Original Article

The Construction of a Community Long-term Care Model for Home-based Elderly Individuals

Yi Qin, Linlin Liu*, Fanghui Zhu, Huazhen Lu, and Mingliu Huang

Guangxi University of Chinese Medicine, Guangxi 530200, China

With rapidly aging populations, family care functions can become weakened, and community health services often lack unified standards. A standardized and professional community home-based long-term care model (CHLCM) for the elderly is urgently needed in many regions of China and in other countries. Here, we explored the indicators of the need for a CHLCM among elderly individuals, and we constructed a CHLCM. We created and distributed a questionnaire regarding the requirement of long-term care services, based on a literature review. The two-rounds Delphi method was used, involving 20 experts who were randomly selected from among the medical universities, community health service centers, and nursing homes in Nanning, Guangxi, China. The experts' enthusiasm rates in the questionnaire's two rounds were 95% and 100%, respectively. The authentic coefficient of the experts' consulting was 0.857, and that of the experts' academic level was 0.835; the judgement coefficient was 0.880 and the familiar coefficient was 0.855. The CHLCM includes service content and an evaluation. The coordination coefficients for the two primary, eight secondary, and 29 tertiary indicators were 0.200, 0.386, and 0.184, respectively ($p < 0.05$). The experts' enthusiasm and authority were high. The coordination of the experts' agreement was sufficient, and the analysis results were reliable. The CHLCM includes 29 items that provide a foundation and references for the formulation of concrete indicators and subsequent research.

Key words: community home-based, long-term care, elderly, indicator system

With the current rapid aging of China's population [1], numerous problems have emerged. The issues associated with the aging population have become more serious and urgent, and among these issues, that of the long-term care of community-dwelling elderly individuals has become a key challenge in Chinese society [2]. Long-term care for the elderly is usually comprised of assistance with activities of daily living (ADLs), the provision of nursing services, and social activities designed for the elderly [3]. Long-term care services are provided in China in three fundamental modes: community home-based care, family-pro-

vided care, and nursing home care [4]. Family-provided care is characterized by non-professional care; family members usually lack professional knowledge, and the family size is becoming smaller, which increases the burden on the remaining family members [5,6]. The rates of empty-nesters and individuals with dementia among the community-dwelling elderly are also increasing, which contributes to the lack of adequate care; the family's burden in the provision of long-term care for elderly family members is thus increasing [5,6]. Moreover, low medication compliance often exists among elderly individuals with chronic disease [7], and family's function to support the elderly is gradually

weakening [8].

Nursing home long-term care for elderly people focuses on their daily functioning, but this type of care provides mainly assistance with ADLs with a relatively simple level of service; it also entails a major financial burden and removes the elderly from society [9,10]. Long-term care for the elderly that provides long-term care resources as an alternative to both family members and nursing homes is thus urgently needed. A community home-based long-term care model (CHLCM) is a new type of long-term care that combines family-based care and an institutional long-term care model. In a CHLCM, the main providers of medical care are personnel at community health service centers and a small number of volunteers in the community. The implementation of a CHLCM can enable the elderly to live and be cared for normally at home, which gradually results in a 'deinstitutionalization' and 'socialization' model. CHLCMs are thus receiving increasing attention.

In China, the government greatly advocates and supports CHLCMs, and it considers the use of CHLCMs an effective path to solve the current issues presented by the country's aging population. However, there is a lack of consolidated standards and management regarding CHLCMs in China [11,12], and a standard CHLCM for the elderly has not yet been formed. Research regarding long-term care of the elderly in China is still at an early stage [13], and the findings related to CHLCMs are rare, incomplete, and unclear.

We thus sought to identify the indicators for the implementation of a CHLCM for the elderly living in their homes in China. For this investigation, we applied the Delphi method and an analytic hierarchy process to explore an effective implementation path for a CHLCM, with the larger goal of improving CHLCMs for the elderly.

Materials and Methods

The collection of potential indicators.　　For the identification of potential indicators for a CHLCM, we conducted a literature review of studies of community home-based long-term care for elderly, using the key words 'community health', 'long-term care', 'home-based long-term care', 'community home-based long-term care', 'geriatric care', and 'geriatric nursing'. The electronic databases PubMed, ProQuest, ScienceDirect,

Google Scholar, and the China National Knowledge Internet (CNKI) were searched. The indicators 'service content' (volunteer service, medical service, daily living care, and Smart Silver hair service) and 'service evaluation' (the qualified rate of service, the service target evaluation, and the evaluation of risk management services) were applied [14].

