Validating the Center for Epidemiological Studies Depression Scale (CES-D) for Use among Older Adults in Nepal

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Introduction

Declining fertility and improvements in health status and long life suggest that the aging population will increase continue to increase in poorest countries like Asia and Africa (Martin, 1990). Over the last several decades, many of the poorest countries in the world have undergone substantial economic growth and great changes in social conditions. With the fall of infant and child mortality rates and increase in adult survival noncommunicable disease have emerged as important causes of death associated with aging in the poorest regions of the world (Murray and Lopez, 1996). Together, these changes will likely have consequences for the mental health of the elderly living in Asia and other regions that are under going rapid change.

Global population aging has led to new research activities throughout the world. There are many countries, including Nepal, for which only limited health and aging data are available. We know much less about mental health and don't have equivalent measures for research in Nepal as well as other Asian countries. Mental health problems are underdetected in Nepal, therefore we know even less about mental health status of the elderly. The purpose of this study is to (1) to evaluate the validity of measures of depression (CES-D) scale and (2) to describe overall mental health status of a sample of older Nepalese. Specifically, we examine data from the Chitwan Valley Family Study of Nepal. Specific research questions are as follows:

Research Questions

1) What are the main factors that can be ascertained by gathering information using the CSE-D scale among Nepalese Elderly?
2) How does this scale compare to the United States, other western nations, and other Asian nations from which we have data?
3) What relationship do age, gender, and health status have with depression in the Nepalese context?
4) How do these relationships compare to the United States, other western countries nations, and other Asians countries from which we have data?

Background

Depression has been defined as an unpleasant feeling of sadness and/or dejection marked by difficulties in sleeping, concentrating and acting. Depression often arises from stress and strain, making it an excellent indicator of well being (Turner et al., 1995). Also, depression is probably the single most studied aspect of mental health. And, it has practical, clinical, and scholarly implications. Unfortunately less is known about the prevalence of depression and other indicators of mental health in poorer, rapidly changing nations such as those countries in Asia, Africa, and some parts of Latin America.

A growing number of epidemiological studies are examining the relationship between population aging in such nations and psychopathological well being. These studies commonly rely on self-report, standardized instruments, which measure

psychiatric symptomlogy in non-clinical populations (Beals et al. 1991; Manson et al. 1990). There are numerous benefits in employing self-report, standardized instruments, as they can be easily administered to large groups, can be readily scored, and may allow for statistical comparison between ethnic population groups. A weakness of using standardized measurement, however, is in the assumption that concepts and expression of psychological disorders are uniform across cultural groups. This may be an ethnocentric assumption when considering different between cultural groups (Marsella et al. 1985).

One of the most frequently used standardized measures of depression is the Center for Epidemiology Studies on Depression (CES-D), a self-administered instrument consisting of 20 items that is designed to measure the level of depressive Symptomatology in community populations. Although the CES-D was designed primarily to measure depression symptoms, (e.g., feel blue, feel depressed, etc), it also measures self-esteem and social withdrawal (e.g., lonely, sad, fearful, a failure, feeling bothered, talking less, feeling that people are unfriendly, and feeling disliked etc).

In Radloff's (1977) original study, the CES-D was administered to African-and European-Americans. In Western samples, four factors are typically differentiated: (a) depressive mood (feeling blue, depressed, lonely, sad, fearful, a failure); (b) positive affect (happy, feeling as good as others, enjoy life, hopeful); (c) somatic symptoms (feeling bothered, losing sleep, keeping ones mind on problem, using too much effort and (d) interpersonal problems (feeling disliked, feeling that people are unfriendly) (Radloff, 1977). While Thorson and Powell (1993) obtained a five-factor solution for an adult sample, other studies have repeated Radloff's (1977) four-factor solution (Clark et al.

1981; Golding & Aneshensel 1989), including a study using a Korean version of the CES-D (Noh et al. 1995).

