Chinese Version of the Community Residents' Health Status Assessment Scale: Reliability and Validity Testing in Elderly Patients (Postprint)

Authors: Li Hang, Liu Suzhen, Ni Yunxia, Liu Suzhen

Date: 2023-12-28T15:23:34+00:00

Abstract

Background: Against the backdrop of the national initiative to vigorously promote home-based medical services for elderly, chronic disease, and disabled patients, the adoption of professional assessment tools that can effectively evaluate patients' health status in home environments and their medical and nursing service needs is a critical assurance for precisely addressing patients' home-based medical and nursing care demands.

Objective: To translate and culturally adapt the Community Health Intensity Rating Scale (CHIRS) into Chinese, and to evaluate the reliability and validity of this scale among community-dwelling elderly patients with chronic diseases.

Methods: After obtaining authorization from the original author, the Chinese version of CHIRS was developed following the translation, back-translation, and cultural adaptation process based on the Brislin model. From March to June 2021, elderly patients managed by a community health service center (station) in Chengdu were selected as research subjects using convenience sampling. Expert consultation was employed to evaluate the content validity of the scale, internal consistency coefficients were used to test the reliability of the scale, and its practical applicability was verified.

Results: A total of 244 patients were surveyed and completed home-based questionnaires, with a 100% effective response rate. Expert consultation results showed that the S-CVI/ave of the Chinese version of CHIRS was 0.98, and I-CVI ranged from 0.71 to 1.00; the overall Cronbach's α coefficient was 0.884, and the Cronbach's α coefficients for the four dimensions ranged from 0.593 to 0.787. Predictive validity results showed that the Spearman correlation coefficients between the rating results of the Community Health Intensity Rating Scale and patients' self-rated health status and self-rated home-based medical and nursing service needs were -0.611 ($P<0.001$) and 0.584 ($P<0.001$), respectively.

Conclusion: After translation and cultural adaptation, the Chinese version of CHIRS demonstrates good reliability, validity, and reference value, and can be used to assess the health status and home-based medical and nursing service needs of community-dwelling elderly patients with chronic diseases.

Full Text

Sinicization of the Community Health Intensity Rating Scale and Its Reliability and Validity Test in Elderly Patients

LI Hang[1], LIU Suzhen[2]*, NI Yunxia[3]

[1]Department of Urology, West China Hospital, Sichuan University/Institute of Urology/West China School of Nursing, Sichuan University, Chengdu 610041, Sichuan Province, China
[2]West China Hospital, Sichuan University/West China School of Nursing, Sichuan University, Chengdu 610041, Sichuan Province, China
[3]Department of Cardiology, West China Hospital, Sichuan University/West China School of Nursing, Sichuan University, Chengdu 610041, Sichuan Province, China

Corresponding author: LIU Suzhen, Professor, Master's supervisor; E-mail: yly90777@163.com

---

Abstract

Background
In the context of national efforts to promote the development of home care services for the elderly, chronic disease patients, and disabled individuals, the adoption of professional assessment tools that can effectively evaluate patient health in home environments and meet care service needs is essential for accurately matching patients' home medical care requirements.

Objective
To sinicize the Community Health Intensity Rating Scale (CHIRS) and evaluate its reliability and validity among elderly chronic disease patients in Chinese communities.

Methods
After obtaining authorization from the original author, the Chinese version of CHIRS was developed following the Brislin model's translation, back-translation, and cultural adaptation process. From March to June 2021, elderly patients managed by a community health service center (station) in Chengdu were selected as research subjects using convenience sampling. Expert consultation was used to evaluate content validity, internal consistency coefficient was used to test reliability, and practicality was verified.