The secondary indicator 'public health service' was added based on the community's current situation in the city of Nanning in Guangxi, China, because the following tertiary indicators are the mission of community health in China: residents' health record management, health education, vaccinations, the health management of the elderly, the health management of patients with hypertension, the health management of patients with diabetes, the health management of tuberculosis patients, health management using traditional Chinese medicines (TCM), and the reporting and handling of infectious diseases and public health emergencies.

For the confirmation of the appropriateness of all potential indicators, we conducted face-to-face interviews with the professional medical staff at a community health service center in Nanning Community. The draft of the new CHLCM was subsequently formed with two primary indicators, seven secondary indicators, and 30 tertiary indicators.

The identification of consulting experts.　　Random sampling was used to select 20 experts from two affiliated hospitals of Guangxi University of Chinese Medicine, the Nanmian Community Health Service Center, the Guiya Community Health Service Center, two nursing faculties of medical universities, Guangxi Chongyang Nursing Home, and the Wuxiang Nursing Home Service Center. The experts were required to have an intermediate or above professional title, ≥10 years of experience in a medical care field as a professional, and relevant professional knowledge in their medical field of study. The selected experts' main occupations involved community nursing, geriatric nursing, nursing education, nursing management, preventive medicine, health care, rehabilitation nursing, and other professional medical fields. All selected experts needed to be capable of continuous participation in this study. Experts were also required to be "friendly" (*i.e.*, able to provide and discuss divergent opinions), as the other experts were encouraged to justify and potentially challenge the original judgments in greater detail, as a method for reducing the experts' bias.

Consulting tools and methods. A self-designed questionnaire was used as the consulting tool. The content of the questionnaire included an overview of the present study, a request for the respondent's informed consent, and the introduction of Delphi method and announcements. The questionnaire consisted of two parts. The first part requested the respondent-expert's basic information: age, gender, educational level, professional title, workplace, field of expertise, and number of years working in the present profession. The questionnaire's second part concerned the respondent's evaluation of several indicators (mainly the respondent's familiarity with the above-described indicators, and a self-evaluation). We created the questionnaire based on another literature review of studies of home-based long-term care among elderly living in the community [15]. An additional specification [16] was formulated according to the ISO9001-2017 standard [17], and the framework of the CHLCM was drafted and formed after discussion and analyses by our research group.

Each indicator used in the questionnaire was assessed by the respondent according to Likert's five-grade scoring method [18]: a score of 5 indicates 'very important', 4 = 'relatively important', 3 = 'general', 2 = 'not too important', and 1 = 'not important'. The only way that the content of an indicator could be revised was by asking the respondent-experts for their opinions on the importance of each indicator and their opinions related to the modification, addition, and deletion of each indicator.

The value of expert authority (Q) was obtained by averaging the sum of the academic weight (Q1), the judgment coefficient (Q2), and the familiarity coefficient (Q3). The calculation formula was thus: $Q = (Q1 + Q2 + Q3)/3$. The academic weight was based on the respondent's report of his/her possession of a senior professional title, associate senior professional title, or intermediate professional title. The judgment coefficient was based mainly on the respondent's professional title. It is generally considered that the higher a consultant's professional title is, the higher the academic level is, and the more valuable the opinions expressed will be. More details about the weight of the consultants' academic levels are given in Table 1, according to the respondents' disciplines. The judgment coefficient was divided into three levels (low, medium, and high) and was implemented according to four aspects: theoretical analysis, practical experience, expert intuition, and peer understanding. The respondent-experts were given grades according to their academic level and other conditions; more details are provided in Table 2.

The familiarity coefficient can be divided into five grades ranging from low to high: very unfamiliar (0), unfamiliar (0.2), ordinary (0.5), familiar (0.8), and very familiar (1). More information is presented in Table 3.

