論　文　内　容　要　旨

Brief HIV stigma scale for Japanese people living with HIV: validation and restructuring using questionnaire survey data

（日本人向け HIV スティグマ尺度短縮版：質問紙調査を用いた評価と再構成）

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There are several obstacles to self-care for HIV-positive individuals such as negative thoughts and behaviors toward them by others. A high degree of stigma among patients with HIV is associated with lower medication adherence. Stigmatizing attitudes in low-HIV prevalence countries is more influential than those in high-HIV prevalence countries. Japan is one of the low-HIV prevalence countries, with 0.03 per 1,000 adults who are between 15 to 49. However, a HIV stigma scale has not been developed for Japanese adults with HIV. A validated scale to measure stigma related to HIV is essential to clarify the impact of stigma among Japanese people with HIV. Therefore, this study aimed at validating a ten-item HIV stigma scale that was originally developed in the USA and adapting it for Japanese adults with HIV.

To adapt the HIV stigma scale for Japanese adults with HIV, a Japanese version of the HIV stigma scale for adults (HSSj) was developed through a forward-backward translation method, and was subsequently revised based on suggestions by experts and Japanese individuals with HIV (four men and one woman: average age = 41.4 years old: all had a good immune status). HSSj was assessed using data (n = 451) from a cross-sectional questionnaire survey that was conducted at nine hospitals in Japan between August 2017 and February 2018. Cross-sectional data obtained from the survey were analyzed using lavaan, SemTools, and psych for confirmatory factor analysis, omega values, exploratory factor analysis, and Spearman's correlation coefficients within R software version 3.5.1, respectively. These non-parametric analysis methods were used because the total score of HSSj was not normally distributed. As each factor in a multidimensional scale should contain at least three items to ensure validity and reliability, we first confirmed if the scale structure matched Japanese adults with HIV by confirmatory factor analysis and calculating omega values. We confirmed the goodness of fit by x^2, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR). The model was considered to have good construct validity if p-values were greater than 0.05, CFI and TLI values were equal to or greater than 0.95, RMSEA values were less than 0.08 and SRMR values were less than 0.05. Omega values greater than 0.7 were considered to reflect good internal consistency for reliability. Based on these criteria, we considered whether the scale was appropriate for Japanese adults with HIV. For cases that were inappropriate, we created a new satisfactory scale by exploratory factor analysis using polychoric correlation coefficients from the survey data. A factor number was determined by the results of a scree plot and a parallel analysis. After determining the factor number,

factor loadings were obtained with promax rotations.

Next, we assessed the feasibility and external validity of the scale. The feasibility was evaluated by the number of missing values. If more than 5% of participants did not answer an item, it was considered unacceptable because missing values may indicate difficulties in answering the question. To demonstrate external validity, Spearman's coefficients were calculated using the scores of the HSSj, and those of PHQ-9 and the self-esteem scale based on previous studies that demonstrated that HIV stigma was positively associated with depression and negatively associated with self-esteem. If the coefficients had values less than 0.3 and were not significantly associated, external validity was considered unacceptable.

Although the validity was acceptable, the internal consistency in two subcategories in the Japanese version of the HIV stigma scale was low (ω: 0.63, 0.60). Therefore, we performed exploratory factor analysis to clarify the HSSj factor structure. Factor analysis (promax rotation) revealed that the first factor was composed of seven items, the second factor was composed of three items, and the correlation coefficient between the two factors was 0.605. However, as the factor loading in item 5 was lower than 0.4, it was excluded from the HSSj. We considered the name of the subcategories after reading the items, and the first and second factors were named "concerned with public stigma" and "negative self-image", respectively. Then, we assessed the reliability and validity of the scale. The omega values in the total HSSj, and the subcategories of "concern with public stigma" and "negative self-image" were 0.89, 0.83 and 0.87, respectively. The total scores for the HSSj and the subcategories of "concern with public stigma" and "negative self-image" were significantly positively correlated with those of the PHQ-9J ($r = 0.45$, 0.43 and 0.37, respectively). The total scores for the HSSj and the subcategories were significantly negatively correlated with those of the self-esteem scale ($r = -0.48$, -0.51 and -0.34, respectively). HSSj therefore had sufficient reliability and validity.

We developed the HSSj by adapting Wright's HIV stigma scale for Japanese adults with HIV. Using survey data in Japan, we evaluated the construct validity and reliability of the HSSj, which indicated insufficient reliability. The low reliability of the original model may be related to cultural differences. As HIV-related stigma is influenced by social environments, the outcome of certain items may differ across different social environments. Moreover, this phenomenon also affected the result of the

exploratory factor analysis. The new improved model by exploratory factor analysis consisted of two subcategories and nine items, and had good reliability and validity by external validation with Spearman's coefficients, good feasibility by non-response rates and good internal consistency by omega values using the survey data.

The new improved model of the HSSj consisted of two subcategories and nine items, and had good reliability and validity. In future studies, the impact of stigma among Japanese adults with HIV can be measured using the HSSj. Studies using the HSSj will clarify whether stigma influences health-related problems, such as QOL, self-care and depression, among Japanese adults with HIV.