Results
A total of 244 patients completed the household questionnaire survey, with a 100% valid response rate. Expert consultation results showed that the S-CVI/ave of the Chinese CHIRS was 0.98, with I-CVI ranging from 0.71 to 1.00. The overall Cronbach's α coefficient was 0.884, with the four dimensions ranging from 0.593 to 0.787. Predictive validity results showed Spearman correlation coefficients between CHIRS rating results and patients' self-rated health status and self-rated home care service needs of -0.611 ($P<0.001$) and 0.584 ($P<0.001$), respectively.

Conclusion
After sinicization and localization modifications, the Chinese version of CHIRS demonstrates good reliability and validity, making it suitable for assessing the health status and home medical care service needs of elderly chronic disease patients in community settings.

Keywords
Home medical care; Health surveys; Aged; Home care; CHIRS; Scale; Reliability; Validity

Introduction

Home medical care services represent an essential need for elderly patients with chronic diseases and have attracted significant attention from both government and society [1]. However, due to its relatively late start in China, home medical care remains in the exploratory stage, facing a contradiction between the growing diverse needs of elderly chronic and disabled patients and the inadequacy of related care service systems, incomplete institutional frameworks, and insufficient implementation [2]. A "needs-oriented" approach is crucial for accurately matching patient medical care service demands while ensuring rational allocation of limited resources. Consequently, identifying patients' direct or potential medical needs has become an important topic for discussion.

Since the 1980s, some developed countries have multi-dimensionally identified and explored existing or potential health problems in patients based on their functional status, medical care activity needs, home environment, and psychosocial support. They have constructed medical care needs assessment tools to determine residents' medical needs, guiding community health service centers and home care agencies in hierarchical/classified management of patients and providing medical care services matched to patient needs. Common assessment tools include the International Resident Assessment Instrument Home Care (InterRAI HC) [3], Community Client Need Classification System (CCNCS) [4], and Community Health Intensity Rating Scale (CHIRS) [5], among others. Although Chinese versions of InterRAI HC and CCNCS exist, the former lacks classification capability while the latter suffers from insufficient objectivity in its indicators, limiting their widespread application in Chinese communities.

Current primary healthcare assessment tools in China, such as the "Standard Assessment Form for Elderly Capacity (Trial)" [6] and the "Qingdao Long-term Care Needs Level Assessment Form" [7], primarily focus on evaluating patients' daily care needs with greater emphasis on functional status, while paying insufficient attention to their home medical care needs. Therefore, to comprehensively and effectively assess the health status of Chinese community residents, particularly the elderly, chronically ill, and disabled patients who are national priorities, and to determine their home medical care needs, this study aims to sinicize and introduce CHIRS and evaluate its reliability and validity among elderly chronic disease patients in Chinese communities. This will provide an excellent assessment tool for evaluating the health status and home medical care service needs of elderly chronic patients and offer references for future development of related tools in China.

Methods

1.1 CHIRS Introduction

CHIRS was developed in 1989 by American scholar DONNA et al. [5] based on the assessment framework of the Problem Classification Subsystem of the Omaha System. It is an assessment tool designed for nursing professionals to evaluate community residents' health status and subsequently determine their medical care needs. The scale comprises four domains: Environmental (economic status, physical environment), Psychosocial (community network, family system, emotional-psychological response, personal growth and development), Physiological (sensory function, respiratory-circulatory function, neuromuscular and skeletal function, reproductive function, digestion and excretion, structural integrity), and Health-related Behaviors (nutrition, personal habits, health management), totaling 15 dimensions with 83 indicators and 879 sub-indicators.

Each sub-indicator of CHIRS is scored from 1 to 4 points, with the dimension score being the highest score among its sub-indicators. The total scale score is the sum of all dimension scores, where higher scores indicate worse health status and greater need for home medical care services. The scale classifies community residents' medical needs into four levels: low need (0-15 points), moderate need (16-30 points), high need (31-45 points), and extreme need (46-60 points) [5, 8-9]. As a universal scale, CHIRS has been widely used internationally to assess health status and medical care needs in community populations including infants, elderly patients, and AIDS patients, and has also been extended to schools to determine students' needs for school health services [8]. The original CHIRS was obtained by the researchers after contacting the original author via email and signing an authorized use agreement.

