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Original Article

Psychometric properties of the Chinese Version of the Readiness for Hospital Discharge Scale for people living with HIV

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ABSTRACT

Objective: The study was conducted to validate the reliability and factor structure of the Chinese version of the Readiness for Hospital Discharge Scale (RHDS-CH) for people living with HIV (PLWH).

Methods: From May 2017 to November 2017, a cross-sectional survey was performed in two AIDS inpatient departments located in two cities in Hunan, China. Reliability was evaluated by examining the internal consistency and split-half reliability of the items. A confirmatory factor analysis was performed to assess the factor structure of the RHDS-CH, and the model was revised according to the modification index.

Results: Cronbach's α for the RHDS-CH was 0.912, and the split-half reliability of the total scale was 0.831. Initially, the results of the confirmatory factor analysis indicated that the sample did not fit this four-factor model and its 23 items well ($\chi^2/df = 3$, GFI = 0.772, TLI = 0.823, CFI = 0.844, RMSEA = 0.100). To improve the model fit indices, we performed model modification with the guidance of modification indices. Finally, the model fit indices showed an acceptable fit to the data ($\chi^2/df = 2.141$, GFI = 0.844, TLI = 0.899, CFI = 0.915, RMSEA = 0.075). Coefficients of corrected item-total correlation of the RHDS-CH ranged from 0.435 to 0.726.

Conclusion: This study is the first to examine the psychometric properties of the RHDS-CH for PLWH. Our findings showed good reliability and confirmed the four-factor structure model for PLWH.

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What is known?

- The assessment of readiness for hospital discharge and the transition to home-based recovery and care have become increasingly important for patients' safety, satisfaction, and positive outcomes. A good transition can promote recovery and achieve a better outcome.
- The readiness for hospital discharge can affect the response and self-management abilities of people living with HIV.
- The Readiness for Hospital Discharge Scale is a general tool used to assess readiness for discharge from the patient's viewpoint, and the Chinese Version of the Readiness for Hospital Discharge

Scale has been developed, but the evidence of its psychometric properties among people living with HIV is limited.

What is new?

- The four-factor structure of the Chinese Version of the Readiness for Hospital Discharge Scale for people living with HIV is confirmed through confirmatory factor analysis.
- The Chinese Version of the Readiness for Hospital Discharge Scale has good psychometric properties and clinical nurses can use this scale to evaluate the discharge readiness of people living with HIV.

1. Introduction

Despite increased public awareness of the risk factors for HIV in recent decades, HIV infection is still a serious public health problem

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worldwide. According to an estimation from a Joint United Nations Program on HIV/AIDS, 36.9 million people were living with HIV in 2017, with 1.8 million new HIV infections [1]. An estimated 758,610 people were living with diagnosed HIV in China by the end of 2017, with 134,512 new HIV infections [2].

With effective antiretroviral (ART) therapy, HIV infection becomes a manageable chronic condition [3,4]. As a result, the number of people living with HIV (PLWH) is increasing, and life expectancy is longer than before [4]. However, the rate of hospitalization is relatively high for PLWH because of HIV-related diseases, non-HIV-related diseases, and late diagnoses of HIV [5–8]. Several studies that were carried out in high-prevalence countries demonstrated that patients with HIV-related diseases occupy the majority of hospital beds, and the length of hospital stay of HIV-positive patients was longer than other patients on average [9]. China's health system reform is currently in a transitional period. To improve the utilization of existing health resources and the quality of services, the health care system has taken steps to shorten the average length of stay [10,11]. However, the prevalence of HIV-related hospital stays puts an additional strain on this changing system. Generally, patients are discharged in an intermediate, rather than sufficient, stage of recovery [12]. Patients and family caregivers are the main managers of recovery because care needs to extend into the home after discharge [13], and caregivers must spend considerable time adapting to the changes. In addition, patients are unable to obtain adequate information and education during hospitalization because of the decreased length of stay [13].

