on the need for LTC, but also could indirectly influence the need for LTC via mental health. It also, to some degree, shows the importance of socioeconomic status.

Existing studies consistently showed that there is a positive correlation between the individual's socioeconomic status and their health (including mental health), which means that a higher socioeconomic status of the individual, his health will be relatively better[31–34]. Specifically, the difference on socioeconomic status usually means the differences of the ability on obtaining the medical services, occupational risks, social support, and life stress. These differences ultimately led to the different level of individual's health[35]. Some researchers also give a similar explanation as below: those who have higher socioeconomic status are more likely

to obtain medical services, more easily to build and maintain their social relationships and more likely to live in good communities, such group will eventually have a higher level of health[36, 37]. It should be emphasized that, from a macro perspective, the impact of individual's socioeconomic status on health is not simply caused by socioeconomic status only, but caused by various factors combined together, including the individual's lifestyle, environmental factors and the social factors and so on[38, 39]. Of course, there are also researchers believe that ecological factors also play an important role in the process[40].

The influence of socioeconomic status on the health narrated above, combining with the structural analysis of the association between socioeconomic status, mental health and the need for LTC among the older persons in this study, the process of the socioeconomic status exerting its effect on the need for LTC can be further specifically summarized as follows: those elderly who are on different socioeconomic status live in different communities, they have different lifestyle, owning different ability to obtain medical services and various degrees of social support. All of these lead to their different mental health conditions, and eventually, they have different levels of the need for LTC.

3.5 Main conclusions

Firstly, members are the major providers of the six basic needs for LTC in this study. The spouse is the most important primary care provider in any kind of the basic needs. Sons, following the spouse, take the secondary role on satisfying the needs of "Cared when sick", "Cash or things" and "Discuss important things" for the elderly. While for the daughters, following the spouse, take the secondary role on satisfying the needs of "Housework", "Talk heartily" and "Going outside together" for the elderly. Comparing with these three main informal care providers, the role of others as the care providers is relatively lower among all of the respondents.

Secondly, among these six basic needs for LTC,

including "Cared when sick", "Housework", "Cash or things", "Talk heartily", "Discuss important things" and "Going outside together", the percentage of their being "always" satisfied was 71.2%, 60.1%, 40.5%, 54.7%, 58.2% and 55.8% respectively. Therefore, except the "Cash or things", more than half of other five kinds of needs for LTC could be always satisfied. Comparing with the needs could be "Always" and "Frequently" satisfied, the remaining four ones, namely "Sometimes", "Seldom", "Never", "Not needed", their proportion is relatively low.

Thirdly, there is a positive correlation between socioeconomic status and mental health both for the Tibetan male and female elderly. That is, the higher socioeconomic status of the Tibetan urban elderly, the better of their mental health; the lower socioeconomic status of the Tibetan urban elderly, the worse of their mental health. Slight difference was observed on the correlation between SES and mental health, while it was slightly stronger among the Tibetan female elderly than their male counterparts.

Fourthly, there is a negative correlation between mental health and the NLTC both for the Tibetan male and female elderly. Namely, better mental health of the Tibetan urban elderly would mainly indicate their fewer NLTC; while for those whose mental health is worse, their NLTC would be more. Subtle difference was found about the relationship between mental health and the NLTC, and it was little stronger among the Tibetan male elderly than the female ones.

Fifthly, Tibetan male and female elderly would not only have a direct impact on the need for LTC, but also have an indirect impact on the need for LTC through mental health, and both the direct and indirect effect are negative. That is to say, the higher socioeconomic status of the Tibetan urban elderly, the less their needs for the LTC; the lower socioeconomic status of them, the more needs for the LTC. Minor distinction was observed on the association between SES and the NLTC, while the total effect was slightly stronger among the Tibetan male elderly than their female counterparts.

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