1.2 Translation and Revision of CHIRS

The sinicization process followed three main steps:

(1) **Establishment of the scale development team**: The team consisted of three medical professionals with bilingual backgrounds and expertise in community and geriatric nursing, including a professor, a PhD, and a master's graduate. Team members strictly monitored the entire research process to ensure the reliability of the study results.

(2) **Forward translation and back-translation**: Following the Brislin translation model [9], the original CHIRS was independently forward-translated by the three bilingual medical professionals in the team, producing three versions that were integrated into Chinese CHIRS Version 1 through group discussion. Version 1 was then sent to a medical English expert unfamiliar with the original scale for back-translation, resulting in English Scale 1 .

(3) **Synthesis and discussion of back-translation**: After back-translation, translators and back-translators conducted a one-by-one comparison of English Scale 1 with the original scale, discussed content with significant discrepancies, marked unresolved issues, and consulted the original author via email to clarify the true meaning of disputed items, resulting in Chinese CHIRS Version 2. The scale sinicization process is shown in Figure 1 [Figure 1: see original paper].

The translation workflow involved three bilingual translators who independently translated the original CHIRS into Chinese versions 1-3, which were merged into Chinese Version 1 through internal group comparison. A back-translator then converted Chinese Version 1 into English Scale 1. Finally, four translators compared the two source language versions and adjusted Chinese Version 1 after consulting the original author .

1.3 Expert Consultation for Chinese CHIRS

We invited seven primary healthcare experts aged 30-60 years with over 10 years of experience in home medical care services. The panel included one master's graduate and six bachelor's degree holders; six senior-level and one intermediate-level professional; and two community nursing specialists and five general practice specialists. The research team conducted expert consultations via email, asking experts to evaluate the scale's content importance, comprehensiveness, and linguistic appropriateness in the context of their professional expertise and community health service development. The consultation revealed high recognition of the scale and its sinicization with relatively concentrated opinions, which were incorporated to develop Chinese CHIRS Version 3.

1.4 Pilot Survey of Chinese CHIRS

Before conducting the pilot survey, two community nurses were invited to trial Chinese CHIRS Version 3 on two elderly community patients with chronic diseases. The nurses reported that the scale had comprehensive indicators, standardized terminology, and good operability. The pilot survey was carried out at

a community health service institution in Chengdu using convenience sampling to select 35 elderly chronic disease patients managed by family doctors at the institution, in order to evaluate the scale's practical applicability.

Inclusion criteria were: (1) age $\geq$ 65 years; (2) permanent residents living at home in the community for more than 6 months during the survey period; (3) chronic disease patients registered in the community family doctor contract information management platform; (4) those who indicated needing care or having activity difficulties during telephone contact; (5) patients or their family members (if patients had communication problems) willing to cooperate with the survey and sign informed consent.

Exclusion criterion: elderly patients receiving services from community day care institutions. The pilot survey results demonstrated that Chinese CHIRS Version 3 had good operability, leading to the final Chinese version of CHIRS.

1.5 Study Implementation

1.5.1 Study Subjects Using convenience sampling, 244 elderly patients managed by a community health service center (station) in Chengdu were selected as study subjects for household surveys. The inclusion and exclusion criteria were consistent with those used in the pilot survey described above. This study was approved by the Biomedical Ethics Committee of West China Hospital, Sichuan University (ethics approval number: 2020-165).

1.5.2 Study Tools The study tools included general demographic information and the Chinese version of CHIRS. The general information questionnaire was designed by the researchers based on literature review and included six demographic items: age, gender, ethnicity, marital status, education level, and personal income, as well as two self-assessment items: self-rated health status from the 12-item Short Form Health Survey (SF-12) [10] and self-rated home medical care service needs derived from literature. Self-assessment items used a five-point Likert scale: (1) Self-rated health status was categorized into five levels: very poor (1 point), poor (2 points), fair (3 points), good (4 points), and very good (5 points). (2) Home medical care service needs were categorized as: not needed at all (1 point), not needed (2 points), uncertain (3 points), needed (4 points), and very much needed (5 points).