The Delphi method [19] was applied, and the questionnaire was sent by the Internet (email, WeChat, and QQ). First, a brief introduction of this study, its significance, the Delphi method's application process, and information about the questionnaire was provided to the potential consulting experts. The questionnaire was

Table 1 Weight value of the experts' academic level

Professional title	Senior	Associate senior	Intermediate
Weight of academic level	1.0	0.9	0.7

Table 2 Quantification of the experts' indicator judgment basis

Judgment basis	Influence of judgment basis on expert judgment		
	Large	Medium	Small
Theoretical analysis	0.3	0.2	0.1
Practical experience	0.5	0.4	0.3
Expert intuition	0.1	0.1	0.1
Peer understanding	0.1	0.1	0.1

Table 3   Quantification of expert familiarity

Familiarity's degree	Very unfamiliar	Unfamiliar	Ordinary	Familiar	Very familiar
Value assignment	0	0.2	0.5	0.8	1

issued after the individual expert's informed consent was obtained. The experts' responses in the first round were statistically analyzed and summarized, and the indicators were modified according to the experts' responses. The second-round questionnaire was formulated based on the revised content of the indicators, and we used the experts' feedback about the first-round results for the second round of consultation.

Data collection and analysis and the indicators' inclusion criteria.   We used the Excel program to input the data for import into the SPSS version. 19.0 software program for the statistical analyses. The screening requirements for the indicators in this study [20] were the "most important" selection rate and the mean of the values of importance, the standard deviation, and the coefficient of variation of each indicator. An indicator was retained after the first round if the indicator met any one of the following criteria: (1) the selection rate of the response 'the most important' for the indicator was $> 30\%$; (2) the coefficient of variation was < 0.25; and (3) the indicator's mean score was > 4.0 (80%), meaning *a priori* $> 80\%$ importance indicating a strong consensus [21, 22]. An indicator was deleted or modified after the first round if the indicator met any of the following criteria: (1) it had a selection rate of 'most important' $< 30\%$ in both the first and second rounds; (2) the indicator's mean score was < 4.0; (3) any one of the variation coefficients of the first round was > 0.4; or (4) any one of the variation coefficients of the second round was > 0.25.

If an indicator met an exclusion criterion in both questionnaire rounds, it was excluded. The criteria of each indicator's addition or deletion were based on suggestions proposed by at least two of the experts, the indicator's structure and content, and the experts' background. Our research team members then discussed and decided whether each indicator should be retained or deleted. Based on the two rounds of expert consultation, the research group selected and established the indicators of the CHLCM for the elderly.

Results

The experts' information and response rates.   The data of the total of 20 experts are summarized in Table 4. The response rates of questionnaires for the two rounds were 95% and 100%, respectively. Twelve (60.0%) consultants also provided their opinions in the first round and five (25.0%) consultants gave their opinions in the second round; the details are provided in Table 5.

1. Degree of expert authority

The mean values of the experts' authority (Q) at the first and second rounds were 0.830 and 0.857, respectively. Table 6 provides the values of expert academic level (Q1), the basis of judgment (Q2), and familiarity (Q3) in the first and second rounds.

Degree of coordination of the experts' opinions. The coordination coefficients of the experts' opinions for the primary, secondary, and tertiary indicators in the second round were 0.200, 0.386, and 0.184, respectively. The results of the significance test for the coordination coefficients ($p < 0.05$) are shown in Table 7.

The draft of indicators and the experts' suggestions in the first round.   Based on the results of our literature review and the actual situation in a community in China, we identified the key points of the evaluation indicator model for the home-based long-term care of the elderly living in the community in the first round: two primary indicators, seven secondary indicators, and 30 tertiary indicators. The experts' suggestions were collected as well. More information is given in Table 8.

Selection of indicators.   The indicators at all levels were then ranked according to the following principles: the single top-ranked primary indicator was retained; the top five ranked secondary indicators were retained, and the top 20 ranked tertiary indicators were retained. For the items that experts suggested should be merged, modified or deleted, our research group made corresponding adjustments of the items after reaching a consensus by discussion. Indicators were excluded if their rank was outside the 20 top ranked, or when the

Table 4   Basic information of the selected experts (n = 20)

Content	Number of experts	Proportion	Average
Gender			
Male	10	50.0%	
Female	10	50.0%	
Age			47.3 ± 8.492
30–39	6	30.0%	
40–49	4	20.0%	
50–59	8	40.0%	
60 and above	2	10.0%	
Professional working years			20.85 ± 6.753
10–15	2	10.0%	
16–20	10	50.0%	
20–25	5	25.0%	
26 and above	3	15.0%	
Educational level			
College degree	3	15.0%	
Bachelor degree	2	10.0%	
Master degree	15	75.0%	
Workplace			
Hospital	2	10.0%	
Pension agencies	8	40.0%	
Community service center	8	40.0%	
Medical college	2	10.0%	
Major			
Nursing education	4	20.0%	
Clinical medicine	4	20.0%	
Hygienic managerialics	3	15.0%	
Chinese traditional medicine	2	10.0%	
Rehabilitation science	2	10.0%	
Nursing research	3	15.0%	
Social work	2	10.0%	
Professional title			
Intermediate	8	40.0%	
Associate senior	9	45.0%	
Senior	3	15.0%	

