

RESEARCH ARTICLE

Reliability and validity of the Chinese version of Oldenburg Burnout Inventory for Chinese nurses

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Abstract

Aim: This study aims to develop a reliable and validate Chinese version of Oldenburg Burnout Inventory (OLBI).

Design: A cross-sectional validation design was adopted in this study.

Methods: After obtaining the copyright by contacting with the author, the original English OLBI was developed to Chinese by forward translation, back-translation, cultural adaptation and a pre-test (20 nurses). The Chinese OLBI and Maslach Burnout Inventory (MBI) were administered to 641 clinical nurses during July and August, 2020. Internal consistency (Cronbach's α coefficient), split reliability (split half coefficient), construct validity (confirmatory factor analysis) and criterion validity (comparison with MBI, using Pearson correlation analysis) were assessed.

Results: The Chinese OLBI included 16 items. Exploratory factor analysis extracted two factors with a cumulative contribution of 62.245%. Two-dimensional structure (exhaustion and disengagement) was confirmed. It has good internal consistency (Cronbach's α coefficient values of 0.905, 0.933 and 0.876 for the total questionnaire, exhaustion dimension and disengagement dimension, respectively), split half reliability (split half coefficient = 0.883, $p < .01$) and criterion validity ($r = 0.873$, $p < .01$). Pearson coefficients between 16 items and the scale varied from 0.479–0.765. An acceptable model fit ($\chi^2/df = 2.49$, RMSEA = 0.068, TLI = 0.906, CFI = 0.922, SRMR = 0.061) was achieved.

KEYWORDS

burnout, Maslach Burnout Inventory, nurses, Oldenburg Burnout Inventory, reliability, translation, validity

1 | INTRODUCTION

Burnout is a psychological response to long-term work stress. It is a process in which workers are constantly experienced stress that

unable to cope with. This leaves them feeling exhausted, lacking in energy and mentally exhausted (Ecie, 2013). Although burnout exists in a wide range of occupations, health professionals (especially nurses) are one of the working groups that is most likely to develop it owing to the characteristic of their work. Additionally,

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most of their working time is spent on contacting with the patients (Kavurmaci et al., 2014; Wilkinson, 2014; Zhang et al., 2014). A recent study reported that there was a high degree of burnout in emergency nurses in Shanghai, China, due to nurse–patient relationship, nurse staffing, salary and working environment (Jiang et al., 2017). A survey on the mental health of nurses in five countries shows that 40% of nurses have occupational burnout (Aiken et al., 2001), which is closely related to high-intensity and high-stress working environment (Liu et al., 2015; Wang, Hu, et al., 2020; Wang, Wang, et al., 2020). Since December 2019, coronavirus disease 2019 (COVID-19) has rapidly spread worldwide. On 12 March 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic (World Health Organization, 2020). During the pandemic, the nurses are more affected by stress. It was seen that working for long periods in an environment with a high level of stress and uncertainty, relocating nurses' units or wards and intense workload caused nurses to experience burnout more rapidly (Drennan & Ross, 2019). Furthermore, the nurses performed beyond their capacity in combating COVID-19, which also brought about burnout (Murat et al., 2021). In a study conducted by Jalili et al. (2020), it was found that 53.0% healthcare professionals experienced high levels of burnout during COVID-19. A large-scale survey on burnout reported that there were moderate degrees of emotional exhaustion during the pandemic among clinical nurses (Chen et al., 2021).

Nurses who experience burnout may display stressful and depressive symptoms, insomnia and problems with memory and concentration, which are critical in the clinical care (Pradas-Hernández et al., 2018). In addition, high burnout level is essential risk factor for the intention to leave (Chen et al., 2019; Coomber & Barriball, 2007; Ramoo et al., 2013). Previous research has proved that nurses' intention to leave was related to their burnout. Occupational burnout is also an important factor affecting the quality of nurses' clinical practice and occupational stability (Duan et al., 2017; Wang, Hu, et al., 2020; Wang, Wang, et al., 2020). Moreover, burnout is damaging not only to nurses, but also to patients and healthcare systems (Tipa et al., 2019). There are researches that emphasize that burnout has a negative effect on patients care and satisfaction (Costa & Moss, 2018). It may cause deterioration of the quality of care and result in poor outcomes for patients (Jalili et al., 2020). A systematic review found that high levels of burnout in health caregivers are associated with less safe patient care (Dewa et al., 2014).

