

Translation and Validation: Chinese Version of the HIV-Related Social Support Scale

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Purpose: Social support is increasingly recognized to be important in care of people living with HIV/AIDS (PLWH), we firstly translate and validate the disease-targeted social support instrument in Chinese and to explore the correlation with WHOQOL-HIV.

Patients and Methods: We established content validity for HIV-related social support scale (HSSS) and administered the resultant questionnaire to 310 PLWH. Descriptive statistics were generated for each of the variables of general characteristics; student *t*-test was used to compare the different groups.

Results: The HSSS demonstrated a high level of internal consistency, both within each subscale and with the total score; all Cronbach's α values exceeded a priori threshold of ≥ 0.70 . The HSSS cores were positively correlated with WHOQOL-HIV total scores (Pearson correlation: 0.39, $P < 0.001$). We also found that higher educational level, personal income, CD4 cell count, and shorter duration of antiretroviral therapy are significantly associated with a higher level of social support ($P < 0.05$).

Conclusion: Social support may improve quality of life for PLWH, Chinese version of HIV-related social support scale can be used in future clinical practice.

Keywords: HIV, AIDS, quality of life, social support

Introduction

HIV/AIDS has become an important public health issue. In China, about 958 thousand people were living with HIV/AIDS at the end of October 2019, and the number of HIV new infections is increasing from 60 thousand in 2008 to 140 thousand in 2018.^{1,2} The global expansion of antiretroviral therapy (ART) provides real hope of long-term survival of HIV-infected individuals and had a great impact on HIV control in China.³⁻⁵ HIV may now be considered as a chronic disease, with greater long-term survival necessitating attention to the functional status and mental health.^{6,7} Therefore, it is important that mental and physical health needs be evaluated and that tailored interventions to address these needs be implemented to maximize the benefit of ART and improve overall health.

More and more studies focus on the psychological status of them.⁸⁻¹¹ Social support was related to psychological distress and health. And increased social support serves to decrease mood disturbance during major life stress, and greater satisfaction with social support is associated with positive psychological states in PLWH.^{12,13} Low perceived social support has been shown to be associated with suboptimal ART adherence and attrition from care.¹⁴⁻¹⁷ Self-report instruments are simple way to assess mental and physical health. Many of the HIV-specific self-report tools assessing health-related quality of life (QOL) in HIV-infected patients, including the WHOQOL-HIV,¹⁸⁻²⁰ were

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developed and utilized in developed countries, and the WHOQOL-HIV is available in a validated Chinese translation but does not include social supports.²¹ The purpose of this study was sought to translate and validate the first disease-targeted social support scale instrument in Chinese. And analysis correlation of the psychometric properties of the HSSS and WHOQOL-HIV, among HIV-infected adults in China, try to know the reliability of these scales differed across groups defined by education, personal income, CD4 cell count or ART duration.

Methods

Study Setting and Subjects

We conducted a cross-sectional study in Zhejiang Province, where reported the first case of HIV in China in 1984, and the HIV epidemic entered a rapid growth period here until 2000. There were reported 32,918 HIV infections at the end of 2020, while the infection level in the whole of China was still low.^{22,23} Using convenience sampling we chose 310 patients selected from six counties in Zhejiang. All patients in the study met these inclusion criteria: confirmed HIV infection resulting from sexual transmission, age between 18 and 70 years, intellectual and psychological capacity to complete the investigation, absence of severe somatic symptoms.

Ethical Review

The study was complied with the Declaration of Helsinki and approved by the Ethics Committee of The First Affiliated Hospital at the School of Medicine of Zhejiang University. All the patients who were asked to participate in the study accepted and consented to participate, there were informed as to the purpose of the study.

Investigation Contents

Patients were asked about demographic and clinical characteristics, also completed the HSSS and WHOQOL-HIV questionnaires.

General Information

The general patient characteristics included age, gender, educational level, marital status, personal income, CD4 cell count, time since diagnosis, duration of ART.

HSSS

We measured social support using a newly translated instrument with 4 scales and 8 items in each scale. Scale 1, family support was defined as the receipt of emotional comfort from family members, Scale 2, work support was regarded as the

influencing change from the workplace or colleague and also included self-report of the patient's ability to work, Scale 3, medical support meant health care from hospitals or other medical units, together with concern with the state of the patient's illness, Scale 4, social support focused on general support from the external environment or the patient's interaction with his or her social groups such as nongovernmental organizations. Summary scores were computed from each scale and analyzed as continuous variables.