Table 5   Indicators of the experts' enthusiasm

Time	Questionnaires issued	Questionnaires returned	Response rate	Valid	Effective rate
1st round	20	20	100%	19	95.0%
2nd round	20	20	100%	20	100%

Table 6   Degree of expert authority (n = 20)

Time	Q	Q1	Q2	Q3
1st round	0.830	0.835	0.850	0.805
2nd round	0.857	0.835	0.880	0.855

Table 7   Kendall coordination coefficient (W) for the first and second rounds

Rounds	Index	Index number	W	X^2	*P* value
1st round	Primary	2	0.200	4.000	<0.05
	Secondary	7	0.279	33.484	<0.001
	Tertiary	30	0.178	103.051	<0.001
2nd round	Primary	2	0.200	4.000	<0.05
	Secondary	8	0.386	54.070	<0.001
	Tertiary	29	0.184	103.146	<0.001

experts had different opinions about the indicator, the use of the indicator in practice was difficult, or the indicator was not within the scope of community home services.

Using the results of the two rounds of consultation, only the rates of the following items were ≤30%: 'health education', 'TCM service', 'spiritual comfort service', 'vaccination', 'health management by TCM', 'family members service', and 'service satisfaction', and we observed that 'health education' was redundant content that should be deleted. The other items were adjudicated as valid working content in community health services and related to elderly populations, and they were thus retained.

The mean scores of the items 'TCM service' and 'service target evaluation' were both 4, which was at the margin for deletion. We decided to retain both items because the TCM service is popular among the elderly in communities in China, and the service target evaluation is important for the evaluation of the quality of service. The primary indicators were thus retained and the secondary indicators included seven items, as a result of adding three items (service mode, family members' service, and service satisfaction) and deleting two items (volunteer service and Smart Silver hair service), resulting in a final total of eight items. The number of tertiary indicators in the first round was 30; it was increased by one item and reduced by deleting two items in second round, giving a final total of 29 tertiary indicators. The indicators of the new CHLCM for the elderly were thus established.

Consultation results.   In the first round, the mean score of the respondents' importance valuation ranged from 4 to 4.95; the coefficient of variation ranged from 0 to 0.259, and the rate of "most important" ranged from 25% to 100%. In the second round, the mean score of the importance valuation ranged from 4.1 to 4.95, the coefficient of variation ranged

from 0 to 0.228, and the rate of "most important" ranged from 25% to 100%. A final total of two primary indicators, eight secondary indicators, and 29 tertiary indicators was thus established. More details are provided in Table 9.

Discussion

A correct application of the Delphi method is the key to obtain accurate research results. The experts selected in this study are 20 authoritative experts with ≥10 years of work experience and intermediate or above professional titles in the field of geriatrics in Nanning, Guangxi, China. They are representative of local medical care disciplines and include nursing disciplines. Fifteen (75%) of the experts had a master's degree or higher degree of education, indicating their expertise. The acceptable value of an authority factor is ≥0.7. The authority coefficients in this study were all >0.8, indicating a high degree of authority.

A questionnaire recovery rate ≥70% is considered a good response [23]. The recovery rates of the two rounds of the present questionnaire were 95% (19 individuals) and 100% (20 individuals), indicating that the experts were very active and enthusiastic about this study and paid close attention to the study's results. In the first round of expert consultation suggestions, 12 (60%) experts put forward eight suggestions for revision, suggesting that they considered this research important, and that home health care quality standards are considered a crucial issue by experts in China [24].

