Sex and Ethnic Differences in Psychological Distress among Older Taiwanese Adults: Relationships over Time

Chi Chiao, Ph.D.[1] & Amanda L. Botticello, Ph.D.[2]

[1]Department of Public Health
College of Medicine
National Cheng Kung University
Tainan Taiwan 701

[2]The Institute for Health, Health Care Policy, and Aging Research
Rutgers the State University of New Jersey
30 College Ave.
New Brunswick, NJ 08901

Background & Significance

Disparities by sex, ethnicity, and other status characteristics are frequently a focus of research related to aging and mental health in industrialized countries. Comparatively less attention has been concentrated on group differences in mental health among the older members of the population in Asian countries, particularly Taiwan. As the Taiwanese population ages (Hermalin, 1995; He et al 2005), it is increasingly important to understand the unique mental health issues facing the nearly elderly and the elderly. Depression is one of the most common and chronic mental health conditions among older adults in Chinese communities (Chi et al 2005; Chou et al 2005). Symptoms of depression experienced in late life have serious implications for the health and functioning of older individuals as rates of depression are consistency associated with cognitive impairment (Mehta et al 2003; Steffens et al 2006), physical illnesses such as heart disease and stroke as well as functional impairment (Rowan et al 2005; Turvey et al 1999), and risk of suicide (Coren & Hewitt 1999; Gottfries 2001; Kessler, Borges, & Walters 1999; Tsoi & Kua 1987). Further complicating the issue is the social fact that some groups of individuals are more vulnerable to experiencing depressive symptoms than others (Blazer & Hybels 2005; Townsend, Miller, & Guo, 2001; Turner & Lloyd, 1999; Turvey et al 1999). Females, ethnic minorities, and those with lower socioeconomic status (SES) are more likely to suffer from increased levels of depressive symptomatology (Aneshensel et al 1981; Mirowsky & Ross 1989; 1995). These social patterns represent an opportunity to identify socially based adversities and disadvantages that are unequally distributed across social groups and influence individuals' well-being (Pearlin 1989).

Intergenerational family living arrangements, are documented as a main factor in well-being among older adults in Asian countries (Hermalin 1995), particularly women (Mason 1992). Co-residence of family members is a traditional feature of Taiwanese households, thus, care of the elderly is the domain of families and institutionalization is rare. However, traditional family living arrangements are shifting due to industrialization, urbanization and emigration (Mason 1992). These societal and cultural shifts have implications for mental health and functioning of individuals as co-residence with adult children provides economic and social security, factors associated with emotional well-being. These changes are most consequential for elderly women because they live longer and by nature of the traditionally patriarchal culture and sex-based division of labor are more dependent on the family systems of care (Bauer, Feng et al. 1992; Mason 1992). Research in this area indicates that much more work is needed to fully understand the impact of changing living arrangements on the well-being of older adults as well as gender differences in distress. Such work also indicates that although economic development may erode traditional family living arrangements, development also carries health benefits for aging individuals such as independence and greater economic well-being (Mason 1992).

Ethnicity also serves as a marker of status differences affecting the exposure to stress and access to resources, in turn disproportionately increasing the vulnerability to psychological distress among some groups more than others. The increased rates of depression among members of racial and ethnic minority groups have been frequently documented in the United States (Kessler and Zhao 1999). This disparity is explained in part because of ethnic differences in SES (Ulbrich, Warheit et al. 1989; Hayward, Miles et al. 2000; Goodman, Huang et al. 2003). Such status characteristics have been demonstrated to be protective against depressive symptomatology (Miech, Eaton et al. 2005) and frequently vary by gender and ethnicity (Ulbrich, Warheit et al. 1989; Hayward, Miles et al. 2000; Inaba, Thoits et al. 2005) Comparatively, the existence of such subgroup differences in mental health outcomes in countries such as Taiwan has been has not been as consistently investigated. Prior evidence indicates that substantial variation in education, job status, and income exists among the three major ethnic identities in non-aboriginal Taiwan—Fukien, Hakka, and Mainlander—even among younger cohorts (Gates 1981; Tsai 1992). This paper will assess the presence of ethnic group differences among older adults in Taiwan and examine the role of SES in the association between ethnicity and mental health.