WHOQOL-HIV

The WHOQOL-HIV is a self-reported questionnaire used to measure the QOL by seven subscales. General health status is evaluated by asking the subject to rate his or her health on the scale, which ranges from very poor (1) to very good (5). The structure of the WHOQOL-HIV includes a profile with scores across six domains (physical, psychological, level of dependence, social relationships, environment and spirituality) and 29 facets, of which 5 relate to HIV/AIDS (symptoms, social inclusion, forgiveness and blame, concerns about the future, death and dying).

Data Collection and Analysis

After receiving appropriate training offered by the lead researchers in this study, the physicians in each participating country began to conduct interviews. All data collected by paper-and-pencil surveys were input manually into a custom-designed database and analyzed using SPSS for Windows Version 16.0. Descriptive statistics were generated for each of the variables for general characteristics, the scores of the HSSS and sub-scale were represented as mean \pm SD, the reliability was calculated by using Cronbach's method, also used Student *t*-tests and correlation analysis to compare the different groups to the HSSS. Values of $P < 0.05$ were considered statistically significant.

Results

Demographic and Clinical Characteristics

We interviewed 310 patients. Of these 212 (68.40%) were male, and the mean age was 44.48 ± 12.06 years. About two-thirds were married or cohabiting, 126 (40.90%) cases had received at most 6 years of education, and half of them had annual personal income less than 2000 RMB. The median duration of HIV infection was 4 years, with the SD value 2.79 years, and the mean CD4 count was 340.59 ± 157.96 . The mean ART duration was 2.16 ± 1.69 years (Table 1).

Table 1 Patient Demographics and Clinical Characteristics

Items	N = 310
Age(years),mean(SD)	44.48(12.06)
Gender (male) (%)	68.40%
Married or cohabiting (%)	67.10%
Education	
6 years or less N (%)	126(40.90%)
Over 6 years N (%)	182(59.10%)
Personal income (/years)	
2000 RMB or less N (%)	156(50.30%)
Over 2000 RMB N (%)	154(49.70%)
CD4 count(mean) (SD)	340.59(157.96)
ART duration years mean(SD)	2.16(1.69)

Abbreviations: SD, standard deviation; ART, antiretroviral therapy; RMB, China yuan.

Reliability of HSSS

The HSSS demonstrated a high level of internal consistency, both within each subscale and with the overall higher-order scale. Table 2 provides the Cronbach's α for each domain. All Cronbach's α values exceeded our a priori threshold of ≥ 0.70 , indicating that all of the subscales performed well together as a composite measure.

Correlations Among Scales

As hypothesized, HSSS scores were positively correlated with WHOQOL-HIV total scores (Pearson correlation: 0.39, $P < 0.01$; Table 3), physical health scores (Pearson correlation: 0.29, $P < 0.01$), psychological scores (Pearson correlation: 0.34, $P < 0.01$), social scores (Pearson correlation: 0.26, $P < 0.01$), religion scores (Pearson correlation: 0.42, $P < 0.01$), and general health scores (Pearson correlation: 0.27, $P < 0.01$). Also, subscales of the HSSS show correlations to the difference scale of the WHOQOL-HIV. The HSSS family scale was positively correlated with physical health scores, psychological scores and general health scores (Pearson correlation ranged from 0.18 to 0.22); the HSSS work scale was positively

Table 2 Numbers of Items, Mean Score, and Reliability of the HSSS

Scale	Numbers of Item	Mean Score(SD)	Cronbach's α
Family	8	25.77 \pm 4.33	0.78
Work	8	24.59 \pm 4.05	0.83
Medical	8	26.20 \pm 4.64	0.81
Social	8	22.56 \pm 2.87	0.72
Total	32	99.12 \pm 11.14	0.88

Abbreviation: SD, standard deviation.

Table 3 Pearson Correlations Between HSSS and WHOQOL-HIV Subscale

Subscale	Family	Work	Medical	Social	Total-HSSS
Physical	0.22**	0.15	0.36**	0	0.29**
Psychological	0.2*	0.28**	0.32**	0.09	0.34**
Independence	0.02	0.04	0.21**	-0.17*	0.06
Social	0.1	0.36**	0.18*	0.06	0.26**
Environment	0.09	0.17*	0.14	-0.08	0.13
Religion	0.21	0.32**	0.48**	0.08	0.42**
General health	0.18*	0.25**	0.21**	0.08	0.27**
Total-QOL	0.22**	0.33**	0.45**	0	0.39**

Notes: * $P < 0.05$; ** $P < 0.01$.

Abbreviation: QOL, quality of life.

correlated with psychological scores, social scores, environment scores, religion scores, and general health scores (Pearson correlation ranged from 0.17 to 0.36); the HSSS medical scale was positively correlated with physical health scores, psychological scores, independence scores, social scores, religion scores, and general health scores (Pearson correlation ranged from 0.18 to 0.48); by contrast, the HSSS social scale was only negatively correlated with independence scores (Pearson correlation: 0.17, $P < 0.05$).