To prevent or to reduce burnout, it is important to assess burnout among nurses properly. A psychometric instrument with adequate reliability and validity evidence should be selected. Despite the existence of several instrument to measure burnout, the most used self-report measurement of nurses' employed burnout in China has been the Chinese version of Maslach Burnout Inventory (MBI) (Li & Shi, 2003), which was originally developed by Maslach and Jackson (1981). Maslach & Jackson described burnout as the following three dimensions: (a) emotional exhaustion (EE), which is correlated with the sensation of mental weariness and physical overexertion; (b)

depersonalization (D) or negative and cynical attitudes towards colleagues and patients; and (c) low personal accomplishment (PA), reflecting a tendency to evaluate oneself negatively in terms of job performance and perceived general competence (Maslach, 2003; Maslach & Jackson, 1981; Maslach et al., 2001; Queiros et al., 2013).

Unfortunately, the shortage of MBI was exposed when in use. Some authors argued that a two-factor model, including emotional exhaustion and depersonalization only, might be more appropriate (Kalliath, 2000). Cordes and Dougherty (1993) suggested that this subscale might be less consistent because personal accomplishment may be more appropriately conceptually identified as a personality trait (similar to self-efficacy) rather than as a component of burnout. Some researchers have also criticized the actual writing of the scale items in addition to focusing on the three-factor structure of the scale. For example, Demerouti et al. (2001) noted that all the items in the three subscales are presented in the same direction; both the emotional exhaustion and depersonalization scales were all negative questions, while the personal accomplishment scale was positively worded. Along with others, they argued that such one-directional phrasing of items within subscales might yield an artificial clustering of factors accounting for the positively and negatively worded scales. Finally, affective components of emotional exhaustion were concerned only in the MBI. A number of researchers (Pines et al., 1981; Shinn, 1982) argued that other aspects of exhaustion should also be considered in the exhaustion component, including physical and cognitive exhaustion, so as to capture the nature of exhaustion due to chronic work stress more broadly.

As a result, OLBI was proposed by Demerouti & Nachreiner (1998) in 1998 to overcome some of the psychometric and conceptual limitations of the MBI. It seems to be the most prominent alternative to MBI (Demerouti et al., 2000). It contains 16 items which described different state of exhaustion and disengagement. Among the items, half of them were formulated positively while the others were formulated negatively. The original version was proposed in German. Its theoretical model is the assumption that burnout is a two-dimensional syndrome that can occur regardless of one's occupation. The validity of OLBI was tested in different population groups in other studies (Demerouti et al., 2001; Demerouti et al., 2003; Demerouti et al., 2010; Halbesleben & Demerouti, 2005).

In recent years, the scale has been translated into many other languages and has been widely used in other countries. However, until now, a validated Chinese version of OLBI was not available. Additionally, the pandemic emphasizes the necessity of such a scale. As a result, this research aims to translate the English version of OLBI into Chinese with appropriate cultural adaptation and assess the reliability and validity of the Chinese version of OLBI for the evaluation of employed burnout in clinical nurses in China.

Research question:

1. Is Chinese version of OLBI have a good reliability and acceptable validity?
2. Can Chinese version of OLBI be an appropriate tool to assess burnout in clinical nurses?

2 | MATERIALS AND METHODS

2.1 | Study design

This was a scale localization and reliability and validity test study. We contact the original author of the scale, Professor Demerouti, to obtain authorization and consent. Brislin (Cha et al., 2007) principle of translation (translation, back-translation, acculturation) was adopted. This study aims to localize OLBI and test its reliability and validity among nursing workers in China, so as to form a professional burnout assessment tool suitable for nurses in China.