Readiness for hospital discharge, also called home readiness, is a term that was initially used to describe patients who had undergone anesthesia and ambulatory surgery and who were at a stage of sufficient recovery to be safely discharged [12]. More recently, readiness for discharge has become a multidimensional and multiphase phenomenon that is used to evaluate a patient's ability to be discharged from the hospital. The assessment of readiness for hospital discharge and the transition to home-based recovery and care have become increasingly important for patients' safety, satisfaction, and positive outcomes [13]. A good transition can promote recovery and achieve a better outcome [13,14]. Inadequate readiness for discharge is associated with adverse outcomes, such as unplanned readmission and emergency department use [15]. For PLWH, in addition to readmission, depression, quality of life, and medication adherence are also important indicators of post-discharge outcomes [16,17]. During hospitalization, PLWH receive treatment and care from medical staff. However, PLWH mainly rely on self-management and family support after discharge, which results in PLWH facing a variety of challenges after returning to their families and communities, especially those PLWH who were newly diagnosed with HIV infection and experiencing their first hospitalization or who have a low educational background and low income. If the patient is not ready for discharge because of a lack of knowledge, insufficient coping skills, or inadequate family support, this would affect the patient's response and self-management abilities [18], such as poor ART adherence, occurrence or aggravation of depressive symptoms, and other factors affecting quality of life. It would help to improve patients' coping and self-management abilities after discharge if there were procedures in place for evaluating patients' readiness for discharge, predicting possible coping difficulties, and providing the timely enactment of targeted interventions. Here, readiness for discharge can be evaluated from the perspectives of the health provider, patient, and family [19]. The need to incorporate the patient's perceptions of readiness for discharge has been confirmed as an important component of discharge assessment. Weiss et al.'s [13] research indicated that patients' negative perceptions of readiness for discharge were

associated with coping difficulties and a greater likelihood of rehospitalization. However, studies directly assessing readiness for discharge from the patient's perspective were limited in number. The common method of assessment is limited to a single-item question with a yes/no response format, and more than 90% of the respondents reply with readiness for discharge [20].

The Readiness for Hospital Discharge Scale (RHDS), developed by Weiss and Piacentine [21], is a general tool used to assess readiness for discharge from the patient's viewpoint. It indirectly investigates the essential contents of discharge preparation education, knowledge gained, and sufficiency of discharge teaching for self-care following hospitalization [21]. The RHDS has been used in different populations, such as adults, postpartum women, and the parents of hospitalized children. Several studies have indicated that the RHDS has adequate psychometric properties [13,21,22]. As a predictor of posthospitalization outcomes and an important indicator to reduce utilization costs after discharge [23], the RHDS has been widely used in Western countries, including the United States, Brazil, and France [23–25]. RHDS has been translated into Chinese to adapt to Chinese contextual factors [26,27]. Zhao et al. [27] has validated a Chinese version of the RHDS (RHDS-CH) in laryngectomy patients, which has demonstrated favorable reliability and validity. However, research about readiness for discharge focused on PLWH has been limited, and the psychometric properties of the RHDS-CH have not been tested for PLWH. Thus, the current study was conducted to validate the reliability and factor structure of the RHDS-CH among PLWH.

2. Material and methods

2.1. Design and participants

From May 2017 to November 2017, a cross-sectional study was performed in two AIDS inpatient departments of two hospitals for infectious diseases in Hunan Province, China. A consecutive sampling method was used to recruit the participants. A total of 213 PLWH were recruited for the current study. Patients were eligible to participate if they were a) aged 18 years or older; b) hospitalized for reasons related to HIV infection; c) discharged within 12 h; d) able to speak Mandarin or the regional dialect; and e) willing to participate in the study. Patients were excluded if their conditions did not allow for participation (e.g., critically ill, cognitively impaired, or had serious mental diseases).

2.2. Instrument

The RHDS-CH consists of 23 items distributed into four dimensions. The first question asks patients if they are ready for discharge and has a dichotomous answer that is not considered when scoring the overall readiness. The RHDS-CH has four subscales: personal status (7 items, items 2–8), knowledge (8 items, items 9–16), coping ability (3 items, items 17–19), and expected support (4 items, items 20–23). The items are rated on an 11-point (0–10) Likert scale. The total score is between 0 and 220 and is calculated by adding the scores in the four dimensions (22 items). Higher scores indicate greater readiness for hospital discharge [23]. The content validity of the RHDS-CH for the total scale is 0.97, with the item scores for content validity index (CVIs) ranging from 0.75 to 1.00, a Cronbach's α reliability of 0.97, and a range of 0.89–0.97 for the four subscales [27].

Patients' self-reported sociodemographic data included age, gender, ethnicity, marital status, educational level, and medical insurance. These data are presented below (Table 1).

