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Quality of life (QOL) among community dwelling older people in Taiwan measured by the CASP-19, an index to capture QOL in old age

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ABSTRACT

There was no existing scale in Mandarin Chinese to specifically measure QOL in old age. We aimed to validate a Chinese Taiwan version of the CASP-19 (control, autonomy, self-realization, pleasure), a QOL questionnaire, in Taiwan. The existing CASP-19 Cantonese version was modified into Chinese Taiwan version and pilot tested. Data were then gathered from 699 older people. Score distribution, exploratory and confirmatory factor structure, reliability and clinical validity of the CASP-19 and its shortened version, the CASP-12, were examined. The mean age of the participants was 75.5 (standard deviation (SD) 6.5), and half (49.5%) were female. The mean CASP-19 score was 38.2 (range 11–56; SD 7.1), lower than that of Western countries. Exploratory factor analysis revealed an additional factor, 'participation' (CASPP-19). There was satisfactory internal consistency (Cronbach's α 0.63–0.85) for the subscales, except for the control domain. For the 19-item scale, the first order five-domain model (CASPP-19) yielded the best fit. For the CASP-12, first and second order original CASP-12 models performed equally well. There was an inverse relationship between the CASP total scores and frailty, chronic diseases, depressive disorders, living alone and fall events in the past 12 months, supporting good clinical validity for all versions of the CASP scale (CASP-19, CASPP-19, original and new CASP-12). The original CASP-12 may be presently the best choice for use in China, Taiwan or other Mandarin-speaking populations due to its conciseness and model parsimony.

1. Introduction

About 10.9% of the population in Taiwan aged 65 and over (Ministry of Interior, Taiwan, 2011). There has been a continuous rise in life expectancy in Taiwan where the average life span is 76.0 years for males and 82.7 for females (Department of Health, Taiwan, 2011). With such longevity, QOL becomes a relevant issue. Higher education was associated with increased SF-36 (the Short Form 36-item questionnaire) scores, whereas chronic diseases were associated with lower scale scores in Taiwan (Tsai, Chi, Lee, & Chou, 2004). Yao, Chung, Yu, and Wang (2002) reported that "feeling respected by others" and "being able to get the things one likes to eat" are specific contributors to QOL in the Taiwanese culture.

The assessment of QOL confronts several challenges (Sim, Bartlam, & Bernard, 2011). QOL research lacks an agreed theoretical basis (Higgs, Hyde, Wiggins, & Blane, 2003). Any measurement should be suitable for the population of interest (Sim et al., 2011). A more holistic approach is needed, since QOL among older people is a complex and multifaceted phenomenon (Higgs et al., 2003). Measurements must be sensitive to different bio-psycho-social determinants of QOL. It is generally accepted that older peoples' health status, whatever physical, mental or social

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aspects, affected their QOL. Moreover, the scale should exhibit acceptable psychometric properties. Thus, there is a need for a psychometrically and culturally relevant measure of QOL for use in Taiwan elders.

The CASP-19 is a 19-item Likert-scaled index intending to capture QOL in old age (Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006). Based on the needs-satisfaction model, CASP-19 was first developed with sociological underpinnings in the UK in 2003 (Higgs et al., 2003; Hyde, Wiggins, Higgs, & Blane, 2003) and has been tested in European countries (Sim et al., 2011; Wahrendorf, Ribet, Zins, & Siegrist, 2008; Wiggins, Netuveli, Hyde, Higgs, & Blane, 2008). CASP-19 comprised of the domains 'control', 'autonomy', 'self-realization' and 'pleasure' (Blane, Netuveli, & Montgomery, 2008). The range of scores was 0–57, and higher scores corresponded to a better QOL. A shortened version, CASP-12 composed of the items 1, 2, 4, 5, 7, 9, 10, 11, 12, 15, 18 and 19 pertinent to the subscales control/autonomy, participation, and self-realization (Wiggins et al., 2008), is also available.

There is no scientific literature reporting CASP-19 data in Asia. The only validated Chinese version of the scale is the Cantonese translation (Cheng, unpublished data). Taiwanese people are of the Chinese ethnicity, and the official language in Taiwan is Mandarin Chinese. However, Cantonese differs linguistically from the Mandarin in common use in China and Taiwan.

We aimed to test and validate a Chinese Taiwan version of the CASP-19 and to analyze its psychometric properties in a community-dwelling older Chinese (Taiwanese) population in Taipei City, Taiwan. We hypothesized that QOL in old age, as measured by the CASP scale, to be inversely related to chronic diseases (Friedman & Ryff, 2012; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2005), frailty (Kanauchi, Kubo, Kanauchi, & Saito, 2008), depressive disorders (Woo, Ho, & Wong, 2005), living alone (von Heideken Wagert et al., 2005) and fall events (Michalowska, Fiszer, Krygowska-Wajs, & Owczarek, 2005).