1.5.3 Data Collection To avoid data collection bias, a researcher who is a nurse collected all data required for this study. Before data collection, the researcher communicated with the institution director, obtained full informed consent, and then met individually with family doctor teams to introduce the study's purpose and methods. The researcher asked them to pre-screen potential subjects according to the inclusion and exclusion criteria in the family doctor contract information management platform to generate an initial list of study subjects. The researcher then contacted each subject by phone according to the list, explained the study purpose and methods, and scheduled home

visits after obtaining consent from subjects and their families. Some general information and partial CHIRS indicators (such as liver and kidney function) were completed based on the contract management system information. At the scheduled time, the researcher visited subjects' homes with a nursing bag. After obtaining signed informed consent from patients or their families, the researcher used health assessment methods including observation, interviews, auscultation, and palpation to collect and record data on-site. For unclear or questionable items, the researcher verified with patients or their families repeatedly before recording. Survey duration varied from 50 to 75 minutes depending on each patient's actual health status. After each survey, the researcher promptly reported the patient's health status to their family doctor team members. The researcher completed screening and surveying for all patients from one family doctor team before moving to the next team.

1.5.4 Statistical Methods SPSS 26.0 was used to establish the database and conduct statistical analysis. Count data were expressed as rates and proportions, while measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$) or median (quartile range) [M(QR)]. Cronbach's α coefficient was used to test internal consistency reliability, expert consultation was used to test content validity, and Spearman correlation analysis was used to test scale validity. $P < 0.05$ was considered statistically significant.

Results

2.1 Revision Results of Chinese CHIRS

Based on expert opinions, Chinese linguistic and cultural context, and pilot survey results, corresponding indicators and item content of the scale were revised. Specific revisions are detailed in Table 1.

2.2 General Information of Patients

This study completed household surveys of 244 patients between March and June 2021, with a 100% valid response rate. The 244 elderly community chronic disease patients ranged in age from 65 to 101 years, with a mean age of (84.1 ± 7.0) years. Among them, 99.2% (242) were Han Chinese, and 143 (58.6%) were female. Detailed information is provided in Table 2.

2.3 Chinese CHIRS Assessment Results

Patients' community health intensity assessment scores ranged from 16 to 46 points, with a mean score of (31.4 ± 6.2). Scores for each domain and dimension are shown in Table 3. According to CHIRS scoring criteria, there were no patients with low-level needs in this survey. Patients with moderate, high, and extreme needs accounted for 116 (47.6%), [text incomplete in original].

2.4 Reliability and Validity

2.4.1 Reliability The Community Health Intensity Rating Scale demonstrated a Cronbach's α of 0.884 when tested in the 244 elderly chronic disease patients, with Cronbach's α coefficients for the four dimensions ranging from 0.593 to 0.787.

2.4.2 Validity Expert consultation was used to evaluate the content validity of the Community Health Intensity Rating Scale. Results showed that the scale's S-CVI/ave was 0.98, with I-CVI ranging from 0.71 to 1.00. Spearman correlation analysis revealed that the correlation coefficients (r) between CHIRS rating results and patients' self-rated health status and self-rated home medical care service needs were -0.611 ($P < 0.001$) and 0.584 ($P < 0.001$), respectively.