Table 1
Characteristics of the study participants ($n = 203$).

Characteristics	<i>n</i>	%
Age (years)		
<35	50	24.7
35–44	38	18.7
45–59	76	37.4
≥60	39	19.2
Gender		
Male	161	79.3
Female	42	20.7
Ethnicity		
Han nationality	196	96.6
Other	7	3.4
Marital status		
Married	116	57.1
Unmarried	49	24.2
Divorced	23	11.3
Widowed	15	7.4
Education		
Illiteracy	8	3.9
Elementary school	56	27.6
Junior high school	72	35.5
High school	38	18.7
College	27	13.3
Graduate school	2	1.0
Medical insurance		
Yes	166	81.8
No	37	18.2
Caregiver during hospitalization		
Yes	133	65.5
No	70	34.5
Diagnosis length (months)		
≤6	108	53.2
7–12	12	5.9
13–36	24	11.8
>36	58	28.6
Missing	1	0.5
Hospitalization stay (days)		
<7	18	8.9
7–13	55	27.1
14–27	75	36.9
≥28	55	27.1
Antiviral therapy		
Yes	157	77.3
No	45	22.2
Missing	1	0.5
Perceived readiness for discharge (single item)		
Yes	197	97.0
No	6	3.0

2.3. Data collection

Permission to use this tool was obtained from the Chinese translator and the developer of the original RHDS. The instrument was designed to be used on the day of discharge and was completed after discharge had been decided upon; within 12 h before discharge, clinical nurses normally complete the discharge guidance and health education, which also makes this the optimal time to evaluate the patient's readiness for discharge. A pilot study of the RHDS-CH was administered with 21 participants; the results indicated that these items were generally clear and understandable. An item was revised based on the suggestions of PLWH, particularly by patients in rural areas. The word "community" in item 16 ("How much do you know about services and information available to you in your community after you go home?") was replaced with "outpatient or Centers for Disease Control and Prevention" because PLWH are managed in these centers and in HIV clinics. The questionnaire was self-administered with the help of a researcher, if required. The questionnaire required between 25 and 30 min to complete. We

checked the quality of the questionnaire at the end of each survey in case of missing data. Within 12 h before discharge, all participants completed the RHDS-CH. We retained their anonymity and confidentiality throughout the present study.

2.4. Ethical considerations

The current study was approved by the institutional review board of the Xiangya School of Nursing, Central South University. We offered written and orally informed consent to the respondents. Verbal informed consent was offered by every respondent after we explained the research purpose, methods, risks, and benefits. To ensure anonymity and confidentiality, on the questionnaires, we recorded codes instead of participants' names. We assured the participants that whether they participated or not or even withdrawing from the study would not impact the services they would receive from the inpatient department. After completing the questionnaire, we provided a package of daily necessities (about USD 10), such as toothpaste and towels, to each participant as appreciation for their participation.

2.5. Statistical analysis

SPSS software (version 23.0) was used to analyze the data. The participants' demographic information and characteristics were described using frequencies and percentages. The total and scores of the subscales of the RHDS-CH were reported with mean and standard deviations. We computed Cronbach's α for the RHDS-CH overall, as well as for its four subscales. Cronbach's α greater than 0.7, 0.8, and 0.9 indicated acceptable, good, and excellent internal consistency, respectively. In addition, Spearman–Brown coefficients were calculated to assess the split-half reliability. The split-half reliability was found to be good, with a Spearman–Brown coefficient between 0.80 and 0.90 [28]. The corrected item-total correlation was examined, and its acceptable level was set at ≥ 0.3 [29].

To determine contrasted group validity, the respondents were divided into groups based on self-reported age. Data of variables presented normal distribution (Shapiro-Wilk, $P > 0.05$) and contrasted group validity was tested with a one-way ANOVA. We hypothesized that different age groups would score differently on the RHDS-CH. Post hoc differences were analyzed among the different age groups (<35, $n = 50$; 35–44, $n = 38$; 45–59, $n = 76$; ≥ 60 , $n = 39$) using Fisher's least significant difference (LSD).