Factors Associated with Difference Scale in HSSS Measures

The HSSS score in the group that received at most 6 years of education was significantly lower than in the group with more than 6 years ($P < 0.01$), the same trends can be seen in all subscales. Also, the HSSS score in the group with annual personal income less than 2000 RMB was significantly lower than that in the group with more than 2000 RMB annually ($P < 0.01$), and the same trends can be seen in all subscales, especially the family, work and social scales ($P = 0.006$, 0.018 and 0.031, respectively). We found that compared with the group with lower CD4 count, the group with higher CD4 count had a higher score on the HSSS ($P = 0.01$), especially in the work subscale ($P = 0.02$). The HSSS score in the group with ART duration of 1 year or less was higher than that in the group with over 1 year, and the variation in medical and social subscales was significant ($P = 0.019$ and 0.009, respectively). (Table 4, Figure 1)

Discussion

This is, to our knowledge, the first published analysis of the reliability and construct validity of scales to measure social

Table 4 Student's *t*-test of the HSSS Scores in Different Groups

Items	Mean	SD	P value
Education			$p < 0.05$
6 years or less	96.71	9.16	
Over 6 years	100.74	12.15	
Personal income (/years)			$p < 0.05$
2000 RMB or less	97.71	7.95	
Over 2000 RMB	100.56	13.54	
CD4 count (mL)			$p < 0.05$
200 cells or less	99.00	14.94	
More than 200 cells	99.15	10.33	
ART duration			0.25
1 year or less	100.41	11.59	
Over 1 year	98.09	10.73	

Abbreviation: SD, standard deviation.

support in an adult HIV-infected population in China. Its subscales focus especially on the most relevant 4 fields: work, family, medical and social. We found that the HSSS performed well in the study population: the scales demonstrated good reliability, as indicated by a Cronbach's α coefficient of 0.88 for the entire cohort, as well as across subscales, where α values ranged from 0.72 to 0.83.

In keeping with our hypotheses, we found that the scales correlated with each other in expected directions: social support was positively correlated with QOL and its subscales except the independence and environment subscales. Discrimination related to HIV/AIDS is the most commonly reported problem faced by PLWH.²⁴ The family support subscale is positively correlated with the physical and psychological subscales of QOL; in fact, the fear that family members will face stigma can overshadow even personal stigma.^{25,26} In China when a person becomes HIV-positive, they are considered to have brought shame to their family.^{27,28} The work support subscale is positively correlated with the psychological, social and religion subscales, and the medical support subscale is positively correlated with all QOL subscales except the environment subscale. Some researchers have attributed the negative attitudes of medical staff to insufficient knowledge about the disease and concerns about their own safety.²⁹ The social subscale is negatively correlated with all QOL subscales except the independence subscale. Associations between the physical health score and clinical markers of HIV disease also support the scale's construct validity.

We also found participants who received significantly lower social support, especially as measured by family and social support subscales. Subjects with lower personal income received significantly less social support as shown on all subscales except the medical subscale. Their low level of education, poor economic conditions, lack of social support, diverse cultural backgrounds, unhealthy behavior and habits, and lack of knowledge and understanding regarding transmission of HIV/AIDS may negatively impact their capacity to deal with their disease. AIDS-related education, as provided by public organizations, emphasizes understanding, caring, and support for PLWH, which may encourage PLWH to face their situations.^{27,30} Experiencing psychological distress while living in poverty may lead to a variety of adjustment difficulties and limit the participants' ability to receive care.³¹ Also, a lower CD4 cell count usually is correlated with lower social support especially on the work subscale, and patients' level of social support, especially on the medical and social subscales, tended to decrease, the longer they had been receiving ART.

Several limitations of this study should be noted. The patient sample was from only one coastal province in China, where the primary transmission of HIV/AIDS was unprotected sex. Thus, the findings may not be representative of PLWH in other geographic areas within the country or of persons infected through another route of transmission. Also, about 41% of the subjects had no more than 6 years of education from the study may also have altered the findings. In common with other studies using self-report instruments, the researcher had to assume that the respondents were truthful and fully understood the questions being asked. Further predictive and intervention studies are necessary to determine the predictors of psychological status and social support in this and other populations in China.

Conclusion

The findings in this study support the reliability and construct validity of the HSSS scale in PLWH in China. With this validated tool, clinicians and researchers can identify risk factors for inadequate social support and study how these conditions may lead to adverse HIV-related outcomes in China. This standardized tool may also be used to identify subgroups that would benefit from interventions that aim to interrupt the relationship between these risk factors and adverse health outcomes, thereby improving public health in China, where HIV-related physical and psychological are both prevalent and disruptive.