2.2 | Development of the Chinese version of OLBI

2.2.1 | Scale translation

After obtaining permission from the author of OLBI, the English OLBI was translated into Chinese by two teachers working in nursing education independently (YZ and XW) and one director nurse working in hospital for 10 years (YW). All the nursing professionals were familiar with linguistic and cultural aspects. One nursing expert with overseas study experience (YL) was asked to compare these three versions and synthesize them into one translated document. When there were some items or words uncertain, the panel of experts (the nursing professionals who participated in initial translation) would have a meeting and discuss about that to develop a satisfactory translated document. After that, the synthetic version was back-translated to English by two bilingual medical experts who were fluent in both Chinese and English with no exposure to the original scale. We compared the back-translated version of OLBI with the original English scale, and the original author was consulted for suggestions.

2.2.2 | Cross-cultural adaptation

Five experts from the fields of humanistic nursing (HZ), clinical nursing (LY), nursing management (YH), nursing psychology (YS) and linguistics (PZ) were invited to further modify, polish and adjust the scale from the four aspects of meaning, idiom, technology and conceptual equivalence, so as to ensure the equivalence of concepts, items and semantics.

2.2.3 | Linguistic validation

In order to ensure the respondents can understand all items of the scale correctly, the language expression of the scale was clear, and to further adjust the ambiguous words or difficult to understand items, twenty registered nurses working in the first affiliated hospital of Soochow University in Jiangsu, China, were selected by convenience to fill in the draft OLBI. After reviewing the results of a pre-test in 20 clinical nurses, we revised the draft OLBI and completed the final

version. After that, the final version of OLBI was used for reliability and validity testing. The Face Validity Index (FVI) was assessed by 10 respondents who were not included in the principal study and 2 nursing managers (YY and YW). The respondents were all registered nurses aged over 20 years, working in clinical for more than 2 years. The two nursing managers both had a Master degree in nursing with nursing management experience for over 5 years. The participants were required to evaluate the scale by considering the following scoring criteria: comprehension, clarity and accuracy. The items were rated using a four-point Likert scale where 1 = not clear or not comprehensible and 4 = very clear or very comprehensible. For content validity, the same five experts enrolled in the cultural adaptation and another five nursing specialists (XW, YS, XC, YB and XL) were invited to evaluate each item with the four criteria: "not relevant," "somewhat relevant," "quite relevant" and "highly relevant." The item-level content validity index (I-CVI), scale-level content validity index (S-CVI) and S-CVI of averaging calculation method (S-CVI/Ave) were calculated at the same time. I-CVI and S-CVI/Ave must be 0.80 and above to be considered good content validity (Makhoul et al., 2020).

2.3 | Subjects

In this study, the convenient sampling method was adopted to conduct electronic questionnaire survey among clinical nurses in Jiangsu province who met the inclusion and exclusion criteria from July to August, 2020. The inclusion criteria were: (a) registered nurses who have obtained the National Nurse Professional Qualification Certificate; (b) engaged in clinical nursing work; and (c) voluntary, signed informed consent. The exclusion criteria were: (a) retired from nursing post and (b) leave nursing post during investigation.

2.4 | Instruments

The nurses completed all the following questionnaires online: demographic characteristics, Chinese version of the OLBI and MBI. The questionnaire adopts a unified instruction language, explaining the purpose, significance and the way of filling in the questionnaire. "Questionnaire Star" network platform was used to develop and release electric questionnaires online. Electronic questionnaires were distributed to the subjects who met the admittance standards through the "Questionnaire Star" platform (Wenjuanxing, <http://www.wjx.cn>) relying on WeChat and QQ (social software) from June, 2020 to August, 2020. The questionnaire was filled out anonymously and voluntarily by the respondents, and all items were set as required until the completion and submission of the questionnaire were automatically generated.

2.4.1 | Demographic characteristics

The following information was collected: gender, age, educational background, professional title, working years, departments.