A large literature on the social influences of health disparities also connects group differences with the experience of stress, both episodic and ongoing, and the availability of support, both instrumental and social, to mitigate the influence of stress. By the nature of the aging process, the end of the life course coincides with social, economic, and health transitions that are inherently depressogenic. In particular, much of the mental health research related to older adults documents a robust association between the number of physical limitations experienced by older adults (Chiou et al 2005). Such declines in functioning are not only distressing, but oftentimes curtail the ability of older people to live independently, further increasing the risk for depression (Yasunaga & Tokunaga 2001). The end of the lifecourse is frequently marked by the widowhood and bereavement (Turvey et al 1999); oftentimes a change in oftentimes living arrangement of an older individual (Bennet 2005). The experience of grief is a natural reaction to the death of a loved one and is not considered pathological. However, persistent grief has a deleterious impact on mental health (Szinovacz and Davey 2004), exacerbated by additional social losses such as change in marital status, the social network, and living arrangement of an older individual (Szinovacz and Davey 2004; Turner, Killian et al. 2004; Chiou, Chen et al. 2005).

The interplay between these ubiquitous late-life stressors and the association between gender, ethnicity, and psychological distress is explained with the stress process theory (Pearlin 1999). This framework indicates that differential exposure to distress conditions, coupled with a lack of adequate coping resources, explains a good deal of the variation in the relationship between social position and depressive symptoms among adults samples in the U.S. (Turner & Lloyd 1999; Turner & Marino 1994; Turner, Wheaton & Lloyd 1995). Substantially less is known of how these processes operate among older adults in Asian countries, a considerable deficit in our knowledge of mental health that the current project seeks to address. Overall, the prevalence and correlates of depressive symptoms are not as well documented in late life in comparison to other periods of the lifecourse using nationally representative community data from an Asian nation. Similarly, explanatory work focusing on the social mechanisms elicit disparities in mental health outcomes between social groups are even more elusive. This research intends to address these gaps in the literature by focusing on the associations between depressive symptoms, social placement, and stress for the elderly in Taiwan by conducting longitudinal analysis with a nationally representative sample.

Sample and Data Collection

This research is based on a secondary analysis of the Survey of Health and Living Status of the Near Elderly (NE) and Elderly in Taiwan. Data were collected by the Bureau of Health Promotion of the Taiwan Public Health Department from 1989 to 1999. This survey was designed to study the impact of socioeconomic development on the physical and emotional well-being of the older adult population in Taiwan. A multi-stage equal probability sampling frame was used to obtain a nationally representative

sample of both community-dwelling and institutionalized older adults. In the first stage of the design, a sample of 56 townships was selected from 331 non-aboriginal administrative units. Subsequently, blocks (*lins*) were sampled within each of selected townships. Finally, residents of the sampled blocks aged 60 or older as of December 31, 1988 were randomly selected for study participation.

Baseline interviews were conducted in 1989, with follow-up surveys administered in 1993, 1996, and 1999. A total of 4,049 out of the 4,412 sampled individuals completed the initial face-to-face interviews; the number of respondents decreased to 3,467 for the 1993 follow-up, 3,002 in 1996, and 2,563 in 1999. This translates into response rates of 92%, 91%, 89%, and 90% for each respective wave of data collection. To compensate for the loss of participants due to attrition and death, an additional 3,041 NE individuals between ages 50-66 were added to the study sample in 1996, of which 2,462 NE (81%) completed interviews. This study utilizes data from respondents sampled in both 1989 and 1996. In this research, we separate the two periods of panel follow-ups: ages 50-66 and above collected in 1996-1999 and ages 60 and above collected in 1989, 1993, 1996, and 1999. Panel contrasts provide possible cohort differences (nearly elderly versus elderly) in relationship between social factors and depressive symptoms. All analyses use sampling weights and statistical procedures with robust standard errors correct for any potential bias. STATA version 9.0 (Stata Corporation, College Station, TX) is used for all analysis.