Several studies relying on culturally diverse samples have questioned the assumption of universality concepts of psychological disorders, thereby challenging the validity of using standardized measures among non-Western populations. For example, research findings on depressive disorders suggest that non-western groups may report more somatic symptoms than Western groups (Marsella et al. 1985). The importance of the somatic component has also been found among the Chinese (Cheung, 1986; Kleinman & Kleinman, 1985), Filipinos (Crittenden et al. 1992) and Vietnamese (Flaskerud and Soldevilla 1986). Researchers have established that the CES-D has acceptable validity for use with Korean and Chinese samples (Lin, 1989). Factor analysis results for Chinese and Japanese American adults obtained a three factor solution in which depressive mood and somatic symptoms items were combined in a single factor (Kuo 1984; Ying 1988). The factor analysis for Korean and Filipino Americans in Kuo's study also supported a combined depressed mood and somatic symptoms items and found only two unique factors. However no study has reported the construct validity of the CES-D in Nepal, for use with the older adult population.

Nepal is a densely populated, landlocked, Himalayan nation located between India and China with a total population size of around 24 million (Statistical Census Bureau of Nepal, 2000). Population aging, typically accelerated by declining birth rates and declining mortality, has just began in Nepal currently only 3.5 percent of the population is over the age of 65 (U.S Bureau of the Census, 2000). Only 4 percent of the population lives in urban areas and farming is the major occupation. Just over 38 percent

of the population is literate, but most (56.6 percent) is economically active. Although there is no universal public pension in Nepal, older adults (age 65+) are less likely to be economically active than the general population (26% of elderly are economically active).

Nepal is one of the world's most economically depressed nations and is a non-Western, very traditional society (Watkins, Regmi, & Alfon, 1989). Nonetheless, there has been a push in Nepal toward greater economic development and closer links to the West (Pigg, 1992). It is still difficult to speculate whether such ideological moves will affect the traditionalism of the Nepalese people. Because of a possible combination of Nepal's traditionalism and changing national characteristics, it is difficult to predict how Nepalese depression scores will compare to United States, other Western nations and other Asian nations.

The Nepalese do not typically use mental health services for the treatment of depression, other these are used only for problems of severe psychoses. Therefore, the general public attitudes towards mental illness are fear and rejection. A mentally ill person is often considered to be an individual born under "bad day" or she/he is meant to suffer the consequences of his, his ancestors' misdeeds in their previous lives. Mental illness brings shame on the whole family members. It affects one's social status in society and it also affects the marriage of the family members. According to report from U.S Department of Health and Human Services (2001), Asian people in general are opposing to talk about mental health issues because there is disgrace associated with revealing mental health problems. Thus it may be difficult to detect depression in Nepal because of the extreme social stigma it carries. It is for this reason that measures of mental health

may not translate well in the Nepalese context. There are difficulties in applying Western diagnostic criteria or symptoms scales to both minority populations and cross culture populations (Kleinman & Good, 1985).

In summary, to establish the validity of the CES-D for use in Nepal with older adults, a factor analysis will be conducted and results compared to studies described above. To further establish the validity of the sub-components and the overall measures of depression, characteristics commonly associated with depression will be correlated with the measures evolving from our analyses. Next, we describe the relationship between depression and health, age, and gender that have been supported in other studies.

Correlates of Depression

Many cross-sectional studies have confirmed that depressed older person have more physical disabilities than their non-depressed peers (Broadhead et al. 1990, & Wells et al. 1989). Several longitudinal studies also found evidence for a negative effect of depression on physical disability over time (Turner, & Noh, 1988; Gallo et al. 1997). The psychiatric and medical literature abound in evidence of the high prevalence of depression among individuals with physical health problems (Green & Austin, 1993; Fielding, 1991; Wells et al. 1991). A review of studies indicates that individuals who suffer from chronic illness, particularly illness that obstructs the daily functioning, are especially susceptible to problems with depression (Taylor & Aspinwall, 1990) and this relationship has been reported across cultures (Ormel et al. 1994). Thus, physical health and depression are expected to be related in Nepal as well.