We used Kendall's coordination coefficient to test whether the experts' indicator evaluation results and indicator importance scores were consistent. The range of this coefficient (W) value is from 0 to 1: the higher the value, the more consistent the indicator score result is and the indicator importance score is. The chi-squared test is used to test the significance of a coordi-

Table 8   The experts' suggestions in the two rounds

Index rate	Important valuation (X ± SD)	Coefficient of variation	Rate	Suggestions from experts
Service content	4.70 ± 0.657	0.140	80.00%	Accepted
Volunteer service	4.85 ± 0.366	0.075	85.00%	Deletion
Living care	4.80 ± 0.410	0.085	80.00%	Deletion
Health education	4.15 ± 0.671	0.162	30.00%	Deletion
Emotional contact	4.20 ± 0.834	0.199	45.00%	Deletion
Service mode	5	0.000	100.00%	Addition
Visiting service	4.90 ± 0.308	0.063	90.00%	Addition
Family doctors' signing service	4.90 ± 0.308	0.063	90.00%	Addition
Referral service	4.35 ± 0.489	0.112	35.00%	Addition
Telemedicine service	4.75 ± 0.444	0.093	75.00%	Addition
Medical service	5	0.000	100.00%	Accepted
Diseases' types	4.75 ± 0.550	0.116	80.00%	Accepted
Emergency service	4.75 ± 0.444	0.093	75.00%	Accepted
General medical service	4.85 ± 0.366	0.075	85.00%	Accepted
TCM medical service	4.00 ± 0.649	0.162	20.00%	Accepted
Rehabilitative service	4.65 ± 0.489	0.105	65.00%	Accepted
Oral health services	4.30 ± 0.801	0.186	50.00%	Accepted
Daily living and public health services	5	0.000	100.00%	Accepted
Daily living care	4.80 ± 0.410	0.085	80.00%	Accepted
Spiritual comfort service	4.25 ± 0.444	0.104	25.00%	Accepted
Residents' health record management	4.20 ± 0.768	0.183	40.00%	Accepted
Health education	4.85 ± 0.366	0.075	85.00%	Accepted
Vaccination	4.20 ± 0.616	0.147	30.00%	Accepted
Health management of elderly	4.55 ± 0.510	0.112	55.00%	Accepted
Health management of patients with hypertension	4.80 ± 0.410	0.085	80.00%	Deletion
Health management of patients with diabetes	4.70 ± 0.470	0.100	70.00%	Deletion
Health management of patients with chronic diseases	4.70 ± 0.470	0.100	70.00%	Addition
Health management of tuberculosis patients	4.55 ± 0.510	0.112	55.00%	Accepted
Health management of TCM	4.25 ± 0.444	0.104	25.00%	Accepted
Report and handling of infectious disease and public health emergency	4.35 ± 0.489	0.112	35.00%	Accepted
Smart Silver Service	4.70 ± 0.657	0.140	80.00%	Deletion
Network information service	4.70 ± 0.571	0.121	75.00%	Deletion
Telemedicine service	4.80 ± 0.410	0.085	80.00%	Deletion
Traffic service	4.70 ± 0.657	0.140	80.00%	Deletion
Family members' services	4.30 ± 0.470	0.109	30.00%	Addition
Health education service	4.75 ± 0.444	0.093	75.00%	Addition
Service evaluation	4.95 ± 0.224	0.045	95.00%	Accepted
Qualified rate of service	4.05 ± 1.050	0.259	45.00%	Accepted
Qualified rate of community nursing	4.70 ± 0.470	0.223	70.00%	Accepted
Community nursing operation's qualified rate	4.35 ± 0.489	0.112	35.00%	Accepted
Service target evaluation	4.00 ± 0.973	0.243	40.00%	Accepted
Service target self-care ability	4.75 ± 0.444	0.093	75.00%	Accepted
Service target quality of life	4.60 ± 0.503	0.109	60.00%	Accepted
Service target cognitive function	4.20 ± 0.951	0.226	50.00%	Accepted
Risk management service evaluation	4.30 ± 0.979	0.221	65.00%	Accepted
Safety incidents	4.40 ± 0.821	0.187	60.00%	Accepted
Adverse nursing events	4.30 ± 0.979	0.228	60.00%	Accepted
Service satisfaction	4.20 ± 0.410	0.098	20.00%	Addition
Satisfaction rate	4.75 ± 0.444	0.093	75.00%	Addition

Table 9   Key points of the evaluation indicator model for home-based long-term care of elderly living in a community