To test the four-factor structure model of the RHDS-CH, a confirmatory factor analysis (CFA) was performed with maximum likelihood using AMOS (version 23). The adequacy was estimated before the study. For the theoretical model, the sample size recommendation is greater or equal to 200 [30]. Thus, 203 subjects were considered adequate to test the RHDS-CH model. We assessed the model's fit with the following recommended goodness-of-fit indices: χ^2 ratio to degrees of freedom (χ^2/df), goodness-of-fit (GFI), comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). $\chi^2/df < 5$, GFI and TLI > 0.9 were viewed as acceptable criteria [31]; CFI > 0.9 indicated a good fit; RMSEA < 0.08 and RMSEA < 0.06 indicated a reasonable and good fit, respectively [32]. The model's modification was implemented by constructing relationships among the errors, according to a modification index greater than 10 [33]. The model's respecification was consistent with the theoretical justification [34].

3. Results

3.1. Sample characteristics

Of the 213 participants who completed the study, 203 questionnaires were considered valid, resulting in a response rate of 95.3%. Table 1 shows the characteristics of the study's sample. The mean age of this sample was 46.55, 161 participants (79.3%) were male, Han was the majority ethnicity (96.6%), and 81.8% of the participants had medical insurance. More than half (65.5%) of the patients had caregivers during their hospitalization, and the average length of hospital stay was 20.41 days (ranging from 2 to 60 days). More than half of the participants (53.2%) had received an HIV diagnosis within the past six months.

3.2. Descriptive analysis of the RHDS-CH

Of the 203 PLWH with valid questionnaires, 197 (97.0%) indicated "ready" when asked whether they were ready to go home as planned (item 1). The total RHDS-CH score of the sample ranged from 74 to 220, with an average score of 171.09. The range of the average score for the scale was from 3.36 to 10.00, with an overall average of 7.78. From the highest to the lowest score, the ranking of the four dimensions was coping ability, personal status, knowledge, and expected support. The descriptive statistics of the total scale and four subscales are presented in Table 2. According to previous studies, 7 points were considered the cut-off score for acceptable levels of readiness. In the current study, most patients (72.4%) scored 7 points or above on the RHDS-CH, indicating that their self-evaluation of discharge readiness was good and that they were ready to go home.

3.3. Reliability

The reliability results are reported in Table 2. The internal reliability was excellent for the total scale, with Cronbach's α equaling 0.912; the subscales were also reliable, with Cronbach's α between 0.787 and 0.912. The split-half reliability was good for the total scale, with a Spearman–Brown coefficient of 0.831, and the results for the four dimensions were also good, with Spearman–Brown coefficients between 0.803 and 0.883. All items had higher than 0.3 corrected item–total correlations (Table 3).

3.4. Contrasted group validity

The one-way ANOVA test was significant ($F = 5.427, P < 0.001$). The post hoc comparisons indicated there were significant differences between the age group under 35 years old and the other three age groups.

3.5. Confirmatory factor analysis

The initial results of the CFA show that the criteria were not met to an acceptable fit ($\chi^2/df = 3, GFI = 0.772, TLI = 0.823, CFI = 0.844,$

Table 2
Descriptive statistics of the four subscales and reliability of the RHDS-CH ($n = 203$).

Subscales	Mean \pm SD	Cronbach's α	Split-half reliability
Personal status	7.97 \pm 1.54	0.821	0.803
Knowledge	7.63 \pm 1.78	0.893	0.870
Coping ability	8.11 \pm 1.69	0.787	0.822
Expected support	7.46 \pm 2.40	0.912	0.883
Total (22 items)	7.78 \pm 1.38	0.912	0.831

Note: RHDS-CH=Chinese version of Readiness for Hospital Discharge.

Table 3
Corrected item–total correlation coefficients of the RHDS-CH ($n = 203$).

Item	Corrected item–total Correlation(r)	Cronbach's α if item deleted
Item 2	0.490	0.743
Item 3	0.435	0.742
Item 4	0.626	0.740
Item 5	0.654	0.740
Item 6	0.464	0.740
Item 7	0.527	0.741
Item 8	0.530	0.744
Item 9	0.653	0.739
Item 10	0.674	0.740
Item 11	0.726	0.739
Item 12	0.617	0.738
Item 13	0.643	0.737
Item 14	0.549	0.740
Item 15	0.674	0.736
Item 16	0.542	0.738
Item 17	0.625	0.738
Item 18	0.642	0.741
Item 19	0.656	0.740
Item 20	0.532	0.740
Item 21	0.510	0.740
Item 22	0.458	0.740
Item 23	0.567	0.737