Studies of depression in later life have also suggested that depression is more common among women (Kennedy et al., 1989). Several studies have found such clear gender differences in the prevalence in depressive disorders (Meltzer et al., 1995). The literature on psychosocial well-being among older people finds that women are much more likely to report depressive symptoms (Nolen-Hoeksema et al, 1999). Across many nations, cultures, and ethnicity, women typically encounter twice the amount of depression as compared to men (Nolen-Hoeksema, 1987). Furthermore, several studies have indicated that females tend to score higher levels of depressive symptoms (Kessler et al., 1994; McGrath et al., 1992). The evidence suggests that differences in rates of depression are largely a consequence of difference in the performance of roles. Many studies suggest that family, marital, and other interpersonal factors serve as a primary basis for these differences (Vanfossen, 1981; Billings & Moos, 1984). Furthermore, Nolen-Hoeksema (2001) offers the explanation that women have less power and status than men in most societies; they experience certain traumas and also experienced lack of respect and constrained choices. Thus, if the CES-D is valid in Nepal among the elderly, rates of depressive symptoms should be higher among women.

Finally, a major contributing factor to increased depressive symptoms in later life is the high rates of illness and disability among older people (Berkman et al., 1986). Somatic symptoms, such as sleep or appetite disturbances and reduced energy could be expected to increase as a result of depression, illness or both. Somatic symptoms alone however, do not account for increased depression among the elderly. Rather both depressive symptoms and somatic symptoms have been found to increase with advancing age (Kessler et al., 1992). An association between increasing age and depression has

been shown inconsistency, a pan-European study found that there was only a modest association between increasing age and depressive symptoms after the age of 65 (Prince et al., 1999). Yet another community study demonstrated an association between age and depressive symptoms after controlling for a number of socio-economic and health related variables (Blazer et al., 1991). Again, it is expected that age and depressive symptoms, if measured correctly by the CES-D.

The Setting

The setting for this study is the Western Chitwan Valley lies in South-Central Nepal. Chitwan is a wide flat valley situated in the Himalayan foothills at approximately 450 feet above sea level. A wide flat valley that was covered by virgin forests until the mid-1950s, when the government began to clear the land to eradicate malaria and make farm plots available to in-migrants. Approximately two thirds of the Chitwan valley was cleared of its dense forest and approximately one third of the original forest was preserved as Royal National Chitwan Park, which remains home to several endangered species today, including Bengal tiger, elephant, rhinoceros, leopard, deer and poisonous snakes. Rich soil flat terrain and the promise of new opportunities drew many farmers into the area, but the valley remained a remote, isolated until the late 1970s.

The first all weather road into Chitwan was completed in 1979. This road linked Chitwan's largest town, Narayanghat, to cities in Eastern Nepal and India. Other important roads followed, linking Narayanghat to Kathmandu, Nepal's capital city, which is 100 miles far. Because of Narayanghat central location, after few years this once isolated town was transformed into the transportation hub of the country. Today

Narayanghat is one of Nepal's largest and fastest growing urban centers. This change produced a rapid proliferation of government services, such as school, health post, as well as business and wage labor jobs that spread through Chitwan. The population of this valley continued to grow as well, with both in-migration and natural increase making significant contributor to this growth.

Together these forces dramatically altered the social and economic organization of Chitwan within the lifetimes of its residents. Before health and bus services, there were many schools spread through out the valley. The average number of minutes to walk to nearest school declined as school scatter through out the valley compare to nearest health or bus services (Pienta, Barber, Axinn, 2000). Bus services through out the valley have given inhabitants access to the wage labor opportunity and commerce of Narayanghat. There have also spread a broad array of government services, including schools, health post, police post and agricultural cooperatives. These changes form a significant affect of the local context for the hundreds of small farming communities in Western Chitwan Valley. The present study examines the overall mental health among the older people in a 100 square mile area of Western Chitwan that was cleared and settled.