Indicators	Important valuation (X ± SD)	Coefficient of variation	Rate
Service content	4.70 ± 0.657	0.139	80.00%
Service mode	5	0.000	100.00%
Visiting service	4.90 ± 0.308	0.063	90.00%
Family doctors' signing service	4.90 ± 0.308	0.063	90.00%
Referral service	4.35 ± 0.489	0.112	35.00%
Telemedicine service	4.75 ± 0.444	0.093	75.00%
Medical service	5	0.000	100.00%
Diseases' types	4.80 ± 0.410	0.085	80.00%
Emergency service	4.60 ± 0.503	0.109	60.00%
General medical service	4.75 ± 0.550	0.116	80.00%
Traditional Chinese medical service	4.10 ± 0.533	0.130	20.00%
Rehabilitative service	4.65 ± 0.489	0.105	65.00%
Oral health service	4.40 ± 0.754	0.171	55.00%
Daily living and public health service	5	0.000	100.00%
Daily living care	4.80 ± 0.410	0.085	80.00%
Spiritual comfort service	4.25 ± 0.444	0.104	25.00%
Residents' health record management	4.20 ± 0.768	0.183	40.00%
Health education	4.85 ± 0.366	0.075	85.00%
Vaccination	4.05 ± 0.759	0.187	30.00%
Health management of elderly	4.55 ± 0.510	0.112	55.00%
Health management of patients with chronic diseases	4.70 ± 0.470	0.100	70.00%
Health management of tuberculosis patients	4.55 ± 0.510	0.112	55.00%
Health management of traditional Chinese medicine	4.25 ± 0.444	0.104	25.00%
Report and handling of infectious disease and public health emergency	4.35 ± 0.489	0.112	35.00%
Family members' service	4.30 ± 0.470	0.109	30.00%
Health education service	4.75 ± 0.444	0.093	75.00%
Service evaluation	4.95 ± 0.224	0.045	95.00%
Qualified rate of service	4.40 ± 0.821	0.187	60.00%
Qualified rate of community nursing	4.70 ± 0.470	0.100	70.00%
Community nursing operation's qualified rate	4.35 ± 0.489	0.112	35.00%
Service target evaluation	4.80 ± 0.410	0.085	80.00%
Service target self-care ability	4.75 ± 0.444	0.093	75.00%
Service target quality of life	4.60 ± 0.503	0.109	50.00%
Service target cognitive function	4.20 ± 0.951	0.226	50.00%
Evaluation of risk management services	4.30 ± 0.979	0.228	65.00%
Safety incidents	4.50 ± 0.513	0.114	50.00%
Adverse nursing events	4.50 ± 0.513	0.114	50.00%
Service satisfaction	4.20 ± 0.410	0.098	20.00%
Satisfaction rate	4.75 ± 0.444	0.093	75.00%

nation coefficient. A probability (p)-value < 0.05 indicates a significant statistical difference, and in this study a p-value < 0.05 indicates that the experts' opinions about the indicator system were highly coordinated.

We devised the content framework of the indicator evaluation questionnaire mainly through the retrieval, reference, analysis and summary of the relevant content of the community home-based long-term care services for the elderly, combined with the content of the ISO9001-2017 service quality standards, in order to develop a community-based long-term care service indicator system for elderly individuals living in a community. The members of our research group collectively discussed and analyzed the results, which were demonstrated to be pertinent, practical, feasible, and systematic. Two primary indicators (service content and service evaluation) were retained. Among the secondary indicators (seven items), two items were removed and three were added, so that the secondary indicators included a final total of eight items: (1) service mode,

(2) medical services, (3) daily living and public health services, (4) family members' services, (5) qualified rate of service, (6) service target evaluation, (7) risk management service evaluation, and (8) service satisfaction. The Smart Silver hair service and volunteer service were deleted, and service methods, family services, and service satisfaction were added.

Medical services and the demand for daily life care are the most important long-term care needs of elderly populations [23, 25, 26], and they are the basis of long-term care services for the elderly living in a community as well. The present study's experts unanimously recognized the values of combination of the service mode, medical service, ADLs, and public health service plus the needs of the community home-based care service for the elderly as the appropriate indicators of a CHLCM for elderly individuals with the combination of medical care and endowment, among which the full score rate for the three indicators, including service mode, medical service, and daily living and public health services, reached 100%.