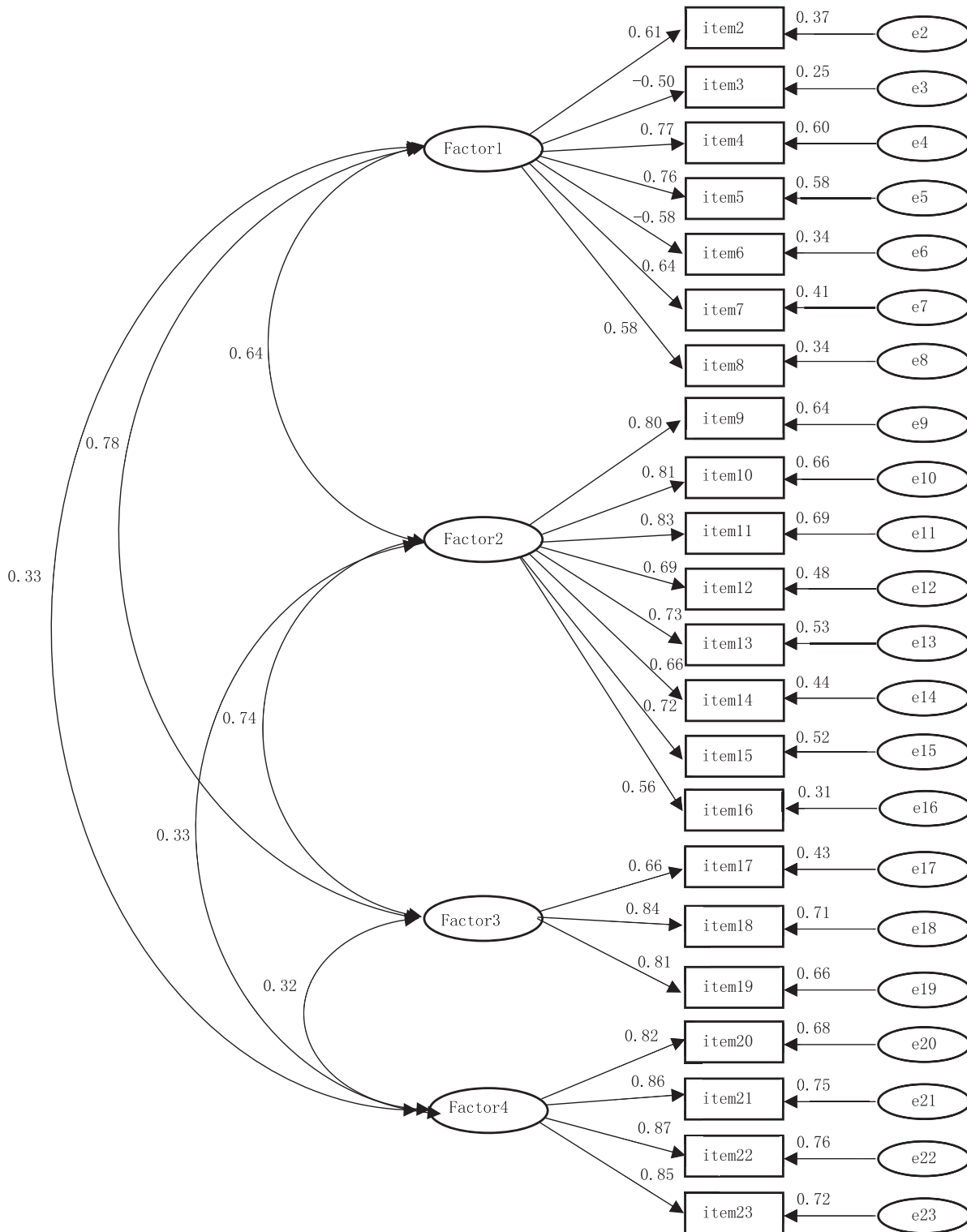
Note: RHDS-CH=Chinese version of Readiness for Hospital Discharge; $P < 0.01$.

RMSEA = 0.100). The standardized parameters of the initial model of the RHDS-CH are reported in Fig. 1. Table 4 presents the correlations between the subscales of the RHDS-CH and the total scale. All correlations were significant among the four subscales ($P < 0.01$). The Pearson's correlation coefficients between the total scale and the four subscales indicated moderate to high degrees of correlation (0.615–0.852). The Pearson's correlation coefficients for personal status, knowledge, and coping ability ranged from 0.506 to 0.626. However, expected support showed low correlations (0.276–0.317) with the other three dimensions.