2.4.2 | Chinese version of MBI

Maslach Burnout Inventory was developed by Maslach & Jackson (1981) and has been used in many countries to measure employed burnout level of workers. The Chinese version of MBI contains 15 items in three dimensions, including emotional exhaustion (five items), depersonalization (four items) and personal achievement (six items). All statements were measured on a seven-point Likert scale from 0 = never to 6 = every day. The higher scores of emotional exhaustion and depersonalization or the lower score of the dimension of achievement indicate the heavier degree of burnout. Cronbach's α coefficient of Chinese MBI is 0.74 (Li & Shi, 2003).

2.4.3 | Chinese version of OLBI

OLBI is a brief questionnaire which requires only 2–4 min to administer. The inventory contains 16 items including an exhaustion dimension (eight items) and a disengagement dimension (eight items). The degree of agreement with each item is expressed in four-point ordinal scale (from 1 = totally disagree to 4 = totally agree). The total score ranges from 16–64 points. (The higher the score, the higher the degree of burnout.) Items 1, 5, 7, 10, 13, 14, 15, 16 are scored in reverse order. The Cronbach's α coefficient of the English scale was 0.74–0.87 (Halbesleben & Demerouti, 2005). There is a high positive correlation between OLBI and MBI in students (Campos et al., 2012).

2.5 | Statistical analysis

IBM SPSS 20.0 (IBM Corporation) was used for statistical analysis. Confirmatory factor analysis was conducted by IBM SPSS Amos 23.0 (Amos Development Corporation). Data were presented as the mean \pm standard deviation (for continuous variables) or N (%) (for categorical variables). Internal consistency was assessed by Cronbach's α coefficient to indicate the correlation between the items, with a value of ≥ 0.7 was considered being satisfactory (Polit & Beck, 2009). Construct validity was assessed by confirmatory factor analysis. Factor analysis was conducted using varimax orthogonal rotation, and variables with factor loading ≥ 0.4 were considered substantial. The Person correlation between OLBI and MBI scores was determined. The adequacy of the model was assessed by the root mean square error of approximation (RMSEA), standardized root mean square residuals (SRMR) and comparative fit index (CFI). The relationship between the score of OLBI and MBI was assessed by an independent two-sample t -test. $p < .05$ was considered statistically significant.

3 | RESULTS

3.1 | Characteristics of the subjects

We screened 662 individuals and 651 participants met the inclusion criteria. However, ten of them did not reply, leading to 641

TABLE 1 Characteristics of nurses ($N = 641$)

Variables	N (%)
Gender	
Woman	628 (97.97)
Man	13 (2.03)
Age	
≤ 30 years	256 (39.94)
31–35 years	190 (29.64)
36–40 years	95 (14.82)
≥ 40 years	100 (15.60)
Education level	
Junior college	124 (19.34)
Bachelor degree	507 (79.10)
Graduate degree	10 (1.56)
Working years	
≤ 5 years	180 (28.08)
6–10 years	177 (27.61)
11–15 years	98 (15.29)
16–20 years	85 (13.26)
≥ 20 years	101 (15.76)
Title	
Nurse	112 (17.47)
Nurse practitioner	244 (38.07)
Nurse in charge	209 (32.61)
Associate Professor of Nursing	68 (10.61)
Professor of Nursing	8 (1.25)
Department	
Department of Internal Medicine	335 (52.26)
Department of Surgery	137 (21.37)
Department of Obstetrics and Gynaecology	44 (6.86)
Intensive care unit	64 (9.98)
Emergency room	50 (7.80)
Department of Paediatrics	11 (1.72)

responses received. For testing of the final version of the OLBI, 641 clinical nurses were recruited in total. As a result, the response rate was 96.8%. The characteristics of the participants are summarized in Table 1. 97.97% of them were women ($N = 628$) and 2.03% were men ($N = 13$). Among these nurses, 69.58% were less than 35 years old ($N = 446$) and 79.10% have bachelor degree ($N = 507$). More than half of them worked in clinical for < 10 years and nurses worked in the Department of Internal Medicine accounted for 52.26% ($N = 335$). The mean score of the Chinese version of OLBI and MBI \pm SD was 38.88 ± 6.95 and 49.24 ± 15.27 , respectively.