Discussion

3.1 Localization of Chinese CHIRS

This study completed household surveys of 244 patients between March and June 2021, with a 100% valid response rate. During the scale sinicization phase, to adapt to China's national conditions and cultural background, the research team made careful deliberations on localizing many scale indicators. For example, during back-translation, the sub-indicator "safety factor" under the original scale item "7.4 Loss of balance/vertigo" was initially translated as "safety factor". However, when comparing with the back-translation version, it was found difficult to understand in context. After consulting the original author, it was revised to "causes other safety issues". During expert consultation, experts made suggestions on some translated indicators. For instance, "boarding home" in the original scale was translated as "boarding family", but this term in China refers to families that provide paid accommodation for international students. Since the most common form of foster care for elderly people in China is nursing homes, this study combined it with "senior housing" under the category of nursing homes/elders' homes.

3.2 Reliability and Validity of Chinese CHIRS

Reliability reflects the consistency, stability, and dependability of a measurement tool, typically tested and determined through internal consistency. In this study, the Cronbach's α of the Chinese version of CHIRS in elderly chronic disease patients was 0.884, meeting the requirement that this coefficient should be at least 0.8 for a scale, and higher than the overall Cronbach's α of 0.78 reported by the original author [5] and 0.525 reported in the Turkish version [11]. The Cronbach's α coefficients for the four dimensions in this study ranged from 0.593 to 0.787, higher than the range of 0.404-0.503 reported in the Turkish version [11]. Since this study focused on chronic disease patients aged 65 and above, with convergent disease types and quantities and similar disease manifestations among patients, the internal consistency was relatively higher than previous

reports, indicating good overall reliability of the Chinese version scale in elderly chronic disease patients.

Validity reflects the accuracy and truthfulness of a measurement tool, including content validity and criterion-related validity. Content validity reflects the representativeness of items, with CVI being an important indicator for measuring content validity. The S-CVI/ave obtained through expert consultation in this study was 0.98, indicating good overall content validity. For the item "ability to manage property" with an I-CVI of 0.71, the research team retained it from a professional perspective considering its ability to reflect patients' financial management capacity. Indicators in the physiological domain of CHIRS are mostly disease symptoms and signs, and since this study focused on chronic disease patients aged $ $65, these indicators could adequately reflect patients' disease conditions. Predictive validity used Spearman correlation coefficient as the indicator. Results showed that the Chinese version of CHIRS was negatively correlated with patients' self-rated health status ($P < 0.001$) and positively correlated with their self-rated home medical care service needs ($P < 0.001$). This suggests that better health status in elderly patients is associated with lower levels of home medical care service needs, while higher self-rated needs correspond to higher professionally assessed need levels.

3.3 Significance of Introducing CHIRS

The survey results revealed that elderly patients had moderate, high, and extreme levels of home medical care service needs, which is largely consistent with HAYS et al.'s [13] assessment of 208 elderly individuals, suggesting that this scale has universal applicability among elderly populations both domestically and internationally. Developing home medical care services represents a shared direction driven by patient demands and national policy support [1], holding significant meaning for meeting patients' medical care service needs and addressing societal aging challenges. However, the mismatch and imbalance between the numerous and differentiated service demand contents and service provision constitutes a major challenge for current service providers [14-15]. Hierarchical management of patient populations serves as an important chronic disease management model with unique frameworks and processes for disease diagnosis, treatment, intervention, and risk assessment. Refined stratified management of patients not only guides the implementation of personalized medical interventions but also improves the efficiency of clinical medical work and effectively promotes the integration and coordination of medical care resources [16]. Therefore, some scholars have pointed out that nursing service levels should be classified based on patients' health status and needs, matched with corresponding service content and time, to promote the construction of standardized home care service projects [17]. This not only facilitates precise matching of patient needs but also benefits efficient management of patient populations. The Community Health Intensity Rating Scale conducts assessment and classification of health status and service needs from a professional perspective, reasonably categorizing and

grading patient populations, which aligns with the fundamental requirements of "allocation according to need" in standardization construction and promotes effects homogenized with chronic disease hierarchical management.