3.6. Model modification

To improve the fit indices, according to modification indices (MIs), we performed a post hoc model modification. We adjusted the model by constructing paths between the residuals. Residual correlations were established based on MIs higher than 10 [33] and theoretical justification [34] during the process of adjustment. Thus, being strongly related, item 2 and item 20 ("How physically ready are you to go home?" and "How much emotional support will you have after you go home?") were associated. Generally, residual correlations could be constructed among very similarly worded items [35]. Item 8, "How would you describe your physical ability to care for yourself today (for example, hygiene, walking, toileting)?" was associated with item 18, "How well will you be able to perform your personal care (for example, hygiene, bathing, toileting, eating) at home?" for having similar wording. Items loading on the same factor have closer associations and local dependencies [35]. Therefore, in the personal status subdomain, two pairs of items (items 4 and 5, items 6 and 7) were suggested by the MIs. In the knowledge subdomain, four pairs of residual correlations (items 9 and 10, items 10 and 11, items 13 and 16, items 15 and 16) were constructed.

The modified four-factor model has an acceptable fit to the sample ($\chi^2/df = 2.141, GFI = 0.844, TLI = 0.899, CFI = 0.915, RMSEA = 0.075$). The item loadings ranged from 0.51 to 0.72 for personal status, from 0.54 to 0.81 for knowledge, from 0.68 to 0.82 for coping ability, and from 0.82 to 0.87 for expected support (Fig. 2).



Note: Factor1=personal status; Factor2=knowledge; Factor3=coping ability; Factor4=expected support.

Fig. 1. Initial results of the confirmatory factor analysis of the Chinese version of readiness for hospital discharge.

4. Discussion

The aim of the current study was to validate the RHDS-CH for PLWH. The results demonstrated that the reliability of the RHDS-CH

was good. The confirmatory factor analysis revealed that the four-factor structure adequately fit the data, supporting the use of the RHDS-CH with PLWH.

The internal consistency reliability of the RHDS-CH was

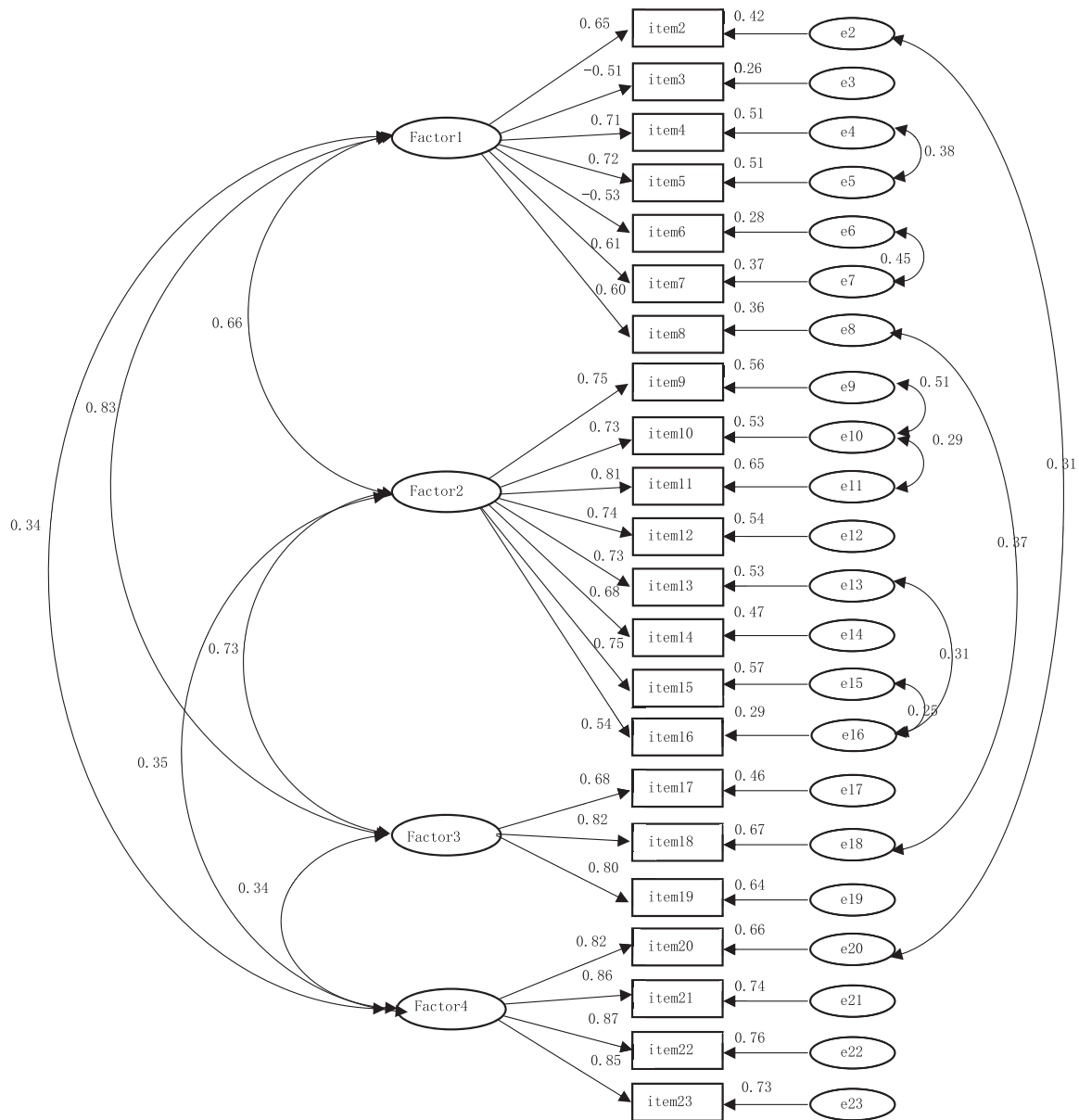
Table 4
Correlations among the four subscales of the RHDS-CH and the total scale (r,n = 203).