Methods

Sample

Data for this study were obtained from a convenience sample of older adult living in the Chitwan Valley of Nepal. The research team began collecting data in the Fall of 1998. The overall goal of initial data collection efforts was to investigate physical and mental health among older people in Nepal. In order to establish a set of measures of

physical and mental health that were meaningful for a previously unstudied population of elderly, a combination of ethnographic field research methods and semi-structured interviews of older adults living in the Chitwan Valley of Nepal were used (Axinn, Pearce, & Dirgh, 1999). From these data, the research team was able to identify salient dimensions of physical and mental health for the daily living of the elderly living in the Chitwan Valley. Individual interviews were conduct with 106 older adults residing in the Chitwan Valley.

Measures

Depression - The Center for Epidemiology Studies of Depression (CES-D) scale was adapted to measure depressive symptoms. Radloff (1977) discusses in detail the properties of the scale and its appropriateness for use with community residence adults. Depressive symptomlogy is measured by the respondent's score on a 10-item scale that was derived from the original 20-items of the CES-D. The participants were asked about 10 depressive symptoms that they might have experienced in the seven-day period preceding the interview. Each item references the frequency of feelings such as loneliness and happiness, with a 2-response category where a respondent either response "yes" having a symptom or not. The items included were: depressed, an effort much of time, sleep well, happy, feel lonely, feel interesting in things, enjoy life, feel sad, fee get going, and lot of energy. Most of the people reported that each symptom was absent and! as persistence of the symptom increased the proportion of the sample reporting that symptom decreased. Items reflecting positive affect showed the opposite pattern and were reverse coded before analysis.

Chronic Disease Status - A measures of chronic disease status is also defined. Respondents were first asked whether they had ever been to a doctor. Of the 106 respondents, only 87 respondents had visited a doctor in their lifetime. Of those reporting they had been to a doctor, they were then asked "Has a doctor ever told you that you have…hypertension/diabetes/stroke/heart disease…yes or no?" The total number of chronic diseases is summed into a single index of comorbidity.

Self-Rated Health - Respondents were asked, "Overall how would you say your health is…to rate their health as excellent, very good, good, fair, or poor? We include this as a measure of self-rated health in our analyses.

Functional Limitations - Physical functioning is measured through a variety of function-specific indicators referencing limitations of lower body mobility, large muscle strength, upper body mobility, and the activities of daily living. Lower body mobility problems refer to any difficulty walking (across the room, a block, or a mile) or difficulty climbing stairs (one or several flights). Any reported difficulty with reaching arms above the head, picking up a dime from a table, or lifting a heavy object (10-pound bag of groceries) defines as an upper body mobility limitation. Large muscle strength problems reference any difficulty sitting for a length of time, rising from a sitting position, or kneeling, stooping, and pushing/pulling large objects. Finally, persons, who report any difficulty with one or more of the following items-eating, bathing, dressing, or getting in and out of the bed-are classified as having an activities of daily living limitation.

Measurement of Sociodemographic Characteristics - Age is measured in years from two questions asking respondents to report their age or the year they were born.

Gender is constructed based on the interviewers observation and coded male (=0) or female (=1).

Analytic Plan

A factor analysis of the items from the CES-D is proposed. The factor analysis is the central analysis that is planned. Results from the factor analysis will then be analyzed further. The sub-components and summary measures of depressive symptoms will be correlated with age, gender, and measures of health (a zero-order correlation matrix will be produced). Bivariate analyses will also be reported: means differences on the sub-components and total depression index will be reported across the groups (men/women, young old/old old; poor health/good health) and the t-test for statistical significance will be calculated. Finally, OLS regression models including all of the independent variables (age, gender, and health) will be estimated for each of the sob-components and overall indicator of depression.

