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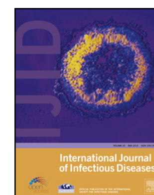

Psychological well-being of people living with HIV/AIDS under the new epidemic characteristics in China and the risk factors: a population-based study

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SUMMARY

Objectives: The HIV/AIDS epidemic in China is growing and the main transmission mode has changed from contaminated blood products to sexual contact. The aim of this study was to evaluate the levels of anxiety (SAS; Zung Self-Rating Anxiety Scale) and depression (CES-D; Center for Epidemiologic Studies Depression Scale) among people living with HIV/AIDS (PLWHA) under the new epidemic characteristics and to examine associated factors.

Methods: The sample size ($N = 800$) was calculated on the basis of the lowest prevalence of psychological disorders among PLWHA and was enlarged taking into consideration a loss of response. Participants were sampled randomly among all PLWHA registered in Liaoning Province. Questionnaires pertaining to the SAS, CES-D, and related factors were distributed between December 2010 and April 2011; 772 effective responses were received.

Results: The prevalence of anxiety (SAS $\geq$40) and depression (CES-D $\geq$16) were 49.0% and 73.1%, respectively. Multivariate logistic regression analysis revealed that SAS was associated with self-rated health, condom use at the last sexual contact, perceived social support, alcohol consumption, and transmission; CES-D was associated with self-rated health, perceived social support, job, and sex.

Conclusions: PLWHA under the new epidemic characteristics in China suffer from serious psychological problems. To improve their psychological well-being, efforts should be focused on improving perceptions of their health condition and increasing perceived social support.

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1. Introduction

The first cases of HIV in China were reported in 1985 and the documented number of people living with HIV/AIDS (PLWHA) reached 370 393 by October 2010.[1] At that time, the predominant transmission route had changed from former plasma donors to sexual contact. Previously, almost 100% of PLWHA in China had been infected by contaminated blood products and resided in and around Henan Province.[2] However, by 2009, transmission through sexual contact had increased to 59%, while transmission by contaminated blood products was only 14%.[2] The percentage of sexually contracted HIV/AIDS is especially high among newly infected individuals, reaching 75%.[3]

The lack of a cure has caused an increased fear of AIDS among many people, which has resulted in serious stigma and discrimination against PLWHA.[4,5] These facts threaten the psychological well-being of PLWHA. Studies conducted in foreign countries revealed that nearly half of PLWHA suffered from anxiety disorders and that 20–32% of PLWHA were affected by depressive disorders.[6–8] In China, policies such as the 5-Year Action Plans and Four Frees and One Care[9] have been implemented to improve HIV/AIDS prevention, treatment, and care services. These policies have mainly focused on physical health care and not on the psychological health of PLWHA. The few studies that we could find

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relating to the psychological well-being of PLWHA that have been reported in China were conducted among commercial blood donors, and the largest study population comprised only 156 PLWHA.[10] Until now, little has been known about the psychological well-being of PLWHA under the new epidemic characteristics.

The aim of the present study was to conduct a population-based investigation of the psychological well-being of PLWHA in Liaoning Province, where sexual contact is the main mode of transmission of HIV/AIDS. Associated factors were also examined. Anxiety and depression represent the most common mental disorders worldwide[11] and, therefore, were used as indicators to assess the psychological well-being of PLWHA. Sex, education, marital status, income, social support, and health status have been reported to be associated with mental health,[12–15] and so we chose to examine these factors. In addition, items regarding HIV/AIDS awareness, condom use, and sexual orientation were included due to the nature of the study population. In full, we assessed the demographic characteristics, social support and network, HIV/AIDS awareness, behavioral factors, and health status of PLWHA to clarify the factors associated with anxiety and depression.

2. Methods

2.1. Ethics statement

The study protocol and informed consent form received ethics approval from the Committee on Human Experimentation at the China Medical University and the Liaoning Provincial Center for Disease Control and Prevention. Written informed consent concerning the conduct of the survey was obtained from each participant.