Measures

Dependent variables. Depressive symptomatology will be measured by the Center of Epidemiological Studies-Depression (CES-D) (Radloff 1977). This measure has been widely used in survey research to assess emotional distress for the previous week, and has been shown to be a valid and reliable measure when used with older Taiwanese population (Cheng & Chan 2005). The full CES-D consists of 20 items. The items used in this instrument were varied by waves: 17 items in 1989, 11 items in 1993, 10 items in 1996, and 10 items in 1999, however. Respondents were asked whether or not they experienced mood changes within the previous week, with responses ranging from never (0) to four or more days (3). Examples of mood changes included "feel not interested in eating," "lack enthusiasm for doing anything," and "feel lonely or isolated." Based on prior research suggesting possible appropriate dichotomous cutoffs for different versions of the CES-D (e.g., Cheng & Chan 2005), the current analysis will involve the use of summated CES-D scores that are subsequently categorized into either a high or low depression using conventional criteria.

Independent variables: background characteristics. The sociodemographic variables of **sex, ethnicity** and **age** were assessed using the standard measures employed in survey data collection. Respondent sex is measured dichotomously. Ethnicity is categorized as Fukien, Hakka, Mainlander (China-born) identity, and other ethnic groups. This research will focus on adults aged 50 and older for two reasons. First, limited evidence using large-scale epidemiologic studies on emotional distress is available for sample older than age 50 (Kessler et al 1994). Second, research suggests that mental health problems decline with age but then escalated after age 65 or older (Kessler et al 1992; Mirowsky & Ross 1989; Newmann 1989; Wade & Cairney 1997; 2000); the current study intends to examine this possible transition in depressive symptoms trajectories as study participants transition to the older period of the lifecourse. Age will be divided into six mutually exclusive categories due to possible non-linear association with depression (Chou & Chi 2005; Chi et al 2005): 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, and 80+.

Socioeconomic status is assessed with two measures: education and employment status. Education is comprised of 6 categories: illiterate, literate but informal education, primary education or lower (1-6 yrs of schooling), junior high school graduated or lower (7-9 yrs of schooling), senior high school graduated or lower (10-12 yrs of schooling), and college and above (13 yrs and greater of schooling). Employment status reflects the respondents' prior employment history and consists of two categories: no and yes. The

respondents' **living arrangements**, a time-varying covariate, is measured categorically as live alone, live with partner, live with children and/or grandchildren, and other (non-family) arrangement. **Marital status**, a time-varying covariate, is obtained from respondents' self reported marital history.

Stressors and Social support. Aging is often accompanied by deteriorating health, which may be experienced as distressing. Although there are many ways to measure changes in physical health, this analysis will include an overall measure of health satisfaction to gauge health status. **T**he respondents respond to an item measuring one's overall **perceived health status** will be included in all analyses as a subject indicator of health status. Specifically, participants were asked, "Overall, how would you rate your health?" Responses ranged from poor (0) to excellent (5). A bereavement measure is also included in the analysis as a measure of an acute stressor that commonly occurs in old age that not only increases risk for distress but is also accompanied by social changes. And finally, a measure of perceived social support is examined in the analysis as a *mediator* in the stress process. Respondents were asked, "How much do you feel that your family, relatives or friends are willing to listen when you need to talk about your worries or problems?" and "How much do your family, relative, or friends make you feel loved and cared for?" Responses ranged from a great deal (1) to not at all (5).