Results

Preliminary results are described next. Descriptive statistics are presented for the sample of older Nepalese living in Chitwan Valley. The sample ranged in age from 55 to 87 with a mean age of 66. Just the less than half of the sample was comprised of women (46.1%). Also, reported in Table 1 are indicators of health of the elderly sample. Out of the 106 respondents, only 87 respondents ever visited doctor. Among those who visited doctor then asked series of question to illicit the prevalence of doctor diagnosed health problems. Heart disease and hypertension were the most common chronic disease condition with 30.12% and 22.38 %of elderly reporting they had been diagnosed as

having heart disease and hypertension respectively. Diabetes (6.10) and stroke (9.20%) and cancer (2.33%) were much less prevalent. the comorbidity index that was constructed from these disease status indicators by simply summing the number of reported chronic conditions, exhibited a range of 0 to 3 conditions among the elderly people in sample. Self-reported health evaluates an individual's view of his or her general health status. Only 12.6% of adults over the age of 55 rate their health as being poor. However, only 4.9% report their health as being excellent. Functional limitations are also frequently reported among the elderly of the sample. Most elderly respondents report difficulty in one of the domains of functional ability. Lower body (96.1%), upper body (80.2%), and strength (100%) limitations are normative.

[Table 1 about here]

Table 1: Descriptive Sample Characteristics of Elderly in the Chiwan Valley (n=106)

		s.d	min	max	n
Demographic Characteristics					
Age (mean in years)	66.0	7.7	55	87	103
Female (%)	46.1				102
Chronic Disease StatusA					
Hypertension (%)	22.9				83
Diabetes (%)	6.1				82
Heart Disease (%)	30.1				83
Stroke (%)	9.2				87
Cancer (%)	2.3				86
Comorbidity Index (mean # condition)	0.6	0.8	0	3	78
Physical Functioning					
Any Lower Body Limitation (%)	96.1				103
Any Upper Body Limitation (%)	80.2				101
Any Strength Limitations (%)	100				105
Any ADL Limitations (%)	55.8				104
Severity of Lower Body Limitations (mean)	4.5	2.4	0	9	105

Severity of Upper Body Limitation (mean)	2.2	1.6	0	5	104
Severity of Strength Limitations (mean)	3.4	0.9	1	5	106
Severity of ADL Limitation (mean)	1.8	2.2	0	7	106
Self-Rated Health					
Excellent (%)	4.9				103
Very Good (%)	2.9				103
Good (%)	29.1				103
Fair (%)	50.5				103
Poor (%)	12.6				103
Psychological Functioning					
Depression (mean # symptoms)	5.0	2.2	0	10	103

A- Calculated for those who have visited a doctor (n=87)

The overall depressive scale ranged from 0 to 10. The mean number of depressive symptoms reported among the elderly was 5.0. Men (5.1) report slightly higher mean number of depressive symptoms than the women (4.8), but this is not a statistically significant difference. Young old and old old report the same number of depressive symptoms on average (5.0).

Together these results provide a nice descriptive picture of the Nepalese sample. There are an adequate number of respondents to conduct the factor analysis. Also, the distribution of men and women, young-old and old, and health reflect a diverse sample of older adults living in the Chitwan Valley.

Conclusions

The purpose of this study is to evaluate the validity of measures of depression (CES-D) scale and to describe overall mental health status of a sample of older Nepalese. Result of the previous studies which indicate that the factor structure of the CES-D is not consistent across various racial/ethnic groups, or between and men women. This study has demonstrates the possibility of gender differences in measurement. In this analysis, same factors structures may identify in men and women.

> We know much less about mental health and don't have equivalent measures for research in Nepal as well as other Asian countries. Mental health problems are underdetected in Nepal, therefore we know even less about mental health status of the elderly. Because of CES-D poor performance, the use of the CES-D cross cultural research should be limited.

In countries such as Nepal, physical health status may be the most relevant criteria for dealing old age, as there are substantial age related changes evident. I found high levels of physical health in my sample of older adults. However, it has been shown that physical health is a silent feature of daily life of older adult in rapidly changing regions of the world such as Nepal. There are only limited heaths and aging data are available currently, future studies of mental health and physical health in Nepal may focuses on these changes and the consequence of such physical health changes for independence and quality of life in old age. On the other hand, access to health care is severely restricted because of low availability and high cost. According to World Bank dollar-a-day estimates, of the 1.3 billion people living below the poverty line worldwide, 40% (515 million) live in south Asia, and the gross national income per capita in that region is only

$393, compared with $1250 for the rest the developing world. We therefore need to priorities the preventive approach to mental illness as well as Physical limitation.

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