The assessment results showed that the main health problems or medical needs of elderly chronic disease patients were prominently manifested in respiratory-circulatory function, health management, and digestive-excretory functions. HAYS et al. reported that the degree of need manifestation, from high to low, was health management, neuromuscular and skeletal function, and respiratory-circulatory function [13], while Turkish patients' most prominent needs were physical environment, emotional-psychological response, and health management [11]. This indicates that the tool can differentiate health problems and need manifestations among different patients, helping nursing professionals accurately identify patients' health issues, clarify nursing diagnoses and tasks, provide important basis for developing personalized medical care plans, and facilitate targeted allocation of medical care service resources. The Chinese version of CHIRS, based on Omaha System theory, systematically and comprehensively assesses community patients' health status from four major domains. It enables nursing professionals to identify and explore existing or potential health problems from a professional perspective, compensating for the limitation of understanding service need levels solely from patients' subjective viewpoints and facilitating comprehensive medical care decision-making by nursing professionals. Simultaneously, through the identification and exploration of potential health problems, it helps advance tertiary prevention work and holds strong clinical practical significance.

This study's scale sinicization still has limitations. For example, in the environmental domain, some indicators in "indoor facilities" and "sanitation/cleanliness" overlap in attribution, and the scale covers extensive content lacking specific explanations and elaboration. The research team recommends adding scale evaluation criteria when using this scale in the future to improve tool operability. In practical application, the team found that the scale serves not only as an auxiliary tool for medical decision-making but also as a catalyst for promoting positive nurse-patient relationships. Many patients expressed that during the assessment process, they felt deep care from nursing professionals due to diverse examinations, detailed consultations, and health education, and they expressed gratitude toward the medical service institutions and nursing staff—this also represents the significance of introducing this scale.

In summary, this study introduced and sinicized CHIRS and used the Chinese version of CHIRS to assess the health status and home medical care service needs of elderly chronic disease patients, finding it to have good reliability and validity and providing an important reference basis for constructing predictive tools for home medical care service needs and resource allocation. This study still requires improvements: (1) The study was conducted only within one jurisdiction with a small sample size, and the study population was limited to community elderly chronic disease patients, which may introduce bias to the

results; (2) Due to limitations in the original CHIRS design, this study did not use exploratory factor analysis and confirmatory factor analysis to evaluate its structural validity, reducing the methodological rigor of scale quality evaluation; (3) Using only expert consultation for cultural adaptation may introduce professional bias in sinicization [18]. Future related studies should further expand the study population to enhance the tool's universality and, before introducing foreign scales, appropriately employ qualitative interview methods to supplement or replace foreign scale elements with corresponding localized elements to improve the scale's sensitivity and feasibility for the target population and enhance the congruence between tool measurement properties and results.

Tables and Figures

Table 1. Revision Details of the Chinese Version of CHIRS

Dimension & Item	Original Content	Initial Translation	Revised Translation
Environmental Domain			
2.1	Senior housing; boarding home; Temporary housing; mobile home; subsidized public housing	Elderly housing; boarding family; temporary housing; mobile housing; subsidized public housing	Merged into nursing homes/elders' homes; temporary/simple housing (prefabricated housing); public rental housing (government subsidized)
2.2	Structural barrier/safety concern; inadequate roof/windows	Structural barriers/safety concerns; inappropriate eaves and windows	Indoor living facilities issues/safety concerns; low ceiling height/small windows
Psychosocial Domain			

Dimension & Item	Original Content	Initial Translation	Revised Translation
(Emergency items)	Call 911; New to community; Not continuously using services	Dial 911; new to community; not continuously using services	Dial 120/110/119; other emergency/escape methods (phone/emergency routes/escape tools)
5.4	Limited recall of long past events	Limited recall of past events	Impaired long-term memory
8.7	Limited: compromises performance of ADLs	Limited: affects activities of daily living	Activities of daily living affected
Physiological Domain			
10.4	Menses	Menstruation	(Reproductive function items 10.1-10.4 deleted for elderly population per expert suggestion; sexual function/activity indicators retained)
Health-related Behaviors Domain			
13	Nutrition support system; system problems; new tube placement	Nutrition support system; system problems; new tube placement	Nutrition support system status; nutrition support problems; initial nutrition support