3.2 | Reliability

As shown in Table 2, the Cronbach's α coefficient of the Chinese version of OLBI is 0.905, and the Cronbach's α coefficients of the two common factors were 0.933 and 0.876, respectively. The scale

was divided into two parts according to the odd and even numbers, and the split half reliability was 0.883 ($p < .01$), indicating that the internal consistency of the Chinese version of OLBI is acceptable.

3.3 | Validity

All the participants reported they understood the items and easy to answer. The I-CVI of the Chinese OLBI ranged from 0.80–1.00 and S-CVI/Ave was 0.956, well above the criterion for content validity, indicating acceptable face and content validity. As a consequence of these findings, all the item were maintained. The simple random method was used to divide the 641 survey subjects into sample A containing 320 cases for exploratory factor analysis and the remaining subjects ($N = 321$) as sample B for confirmatory factor analysis. The results of exploratory factor analysis showed that the KMO index of the Chinese version of OLBI was 0.941, and the Bartlett sphere test value was 2,508.062 ($p < .001$), confirming the sampling appropriateness, with sufficient association between variables to perform factor analysis. Table 3 shows that a two-factor structure containing 16 items was the best structure. All the factor loadings were >0.5 , with eigenvalues higher than 1. The total explained variance was 62.2%. According to the content characteristics of the items explained by each factor, two common factors are named “疲倦” (exhaustion) and “逃避” (disengagement). It confirmed the two-factor structure of the original scale. The 16 items were used as observation variables to establish a structural equation model, and the maximum likelihood method was

used to estimate the model. An acceptable model fit ($\chi^2/df = 2.49$, RMSEA = 0.068, TLI = 0.906, CFI = 0.922, SRMR = 0.061) was achieved. The MBI is used as the gold standard to measure the criterion validity. Pearson correlation test was performed on the scores of the Chinese version of OLBI and MBI, and the correlation coefficient was 0.873 ($p < .01$).

3.4 | Suitability for clinical nurses

In this study, nursing experts were invited to translate and adjust the translation draft according to the characteristics of clinical nursing and Chinese expression habits, and the Chinese OLBI was finally developed. When preliminary investigated, ten nurses working in the hospital and 2 nursing managers agreed that the semantic expression of the Chinese OLBI was clear, straightforward and understandable, and the structure was reasonable. Ninety percent of them indicated the layout and appearance would be acceptable to the clinical nurses. Some of them pointed out that the items could exactly reflect their burnout status. A high response rate also suggested that the scale meet the nurses' requirement of assessing the occupation burnout level, which proved the scale was an appropriate measurement to evaluate burnout level among clinical nurses. It took them only 5 min to complete, indicating it was an effective measurement for clinical nurses due to busy work. Additionally, in the study, the correlation analysis, internal consistency test and validity test all proved that the Chinese version OLBI had good suitability.

Items	Mean \pm SD	Pearson correlation coefficient	Significance (p)
Q1	2.49 \pm 0.67	0.644	<.001
Q2	1.94 \pm 0.65	0.637	<.001
Q3	2.64 \pm 0.73	0.718	<.001
Q4	2.16 \pm 0.76	0.626	<.001
Q5	2.79 \pm 0.58	0.652	<.001
Q6	2.51 \pm 0.70	0.578	<.001
Q7	2.70 \pm 0.64	0.479	<.001
Q8	2.62 \pm 0.75	0.761	<.001
Q9	2.44 \pm 0.76	0.765	<.001
Q10	2.05 \pm 0.67	0.560	<.001
Q11	2.45 \pm 0.72	0.697	<.001
Q12	2.15 \pm 0.68	0.679	<.001
Q13	2.11 \pm 0.64	0.482	<.001
Q14	2.80 \pm 0.58	0.509	<.001
Q15	2.56 \pm 0.63	0.729	<.001
Q16	2.46 \pm 0.67	0.723	<.001
Cronbach's α coefficient of the OLBI		0.905	
Split half coefficient		0.883	<.001