Because elderly populations are physically aging and have a high incidence of chronic diseases and reduced daily living and self-care abilities (in addition to the weakening and non-specialization of family functions), elderly populations' need for visiting services, medical services, and ADL and public health services is gradually increasing [26], which makes these services extremely important for the long-term care of the elderly in many communities. Our present findings also indicate that family service is one of the factors that affect the quality of long-term care for the community-living elderly. Xianping Tang developed indicators of the quality of family care, which showed that family care technology and family health education and guidance are the most important family care indicators [22]. She also regarded "family care operation" and "family care services meeting residents' needs" as the indicators of the quality of family care that can be tested to evaluate the effect of the quality of family care [24]. She reported that "rules and regulations of home care" and "assessment related to home care operation" are key preconditions for quality family care [24].

Family services have varying degrees of impact on the quality of life, mood, mental status, and care of the elderly, and it has been indicated that family services influence the mood of elderly individuals [27]. Topics for further research include the questions of how to provide health education related to long-term care for family members, how to increase the knowledge about long-term care among the elderly in a community, and how to obtain the cooperation of family members to improve the quality of long-term care. Our present study identified 30 tertiary indicators; one item was added, two were deleted, and a final total of 29 items was established. Two items (the health management of patients with hypertension and the health management of patients with diabetes) were removed, and the health management of patients with chronic diseases was added, with a full score rate of 70%. The experts reported that they believed that these items should be changed to 'the health management of patients with chronic diseases,' and that the content coverage would thus be more comprehensive. Because of the wide variety of chronic diseases among the elderly in a community, the indicator coverage needs to be more comprehensive.

The deletion of the item 'Smart Silver hair service' caused great disagreement. The Smart Silver hair service is a product of the development of modern information technology and is also a future development trend in China. Community home-based long-term care service for the elderly has not yet reached the conditions of informatization, and it fails to connect well with the Internet. In this regard, an earlier study described the application of health information technology in the home long-term care of the elderly [28], which supports the future development trend of the Smart Silver hair service. The content of the research and construction of a long-term care service system should be suited to the needs of local community residents.

In conclusion, the CHLCM devised herein involves a wide range of content. An insufficient understanding of experts' professional knowledge in their respective fields could lead to insufficient reliability of the results. However, the present experts' opinions were the main basis of our analyses, and the suggestions from experts in non-professional fields were used as advice and reference information to discuss and analyze. Establishing standardized indicators of a CHLCM could enhance the quality of services in the community home-based long-term care of elderly individuals, facilitate the standardization and normalization of long-term care services for the elderly in communities, and promote the unification of long-term care services for the elderly in a given

region or country, which will provide the reference materials for improving the construction of long-term care service systems [29].

References

1. Fang EF, Xie C, Schenkel JA, Wu C, Long Q, Cui H, Aman Y, Frank J, Liao J, Zou H, Wang NY, Wu J, Liu X, Li T, Fang Y, Niu Z, Yang G, Hong J, Wang Q, Chen G, Li J, Chen HZ, Kang L, Su H, Gilmour BC, Zhu X, Jiang H, He N, Tao J, Leng SX, Tong T and Woo J: A research agenda for ageing in China in the 21st century (2nd edition): Focusing on basic and translational research, long-term care, policy and social networks. Ageing Res Rev (2020) 64: 101174.

2. Du P, Dong T and Ji J: Current Status of the Long-term Care Security System for Older Adults in China. Res Aging (2021) 43: 136‒146.

3. Mortenson LC: Long-Term Care: Home- and Community-Based Services. Issue Brief Health Policy Track Serv (2017) 2017: 1‒51.

4. Kimura H, Nishio M, Kukihara H, Koga K and Inoue Y: The role of caregiver burden in the familial functioning, social support, and quality of family life of family caregivers of elders with dementia. Journal of rural medicine: J Rural Med (2019) 14: 156‒164.

5. Zhang L, Zeng Y, Wang L and Fang Y: Urban-Rural Differences in Long-Term Care Service Status and Needs Among Home-Based Elderly People in China. Int J Environ Res Public Health (2020) 17: 1701.

6. Su Z, Hu Z and Peng X: The impact of changes in China's family patterns on family pension functions. Int J Health Plann Manage (2017) 32: 351‒362.

7. Soška V and Kyselák O: [Is it possible to improve long-term compliance of patients to statin therapy?]. Vnitr Lek (2017) 63: 663‒666 (in Czech).

8. Hu B, Li B, Wang J and Shi C: Home and community care for older people in urban China: Receipt of services and sources of payment. Health Soc Care Community (2020) 28: 225‒235.