2. Subjects and methods

2.1. Cultural adaptation of CASP-19 Chinese Taiwan version from CASP-19 Chinese Cantonese version

Ten literate, community-dwelling senior Taiwanese residents were interviewed in February 2010 by an investigator (T.Y. Wu) to determine the face validity of the questionnaire. Participants were adequately representative of those for whom CASP was designed in their socio-demographic characteristics. They were asked about the wording of the existing Chinese Cantonese version, which was understandable but different from the Mandarin Chinese in common use in Taiwan or mainland China, and to complete the questionnaire. A modified Chinese Taiwan version was then produced.

Two independent, bilingual medical doctors experienced in Psychiatry backward translated this modified version into English. Discrepancies in translation were resolved by consensus and a back-translated interim English version was produced, sent and shown to the developer of the source questionnaire (D. Blane), who agreed that our final CASP-19 Chinese Taiwan version was linguistically and conceptually equivalent to the original.

2.2. Field test

2.2.1. Participants

We conducted a hospital-based, cross-sectional study in Taipei City, Taiwan in 2010. Each year, the Taipei City Government provided free annual Senior Citizens Health Examination for its senior residents aged over 65 and aborigines over 55 years old in several local hospitals. Our study sample came from the participants of this health examination in Taipei City Hospital, Renai Branch in 2010 or earlier. A certain proportion of senior residents were randomly invited for questionnaire completion (the questionnaire group) by drawing paper lots.

The questionnaire was interviewer-administered by a single trained assistant. Participants who were unable to answer the questionnaire were excluded. Oral and written informed consent was obtained. This study was approved by the Taipei City Hospital Institutional Review Board [TCHIRB-990204].

2.2.2. Instruments

The health examination included collection of basic demographic and lifestyle data, physical examination, laboratory tests, and screening for depressive disorder (Brief Symptom Rating Scale, BSRS-6, Lee et al., 2003). Higher BSRS-6 scores meant greater psychiatric morbidity.

We additionally collected data about chronic disease and frailty status, fall events and social well-being with the questionnaire. QOL was assessed with the CASP-19 Chinese Taiwan version, which was embedded in this questionnaire. Frailty was assessed with the Chinese-Canadian study of health and aging clinical frailty scale (CSHA-CFS) (Chan, Tsou, & Chen, 2010). Chronic disease status and fall events in the past 12 months were self-reported by the respondents.

2.3. Statistical methodology

All analyses were performed using SPSS 16.0 and AMOS 7.0 (SPSS Inc., Chicago, IBM Company, USA). Student's *t*-test for subgroups of two (Tables 1 and 5) or analysis of variance (ANOVA) test for more than three subgroups (Table 5) was used for continuous or discrete variables. Chi-square test was used for categorical variables (Table 1). $p < 0.05$ for 2-tailed tests were considered significant.

2.3.1. Psychometric evaluation

The score distribution, internal consistency, and factor structure of both CASP-19 and CASP-12 were examined. Factor structure was tested using exploratory and confirmatory factor analysis (EFA, CFA). Conventionally, a factor loading >0.30 is recommended (Martinez-Vizcaino et al., 2010; Pillon, Laranjeira, & Dunn, 1998). According to Wiggins et al. (2008), three hypothesized models were tested: the single factor model in which all items load on to a single underlying QOL, the first order domain model in which items were based on the four domains control, autonomy, self-realization and pleasure, and the second order domain and total model in which connection to the four domains were due to the common dependence on underlying QOL. A good fit between the data and the latent variables reassure the hypothesized structure (Sim et al., 2011). We used several indices as measures of fit: standardized X^2 (X^2/df), goodness of fit index (GFI), adjusted GFI (AGFI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and Tucker Lewis Index (TLI, also as non-normed fit index, NNFI). An acceptable fit was indicated by a standardized $X^2 < 3$, GFI > 0.90, AGFI > 0.85, CFI > 0.95, RMSEA < 0.08, and NNFI > 0.95 (Schermelleh-Engel, Moosbrugger, & Müller, 2003).

Reliability was based on internal consistency (Cronbach's α) and item-total correlation. A Cronbach's α value of 0.7–0.8 was considered satisfactory (Bland & Altman, 1997). Item-total correlations may signal mismatches with the hypothesized model (Sim et al., 2011). Ideally, an item should correlate more strongly with its own domain than with others.