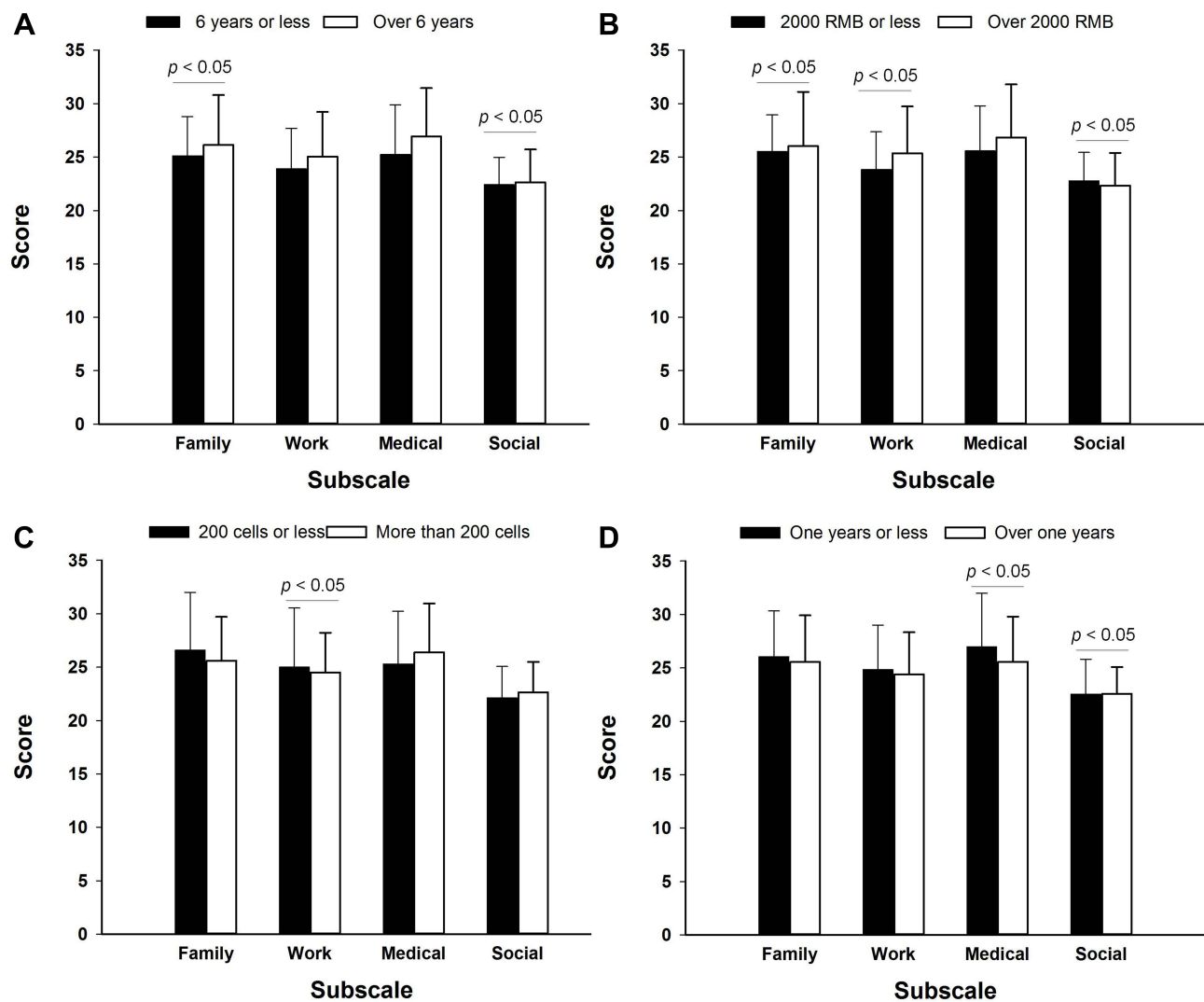


Figure 1 Comparison of scale scores in different items. (A) Comparison of scale scores in different education group, (B) Comparison of scale scores in different annual personal income group, (C) Comparison of scale scores in different CD4 count group, (D) Comparison of scale scores in different ART duration group.

Data Sharing Statement

The authors are willing to share the entire individual participant data collected during the study, after de-identification. These data will be available beginning 3 months and ending 5 years after article publication. Requests should be directed to tianshengxie@126.com. To gain access, data requestors are needed to sign a data access agreement.

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Disclosure

The authors report no conflicts of interest in this work.

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