9. Lee M and Jung D: Development and Psychometric Evaluation of a Fear of Dementia Scale for Community-Dwelling Older Adults. J Nurs Res: JNR (2020) 28: e94.

10. Zhang LW, Zeng YB, Wang LX and Fang Y: [The status quo of service quality evaluation of pension institutions in China and research progress]. Liu Xing Bing Xue Za Zhi (2018) 39: 1524‒1529 (in Chinese).

11. Gong Y, Xu J, Chen T, Sun N, Lu Z and Yin X: The effect of the latest health care reforms on the quality of community health services in China. Int J Health Plann Manage (2018) 33: e1225‒e1231.

12. Yang Z, Jiang Y, Wang M and Zeng H: Current Status and Challenges of Community-Based Elderly Care Centers in Chongqing, China: A Cross-Sectional Study. Risk Manag Healthc Policy (2020) 13: 2975‒2983.

13. Wu B, Cohen MA, Cong Z, Kim K and Peng C: Improving Care for Older Adults in China: Development of Long-Term Care Policy and System. Res Aging (2021) 43: 123‒126.

14. Elena, E.G. Zhanlian, F. Options for Aged Care in China: Building an Efficient and Sustainable Aged Care System. Washingdon, D.C., United States: World Bank Publications (2018).

15. Hrženjak M: Precarious Situations of Care Workers in Home-Based Elder Care in Slovenia. New solutions: a journal of environmental and occupational health policy: New Solut (2018) 27: 483‒500.

16. Li P, Lv YH, Ma L, Yang SH, Xiang Y, Lei Q, Du GD and Huang DJ: [Research of the Epworth sleepiness scale based on ruzzy comprehensive evaluation]. Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi (2017) 31: 356‒360 (in Chinese).

17. Quality management systems - Requirements. International Organization for Standardization. ISO∕DID 9001: 2015.

18. Schöne G, Damerow S, Hölling H, Houben R and Gabrys L: [Method for the quality assessment of data collection processes in epidemiological studies]. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz (2017) 60: 1109‒1114 (in German).

19. Humphrey-Murto S, Wood TJ, Gonsalves C, Mascioli K and Varpio L: The Delphi Method. Acad Med (2020) 95: 168.

20. McPherson S, Reese C and Wendler MC: Methodology Update: Delphi Studies. Nurs Res (2018) 67: 404‒410.

21. Engelman D, Fuller LC, Steer AC, International Alliance for the Control of Scabies Delphi panel. Consensus criteria for the diagnosis of scabies: A Delphi study of international experts. PLoS Negl Trop Dis (2018) 12: e0006549.

22. Tang X, Chen X, Pang Y and Zhou L: The development of quality indicators for home care in China. Int J Qual Health Care (2018)30: 208‒218.

23. Hao X, Gu J, Ying X, Bo T and Fu W: Social support and care needs of the disabled elderly population: An empirical study based on survey data from Beijing, China. Biosci Trends (2017) 11: 507‒515.

24. Tang X, Ge S, Ma C, et al.: Evaluating the Quality of Home Care in China Using the Home Care Quality Assessment Tool. J Transcult Nurs (2021) 32: 173‒179.

25. Shen J, Xiao LD, Liu Y, Zhang H and Wu L: A Phenomenological Study on New Care Needs of Maslow's Need-Hierarchy Among Disabled Residents at Nursing Homes in Modern Chinese Society. J Transcult Nurs (2021) 32: 501‒507.

26. Huang CH, Umegaki H, Kamitani H, Asai A, Kanda S, Maeda K, Nomura H and Kuzuya M: Change in quality of life and potentially associated factors in patients receiving home-based primary care: a prospective cohort study. BMC Geatr (2019) 19: 21.

27. Lu C, Yuan L, Lin W, Zhou Y and Pan S: Depression and resilience mediates the effect of family function on quality of life of the elderly. Arch Gerontol Geatr (2017) 71: 34‒42.

28. Alexander GL, Georgiou A, Doughty K, Hornblow A, Livingstone A, Dougherty M, Jacobs S and Fisk MJ: Advancing health information technology roadmaps in long term care. Int J Med Inform (2020) 136: 104088.

29. Brière A: [Evolution of home care nursing support and coordination teams]. Rev Infirm (2020) 69: 33‒35 (in French).