Table 2. General Information of Community Elderly Chronic Disease Patients (n=244)

Characteristic	n (%)
Age (years)	65-101, mean (84.1$±$7.0)

Characteristic	n (%)
Gender	
Male	101 (41.4)
Female	143 (58.6)
Ethnicity	
Han Chinese	242 (99.2)
Other	2 (0.8)
Marital Status	
Married	169 (69.3)
Divorced/Widowed	75 (30.7)
Education Level	
Junior high school and below	96 (39.3)
High school/Technical secondary school	88 (36.1)
Bachelor's degree/College and above	60 (24.6)
Number of Chronic Diseases	
1 type	20 (8.2)
2-3 types	139 (57.0)
$ $4 types	85 (34.8)
Self-rated Health Status	
Very poor	1 (0.4)
Poor	32 (13.1)
Fair	94 (38.5)
Good	88 (36.1)
Very good	29 (11.9)
Self-rated Home Medical Care Service Needs	
Not needed at all	101 (41.4)
Not needed	97 (39.8)
Uncertain	3 (1.2)
Needed	35 (14.3)
Very much needed	8 (3.3)

Table 3. Scores of Each Domain and Dimension of Chinese CHIRS (n=244)

Domain/Dimension	Score
Environmental Domain	4.3 ± 1.4
Economic status	2.4 ± 0.8
Physical environment	2.0 (1.0)
Psychosocial Domain	9.0 ± 2.8
Community network	2.5 ± 1.1
Family system	2.2 ± 1.0
Emotional-psychological response	2.0 (1.0)
Personal growth and development	3.0 (1.0)

Domain/Dimension	Score
Physiological Domain	11.6 ± 2.6
Sensory function	2.5 ± 0.9
Respiratory-circulatory function	2.8 ± 0.6
Neuromuscular and skeletal function	2.3 ± 1.2
Reproductive function	0.0 (0.0)
Digestion and excretion	2.6 ± 0.6
Structural integrity	1.0 (2.0)
Health-related Behaviors Domain	6.4 ± 1.5
Nutrition	2.4 ± 1.0
Personal habits	1.2 ± 0.5
Health management	2.8 ± 0.6

Note: Values are presented as mean ± standard deviation or median (interquartile range).

Figure 1. CHIRS Sinicization Process

[Figure 1: see original paper]

References

[1] Ji X, Wang G. Research on the necessity of developing community home-based long-term care[J]. Health Economics Research, 2019, 36(7): 56-57, 62. DOI: 10.3969/j.issn.1674-2982.2016.02.004.

[2] Hao X, Bo T, Zheng Y, et al. Analysis of the current status and development path of home medical care services[J]. Health Economics Research, 2020, 37(2): 7-9. DOI: 10.12026/j.issn.1001-8565.2018.04.24.

[3] Tian J, Liu Y, Zhang S, et al. Sinicization and reliability and validity test of the home care assessment scale[J]. Chinese Journal of Nursing, 2019, 54(2): 199-205. DOI: 10.3761/j.issn.0254-1769.2019.02.007.

[4] Feng R, Wang Y, Wang P, et al. Sinicization and reliability and validity test of the community population needs classification system[J]. Chinese General Practice, 2020, 23(34): 4326-4331. DOI: 10.12114/j.issn.1007-9572.2019.00.769.

[5] PETERS D A. Development of a community health intensity rating scale[J]. Nurs Res, 1988, 37(4): 202-207. DOI: 10.1097/00006199-198807000-00003.

[6] Bureau of Medical Administration. Notice on carrying out assessment and standardized services for elderly care needs[A/OL]. (2019-08-26)[2023-08-19]. http://www.nhc.gov.cn/yzygj/s7653/201908/426ace6022b747ceba12fd7f0384e3e0.shtml.