2.2. Study area and study population

Liaoning Province is the commercial hub of northeast China, and the income level is comparable to that of the Chinese average, according to the China Yearbook. The participants were sampled by tables of random numbers among all PLWHA who had registered at the Liaoning Provincial Center for Disease Control and Prevention (CDC), the legal organization in charge of the HIV/AIDS epidemic. According to data from this organization, PLWHA minors and elderly PLWHA accounted for only 1.76% and 2.59%, respectively, on November 30, 2010. Along with the consideration of the low possibility of sexual contact among minors and the declining cognitive function of the elderly, we initially focused on the following inclusion criteria: (1) positive for HIV antibody, (2) age 18–65 years. In addition, since only 10.8% of PLWHA in Liaoning Province were female, we did not stratify based on gender. The sample size ($N = 734$) was calculated according to the formula $n = 100 \times (1 - p)/p$. It has been reported that 19.4–74.02% of PLWHA experience symptoms of depression or anxiety disorders,[6,16–18] and that the prevalence of severe depression among PLWHA is 12%.[19] To ensure an adequate sample size, the lowest prevalence rate (12%) was used as the p-value. The sample size was further increased to 800 to take into account a loss of response. If an individual refused to participate, a replacement was selected via the same process. Questionnaires were distributed to all sampled individuals between December 2010 and April 2011. A total of 772 effective responses (effective response rate 96.5%) were obtained.

2.3. Measurements of psychological well-being

Anxiety was evaluated using the Zung Self-Rating Anxiety Scale (SAS), which was designed by William W.K. Zung. This focuses on somatic complaints, a core feature of anxiety disorder.[20,21] This scale has been used widely in the Chinese population,[22–24] and the Cronbach's alpha coefficient was 0.87 in the present study population. An individual with a raw SAS score $\geq$40 was considered to be demonstrating anxiety.[22]

Depression was examined using the 20-item Chinese version of the Center for Epidemiologic Studies Depression Scale (CES-D).[25] The CES-D has been used widely among the Chinese population due to its high reliability and validity. The Cronbach's alpha coefficient was reported to be 0.90 among the Chinese population.[26] With regard to validity, the values for the RMSEA (root of mean square error of approximation), GFI (goodness of fit index), and CFI (comparative fit index) have been reported to be 0.06, 0.95, and 0.98, respectively.[26] In this study population, the Cronbach's alpha coefficient was 0.91. The total score on the CES-D ranges from 0 to 60, and the cut-off score for depression was set at CES-D $\geq$16.

2.4. Measurements of demographic characteristics, social support and network, HIV/AIDS awareness, behavioral factors, and health status

Demographic characteristics assessed included age, sex, ethnicity, marital status, education, job, monthly income, and sexual orientation. In China, there are 56 ethnicities. The Han ethnicity population accounts for more than 90% of the total population. Thus, ethnicity was categorized as either Han or minority. With regard to marital status, only 0.5% of the participants were widowed, so this group was combined with the divorced group. Education was categorized into three groups: primary/middle school, high school, and junior college and over. Job was defined as student/housework/unemployed, informal employee, or formal employee. Monthly income (Yuan) was divided into three groups: $\leq$1000, 1001–2000, and >2000 Yuan. Sexual orientation was divided into four groups: homosexual, heterosexual, bisexual, and unknown.

Social support and network included four items: (1) living arrangement, (2) neighborhood, (3) family awareness of sexual orientation, and (4) perceived social support. Living arrangement was categorized as either living with others or living alone. Neighborhood was measured by asking "How do you feel about your relationship with your neighbors?", with four possible responses: very good, good, fair, and poor. The responses were dichotomized as 'good' or 'fair/poor' by combining response 1 with response 2, and response 3 with response 4, with reference to the study on depressive symptoms in the elderly.[27] Family awareness of sexual orientation was examined by asking "Do your family know your sexual orientation?", with three possible answers: 'yes', 'no', and 'unsure'. The response of 'unsure' referred to the situation in which the participant could not clearly be sure whether or not their family knew of their sexual orientation. Perceived social support was examined using the Duke-UNC Functional Social Support Questionnaire (FSSQ), which is an eight-item instrument that measures an individual's perception of his/her social support network and yields a single total score.[28] The Cronbach's alpha coefficient for the FSSQ in the present study was 0.92.

HIV/AIDS awareness was assessed on the basis of four items: (1) comprehensive HIV/AIDS knowledge, (2) transmission, (3) antiretroviral therapy, and (4) disease status. Comprehensive HIV/AIDS knowledge was measured using the United Nations General Assembly Special Session (UNGASS) indicator,[29] which has five questions. Comprehensive HIV/AIDS knowledge can only be confirmed if all five responses are correct. Transmission was examined by asking "Do you know how you were infected by HIV?" Among our participants, only 12 individuals (1.6%) had been infected by contaminated blood products and 39 individuals (5.1%) did not know their method of transmission. These two groups were therefore combined. With regard to antiretroviral therapy, the Four Free and One Care policy[9] in China provides free antiretroviral therapy to PLWHA if their CD4+ T lymphocyte level is lower than 350 cells/mm^3. Therefore, this was assessed on the basis of the

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