subscales	Total	Factor1	Factor2	Factor3	Factor4
Total	1				
Factor1	0.781**	1			
Factor2	0.852**	0.506**	1		
Factor3	0.779**	0.619**	0.626**	1	
Factor4	0.615**	0.276**	0.318**	0.317**	1

Note: Factor1 = personal status; Factor2 = knowledge; Factor3 = coping ability; Factor4 = expected support; RHDS-CH=Chinese version of Readiness for Hospital Discharge; **P < 0.01.

excellent, with Cronbach’s $\alpha = 0.912$, which is slightly lower than the original RHDS-CH [27] (Cronbach’s $\alpha = 0.97$). Cronbach’s α of the four subscales were above 0.7. The corrected item-total

correlations for all items in the RHDS-CH were over 0.3, indicating good internal consistency reliability. Thus, none of the items were deleted. Contrasted group validity was supported for the RHDS-CH. Patients who were under 35 years old scored higher than those who were older than 35. The results of the CFA for the RHDS-CH ($\chi^2/df = 2.141$, GFI = 0.844, TLI = 0.899, CFI = 0.915, RMSEA = 0.075) indicated that it is superior to the original English version of the RHDS ($\chi^2/df = 2.69$, GFI = 0.79, RMSEA = 0.10) [21]. In the current study, the GFI, 0.844, was below 0.9, but the GFI is highly dependent on the sample size. Moreover, there is some literature showing that it is still acceptable for a confirmatory analysis if the GFI is slightly below 0.9 [36]. Even though the TLI should be over 0.9 for a good fit, in our study, the TLI is 0.899, which is very close to 0.9. In addition, there is literature indicating that $TLI \geq 0.85$ can be an acceptable fit [37]. The French version of the RHDS applied to older inpatients differed from the original four-



Note:Factor1=personal status; Factor2=knowledge; Factor3=coping ability; Factor4=expected support.

Fig. 2. Modified results of the confirmatory factor analysis of the Chinese version of readiness for hospital discharge.

factor structure [24]; these results indicated that we should validate the scale of readiness for hospital discharge using different inpatients with various contextual factors and within different health care systems.