TABLE 2 Item–total score properties and correlations of OLBI

TABLE 3 OLBI items-factor analysis

Items	Factor loadings	
	I	II
Q2	0.732	0.324
Q4	0.776	0.341
Q5	0.636	0.426
Q8	0.763	0.322
Q10	0.505	0.466
Q12	0.730	0.316
Q14	0.710	0.328
Q16	0.694	0.411
Cronbach's α coefficient	0.933	
Q1	0.318	0.675
Q3	0.374	0.757
Q6	0.422	0.558
Q7	0.387	0.683
Q9	0.312	0.709
Q11	0.426	0.617
Q13	0.444	0.574
Q15	0.493	0.664
Cronbach's α coefficient	0.876	
Percentage of cumulative variance explained	62.2%	

Abbreviation: OLBI, Oldenburg Burnout Inventory

Note: The bold values represent the final selected factor loading values.

4 | DISCUSSION

This study presents a version in Chinese of the Oldenburg Burnout Inventory, adapted for clinical nurses, and examines its reliability and validity. To our knowledge, the OLBI had not been tested in Chinese nurses, so this is the first study to apply this inventory on clinical nurses and test its properties in China.

The Chinese version of OLBI was composed of two dimensions and 16 items. The psychometric characteristics of it were similar to those of the original one. However, some differences existed between them. First, item 9 (Over time, one can become disconnected from this type of work) was translated as “渐渐地,我想摆脱这份工作,” which means “Gradually, I wanted to get out of this type of work” to fit Chinese environment. Second, item 10 of the scale was changed to “下班后,我有足够的精力参与娱乐活动,” which means “After work, I have enough energy for my leisure activities.” We changed “time” in the original scale to “energy” because the experts pointed out that loss of “energy” was a better indicator of exhaustion than “time.”

The preparation process of the scale strictly follows the sinicization procedure of the international scale, and its reliability and validity all meet the requirements, with good scientificity and applicability. Cultural adaptation was conducted so that the scale could be easily understood by Chinese population. Compared with the

current general BMI, Chinese OLBI items were more reasonable. It took full consideration of the effects of job burnout on both physical and cognitive. It was convenient for nursing managers to assess clinical nurses' job burnout level. The OLBI was considered a reliable instrument to evaluate occupation burnout in Chinese nurse population.

In this study, the Cronbach's coefficient of OLBI in Chinese version was 0.905, indicating that the Chinese version of the scale had good internal consistency. Internal consistency refers to the homogeneity or internal correlation among all items in the scale. The better the internal correlation or homogeneity is, the more consistent all items are measuring the same problem or indicator, and the better the internal consistency and the higher the reliability of the scale is. It is generally believed that Cronbach's coefficient 0.70–0.79 indicates good internal consistency reliability, 0.80–0.89 indicates good, and 0.90–0.99 indicates very good (Cha et al., 2007). Cronbach's α coefficient of the original scale was 0.74–0.87, slightly lower than that of this study, which may due to cultural differences and different occupations of the respondents. In addition, the split half reliability of the scale was 0.883 ($p < .01$), which was higher than 0.8, indicating that the Chinese version of OLBI had a high reliability. A research (Demerouti et al., 2003) revealed that if the items of OLBI scale are effectively combined with the items of MBI and a new scale is developed, it will be helpful to improve the internal consistency reliability of the scale.