Analytic Strategy

This analysis addresses 1) if risk for depressive symptoms varies across social groups (sex and ethnicity) over time; 2) if this variation is affected by living arrangement and SES; 3) and role of stressors and support play in the association between gender and ethnicity and risk for distress. All analyses will be conducted separately for the elderly and NE samples due to accommodate for differences in data collection and potential cohort effects. This survey collected information of the elderly group over four waves (1989, 1992, 1996, and 1999) and the NE group for two waves (1996 and 1999). To meet the specific aims of this research, we will use the following analytic strategies. For the specific aim 1, bivariate analyses will be used to determine whether there is significant variability in stress and psychological distress for different subgroups of the population during 1989-1999 among the elderly cohort, in comparison to the NE cohort. Subgroups will be specified by sex, and ethnicity. These subgroup distributions will provide a picture of how depressive symptoms varied within and between different subgroups over time. Generalized estimating equations (GEE) with robust standard error estimates are used to take into account within-subject correlations during the 10-year follow-up period (Zeger & Liang 1986; Liang & Zeger 1986). A piecewise model is proposed to compensate for the two cohorts. Individual growth models address change over time within- and between-subjects simultaneously (Bryk & Raudenbush, 1987; Rogosa & Willett, 1985; Rogosa, Brandt, & Zimowski, 1982; Willett, 1988).

Preliminary Results

Table 1 provides descriptive statistics for the NE and elderly cohorts. As expected, risk for depression was higher in the elderly group in comparison to the NE than the NE (33% vs. 24%). Fifty-seven percent of the elderly group was male, compared to 52% male in the NE. Due to the Communist victory in 1949, a number of mainlanders migrated to Taiwan. The elderly group had a higher percentage of mainlander than the NE (22% vs. 8%). The higher proportion of older adults was illiterate in the elderly group than the NE (42% vs. 25%). The NE group was more likely to be part of the workforce and have both spouses living than in the elderly group.

The descriptive analyses suggest significant baseline differences in depressive symptomatology between the elderly and NE group. Further investigations will explore the sex and ethnic differentials in the depressive symptomatology change between these two cohorts as well study GEE and individual growth models incorporating sex, ethnicity and living arrangement from the aging life perspective for each of cohort.

Table 1 Descriptive Statistics of Elderly and Nearly Elderly Cohort (Percentages)

	Elderly Cohort (n=4,049)	Near Elderly Cohort (n=2,462)
Dependent Variables		
Baseline Depressive Symptomatology (%)		
Higher risk	33.0	23.5
Lower risk	67.0	76.5
Individual Variables		
Gender (%)		
Female	42.9	48.5
Male	57.1	51.5
Age in 1996 (%)		
50-54 yrs	--.-	28.6
55-59 yrs	--.-	32.5
60-64 yrs	--.-	26.9
65-69 yrs	21.7	11.9
70-74 yrs	33.4	--.-
75-79 yrs	20.9	--.-
80+ yrs	24.0	--.-
Ethnicity (%)		
Fuchien	60.9	73.5
Hakka	15.0	17.3
Mainlander	22.4	7.7
Other	1.7	1.6
Education (%)		
Illiterate	41.5	25.4
Literate but with informal education	8.8	3.9
Primary education: 1-6 yrs	30.7	46.3
Junior high school: 7-9 yrs	8.1	10.2
Senior high school: 10-12 yrs	5.8	8.4
College and above: 13+ yrs	5.1	5.8
Employment Status (%)		
Yes	27.9	48.6
No	72.1	51.4
Marital Status (%)		
Married	64.3	83.4
Widowed	28.7	11.3
Separated or divorced	3.2	2.8
Never married	3.9	2.5
Living arrangement (%)		
With partner only	13.1	11.5
Alone	9.7	4.8
Other[†]	77.3	83.7

Note: Percentage may not add up to 100 due to rounding.

[†]Other ethnic groups include the groups who lived with children and/or grandchildren, and other (non-family) arrangement, which needs to differentiate in continued analyses.

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