In the current study, when asking PLWH about item 1, whether patients were ready to go home as planned, we discovered that 97% of the respondents answered that they were ready. However, only 72.4% of the patients were reported being prepared to be discharged through the measurement of the scale (RHDS-CH \geq 7). Research by Bobay et al. and Liu et al. [15,38] found similar results. This gap may be because of the patients' poor understanding of the purpose of this item, their understanding of being "ready to go home as planned" as their eagerness to be discharged and go home [39], or their preparation in terms of arranging their belongings and discharge procedures. These results also indicated that a yes/no item cannot fully reflect the connotation of discharge readiness.

The total RHDS-CH score of the sample population was 171.09 ± 30.39 , and the average score was 7.78 ± 1.38 , which is similar to Liu et al.'s results [40] of patients undergoing lung cancer chemotherapy (170.07 ± 29.79). The average score of RHDS-CH was slightly lower than the average score of Weiss et al.'s study (8.0 ± 0.9) of adult surgical patients [13], and the average score was slightly higher than Wang's study [41] of osteoporosis patients (7.40 ± 1.35). The results demonstrated that the overall score of discharge readiness for PLWH was at a good level. Compared with other diseases [13,39,41], PLWH did not make a lower evaluation of their own discharge readiness. Ranked from highest to lowest, the RHDS-CH scores of the four dimensions were coping ability, personal status, knowledge, and expected support, which is inconsistent with the research of other scholars [39,42]. In Wang's study [41], the subscale scores of osteoporosis patients, ranked from highest to lowest, were expected support, personal status, coping ability, and knowledge. In the research on patients undergoing endoscopic mucosal detachment [42], the subscale scores, from highest to lowest, were expected support, personal support, knowledge, and coping ability.

We found that the average score for expected support was the lowest of all four factors. The findings indicate that the sample population did not receive as much support as patients with other diseases. A study conducted in Guangxi, China showed that social support for PLWH undergoing ART was worse than for healthy people [18], especially for those who were afraid to disclose their illness to their families and those who were newly diagnosed. PLWH not only suffered from the disease, but also from being alienated by their families and society. Studies have demonstrated that social support could facilitate adaptive coping, and the use of various coping strategies, especially with emotional and informational support, could aid PLWH [16]. Therefore, health care providers should strengthen the evaluation of social support for PLWH to improve patients' coping abilities and readiness for discharge.

With the increasing number of PLWH and the wide use of ART, HIV/AIDS has become a manageable chronic disease [43]. Similar to other chronic diseases, PLWH can be admitted to the hospital repeatedly. As a predictive indicator of posthospitalization outcomes, the RHDS-CH can be a useful instrument to assess potential coping difficulties and implement targeted intervention planning to facilitate successful transitions from hospitals to homes. In addition, the current study found that the RHDS-CH could reflect discharge readiness in PLWH, and its psychometric features were favorable. In addition, clinical nurses can use the RHDS-CH to evaluate the discharge readiness of PLWH.

5. Strengths and limitations

This study presents the following advantages. To the best of our

knowledge, the current study is the first to assess the psychometric properties of the RHDS-CH for PLWH. Our study confirmed the reliability and the four-factor structure model of the RHDS-CH for PLWH. The RHDS-CH could be used by clinical nurses to determine the discharge readiness of PLWH.

The limitations of the current study include the small sample size and our use of nonprobability sampling to collect data from two HIV clinics, which may have limited the generalizability of the study results. In addition, the predictive validity and criterion validity of the RHDS-CH was not assessed. Moreover, the correlation between readiness for discharge and discharge outcomes among PLWH needs further research.

6. Conclusions

Our results supported the four-factor model of the RHDS-CH for PLWH, and the reliability of the RHDS-CH was good. Therefore, this scale could be useful for evaluating the discharge readiness of PLWH. Nurses should regard this scale as an effective way to measure the perceptions of PLWH in terms of discharge readiness, to predict latent problems related to postdischarge issues, and to strengthen health education to achieve a secure transition. For future work, the scale structure needs to be validated in different settings and with a larger sample.

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Declaration of competing interest

The authors have no conflicts of interest to declare.

CRediT authorship contribution statement

Chen Chen: Formal analysis, Data curation, Software, Writing - original draft, Investigation, Data curation. **Xiaoxia Zhang:** Conceptualization, Methodology, Investigation, Data curation. **Chulei Tang:** Writing - review & editing, Software. **Xueling Xiao:** Writing - review & editing. **Zirong Tao:** Writing - review & editing, Validation, Supervision. **Honghong Wang:** Supervision, Validation, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijnss.2019.12.011>.

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