Three validity measures were used in the study, content validity (FVI and CVI), construct validity (EFA) and criterion-related validity (Pearson correlation). The face validity of Chinese OLBI was found to be satisfying when used on a nursing population. In addition, our good CVI indicated the Chinese version of OLBI was a valid tool. It can be used as an appropriate assessment for evaluating burnout among clinical nurses. Construct validity reflects the consistency between the measurement results and the theoretical model. The higher the validity, the more capable the testing tool is to measure the authenticity of the subject. Factor analysis is the most popular used and effective method to evaluate structural validity. The exploratory factor analysis results of this study showed that the number of factors and the items contained in each common factor of Chinese version of OLBI are consistent with those of the original English version of scale. The load of each item on the corresponding factor ranged 0.505–0.776, all of which were >0.5 . The study confirmed the validity of a two-factor structure, with eigenvalues higher than 1 that explained 62.2% of the total variance. Confirmatory factor was used to further verify the structure, and the results showed that the model fit was good, indicating the scale construct validity was high.

The criterion-related validity is used to reflect the correlation between test scale and reference scale. In this study, the MBI scale, which is widely used at present, was used as the criterion standard. OLBI showed strong correlation with the MBI ($r = .873$, $p < .01$), which was consistent with the results of the previous study (Juliana et al., 2011). It indicated that the Chinese version of OLBI had good criterion validity and could effectively evaluate the occupation burnout level.

This study is of great importance because OLBI is a very useful and simple scale to assess occupation burnout. It takes approximately 5 min to complete. However, up to now, a Chinese version was not published and used. Our research reported successful translation of the OLBI into Chinese, which will benefit clinical nursing managers and researchers. The potential application of the OLBI would be to assess occupation burnout in other workers in China, for example, teachers, students, etc.

5 | LIMITATIONS

There were also some limitations in the study. First, a convenience sample through network questionnaire was recruited, which may lead to inevitable bias due to subject selection. Apart from that, the test-retest reliability was not evaluated due to limitations of funds and time. Second, the population investigated in this study was limited to clinical nurses in Jiangsu province. Finally, although the translation was performed independently by three bilingual experts, neither of them was a native speaker; thereby, the use and choice of words may be somewhat inappropriate or inaccurate.

In the future, the scale will be adapted to assess occupation burnout in other work population, and further study should be carried out to establish cut-off value of the scale. In addition, populations in other regions of China should be enrolled to ensure that cultural and regional factors are not introducing a bias.

6 | CONCLUSIONS

The study followed a strict methodology including forward translation, back-translation, cultural adjustments and validation. The result suggested that the Chinese version of OLBI was a potentially appropriate instrument to assess occupation burnout for nursing manage and research purposes. Further study was needed to evaluate its application in other occupation and other regions of China. Cultural and regional differences should be also taken into consideration in the adaptation process.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

AUTHOR CONTRIBUTIONS

ET, KA and WG had contributed to the conception and design of the study. HX and JZ had contributed to the collection data of the study. JJ investigated the experts and nurses. XL and XW had contributed to the analysis and interpretation of the data. HX and YY drafted the manuscript. PZ had contributed to the revision of the

manuscript. All of the authors have reviewed and approved the final manuscript.

ETHICAL APPROVAL

Research Ethics Committee approval was obtained from Ethics Committee of Yangzhou University. All methods were performed in accordance with the guidelines of the Declaration of Helsinki. All the subjects were asked for voluntary participant and signed informed consent.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author.

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APPENDIX 1

Chinese version of oldenburg burnout inventory

Items	Totally disagree	Disagree	Agree	Totally agree
Q1 I can always find new and interesting aspect in my work				
Q2 There are days when I feel tired before work				
Q3 I talk about my working in a negative way more and more times				
Q4 After work, I need more time to be relaxed and comfortable than before				
Q5 I can tolerate the pressure of my work well				
Q6 Lately, I tend to think less at work and do my job automatically				
Q7 I find my work to be a positive challenge				
Q8 During work, I often feel emotionally drained				
Q9 Gradually, I wanted to get out of this type of work				
Q10 After work, I have enough energy for my leisure activities				
Q11 Sometimes I feel sickened by my work tasks				
Q12 After my work, I usually feel worn out and weary				
Q13 This is the only type of work I can imagine myself doing				
Q14 Usually, I can manage the amount of my work well				
Q15 I feel more and more engaged in my work				
Q16 When I work, I usually feel energized				