[7] Qingdao Municipal Medical Security Bureau, Qingdao Municipal Bureau of Civil Affairs, Qingdao Municipal Health Commission. Notice on issuing the "Implementation Measures for the Assessment of Care Needs Levels of Disabled and Demented Persons in Qingdao"[A/OL]. (2020-02-27)[2023-08-19]. http://www.qingdao.gov.cn/zwgk/xxgk/ybj/gkml/gwfg/202102/t20210209_{2966571}.shtml.

[8] PETERS D A, HAYS B J. Measuring the essence of nursing: a guide for future practice[J]. J Prof Nurs, 1995, 11(6): 358-363. DOI: 10.1016/S8755-7223(95)80055-7.

[9] HAYS B J. Nursing care requirements and resource consumption in home health care[J]. Nurs Res, 1992, 41(3): 138-143. DOI: 10.1097/00006199-199205000-00003.

[10] Wang H, Ren L, Liu Y, et al. Current status of evaluation research on the SF-12 health survey scale[J]. Chinese Journal of General Practitioners, 2015, 14(7): 574-576. DOI: 10.3760/cma.j.issn.1671-7368.2015.07.025.

[11] ÇELEBIOĞLU A, ALTUĞ ÖZSOY S, PETERS D. Study of the reliability and validity of the community health intensity rating scale (CHIRS) in the Turkish community[J]. Public Health Nurs, 2007, 24(3): 283-292. DOI: 10.1111/j.1525-1446.2007.00635.x.

[12] Wang X, Xia H. Construction and application of a new translation model based on the Brislin classic back-translation model[J]. Journal of Nursing Science, 2016, 31(7): 61-63. DOI: 10.3870/j.issn.1001-4152.2016.07.061.

[13] HAYS B J, WILLBORN E H, LOPEZ P. Measuring the need for nursing care in older adults living at home[J]. Public Health Nurs, 1997, 14(1): 37-41. DOI: 10.1111/j.1525-1446.1997.tb00408.x.

[14] Dai L, Duan Y, Zhang M, et al. Structural study on home care service needs of community elderly[J]. Chinese General Practice, 2021, 24(25): 3238-3243. DOI: 10.12114/j.issn.1007-9572.2021.00.226.

[15] Liu Z, Bo T, Hao X, et al. Research on home medical care services for the elderly in Beijing based on gap analysis[J]. Health Economics Research, 2020, 37(2): 13-15. DOI: 10.3870/j.issn.1001-4152.2021.11.102.

[16] Yang X, Yuan L. Research progress on hierarchical management of diabetes[J]. Chinese Journal of Practical Nursing, 2019, 35(17): 1357-1361. DOI: 10.3760/cma.j.issn.1672-7088.2019.17.017.

[17] Huang Y, Liu M, Peng X, et al. Research progress on home care services under the long-term care insurance system[J]. Journal of Nursing Science, 2021, 36(11): 102-105. DOI: 10.3870/j.issn.1001-4152.2021.11.102.

[18] Zhao D, Yang Y, Yang L. Application of cognitive interviewing in the sinicization of the PROMIS chronic disease management self-efficacy scale[J]. Journal of Nurses Training, 2021, 36(11): 967-972. DOI: 10.16821/j.cnki.hsjx.2021.11.002.

Acknowledgments

We sincerely thank Professor Donna Ambler Peters for authorizing our research team to sinicize CHIRS.

Author Contributions

LIU Suzhen developed the research plan and polished the English translation; LI Hang was responsible for data collection, organization, and analysis, and drafted and revised the research paper; NI Yunxia participated in scale sinicization and was responsible for English revision; LI Hang and LIU Suzhen were responsible for final version revision and overall accountability for the paper.

Note: Figure translations are in progress. See original paper for figures.