Postprint: Survey on Organizational Characteristics of Primary Health Care Institutions and Current Status of Home-Based Medical Services in Sichuan Province

Authors: Zhou Luling, Liu Suzhen, Li Hang, Liu Suzhen

Date: 2023-01-30T00:00:00+00:00

Abstract

Background: Against the backdrop of increasingly severe population aging, diversified healthcare needs of older adults, and current shortage of medical resources, the demand for home-based medical services continues to grow. To this end, the state vigorously encourages the development of home-based medical services. As Sichuan Province is a pilot area for home-based elderly care medical services, with primary healthcare institutions currently serving as the main providers, it is essential to explore their organizational characteristics and current service implementation status. Objective: To investigate the organizational characteristics of primary healthcare institutions in Sichuan Province and the current status of home-based medical service implementation, providing references for further promoting the standardization and development of home-based medical care. Methods: From August to October 2021, using convenience sampling, relevant responsible persons from 62 primary healthcare institutions in 7 municipal districts of Sichuan Province were selected as research subjects. Through a self-designed questionnaire, data were collected and analyzed on the institutions' general information, human resources, implementation of home-based medical services, and problems faced. Results: Among the 62 primary healthcare institutions, the scale of full-time medical staff varied considerably, with numbers ranging from 10-316 and a median of 40 (26, 66). The percentage of medical staff among full-time employees averaged 84.9%$±11.3±$0.5. Comparisons of institutional organizational characteristics across different locations and service areas showed statistical significance in participation in hospital accreditation review, presence of part-time medical staff, presence of inpatient beds, percentage of medical staff, nurse-to-physician ratio, and professional title distribution among medical staff ($P<0.05$). Fifty-one institutions (82.3%) had implemented home-based medical nursing services, and implementation of

chronic disease management was an influencing factor for providing home-based medical services (P<0.05). Twenty-six institutions (50.9%) had implemented services for less than 3 years, 31 institutions (60.8%) served primarily elderly chronic disease patients aged $ $60 years, 35 institutions (68.7%) had a workload of $ $1-2 days/week, and the service model was primarily based on family doctor contracts (98.0%). The top three hindering factors for implementing home-based medical services were insufficient human resources, lack of corresponding standards and norms, and inadequate supporting policy support. Conclusion: The organizational characteristics of primary healthcare institutions vary across different regions and service areas. Home-based medical services are widely implemented in Sichuan Province, but there is room for improvement in service models, service duration, and workload. It is recommended that institutions, according to their own circumstances, pay attention to current implementation problems, improve relevant standards and norms for home-based medical services, emphasize chronic disease management and building of institutional talent teams, and further promote the rapid development of home-based nursing care.

Full Text

Investigation on the Organizational Characteristics and Current Status of Home-Based Medical Services in Primary Health Service Institutions in Sichuan Province

ZHOU Luling[1], LIU Suzhen[1]*, LI Hang[2]

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

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

Abstract

Background Against the backdrop of intensifying population aging, diversified healthcare needs among older adults, and current medical resource constraints, demand for home-based medical services continues to grow. The state strongly encourages the development of home-based medical services, and Sichuan Province, as a pilot region for elderly home care services, currently relies primarily on primary health service institutions as the main providers. Examining their organizational characteristics and service implementation status is therefore essential.

Objective To investigate the organizational characteristics and current status of home-based medical services in primary health service institutions in Sichuan

Province, providing a reference for further promoting the standardization and development of these services.

Methods From August to October 2021, relevant administrators from 62 primary health service institutions across 7 municipal districts in Sichuan Province were selected through convenience sampling. A self-designed questionnaire was used to collect and analyze data on institutional general information, human resources, home-based medical service implementation, and challenges encountered.

Results Among the 62 institutions, full-time medical staff numbers varied considerably, ranging from 10 to 316 personnel (median: 40 [26, 66]). Medical staff accounted for 84.9% ± 11.3% of full-time employees on average. Among all professional titles, the median proportion of physicians with junior-level or lower titles was 45.5% (32.3%, 56.5%), while the median proportion of nurses with junior-level or lower titles was 71.9% (50.7%, 84.9%). The physician-to-nurse ratio ranged from 0.43 to 2.63, with an average of 1.44 ± 0.5. Comparisons of institutional organizational characteristics by location and service area revealed statistically significant differences in participation in hospital grading evaluations, presence of part-time medical staff, availability of inpatient beds, proportion of medical staff, physician-to-nurse ratios, and proportions of medical staff by professional title ($P < 0.05$). A total of 51 institutions (82.3%) had implemented home-based medical nursing services, with chronic disease management being a significant influencing factor ($P < 0.05$). Among these, 26 institutions (50.9%) had provided services for less than 3 years, 31 institutions (60.8%) served primarily elderly chronic disease patients aged $ $60 years, 35 institutions (68.7%) had a workload of $ $1–2 days per week, and the predominant service delivery model was family doctor contract services (98.0%). The top three hindering factors were insufficient human resources, lack of corresponding standards and norms, and inadequate supporting policies.

Conclusion Organizational characteristics of primary health service institutions vary by region and service area. While home-based medical services are widely implemented in Sichuan Province, improvements are needed in service delivery models, service hours, and workload. Institutions should address current challenges based on their specific circumstances, improve standards and norms for home-based medical services, emphasize chronic disease management and talent team development, and further promote the sustainable development of home-based care.

Keywords: Primary health service institutions; Organizational characteristics; Human resources; Home-based medical service; Current situation investigation

Introduction

Home-based medical services refer to healthcare institutions providing door-to-door medical services—including diagnosis and treatment, medical nursing, rehabilitation therapy, and pharmaceutical services—to specific populations, particularly elderly patients, in accordance with relevant requirements [1]. As China' s aging population intensifies, the number of disabled or semi-disabled elderly individuals increases, family caregiving capacity weakens, and medical resources remain limited, demand for home-based medical services among older adults has surged. High-quality home-based medical services can reduce readmission rates for discharged patients, decrease healthcare costs, and conserve national public medical expenditures [2]. Consequently, the state advocates vigorously developing home-based medical services. The *National Nursing Development Plan (2021-2025)* explicitly states the need to improve the accessibility of nursing services and actively promote elderly home-based nursing care [3]. The Sichuan Provincial Health Commission also encourages secondary and lower-level hospitals and primary health service institutions to actively develop home-based medical services [4]. Compared with foreign countries where home-based medical services started earlier and have more mature service systems [5], China' s home-based medical services remain in an exploratory development stage, posing practical challenges for healthcare institutions regarding effective promotion. The World Health Organization notes that home-based medical services require not only government-led macro-level policies and service strategies but also management and coordination from healthcare institutions at the meso-level, involving institutional material and human resources, organizational structure, and service processes [6]. However, domestic research examining home-based medical services from an organizational perspective remains scarce. This study therefore surveyed primary health service institutions across Sichuan Province to analyze their organizational characteristics and current home-based medical service implementation, providing references for further promoting the development of these services.

Methods

Study Design and Participants

From August to October 2021, 62 primary health service institutions across 7 municipal districts in Sichuan Province were surveyed on a voluntary basis. This study was registered with and approved by the Biomedical Ethics Committee of West China Hospital, Sichuan University (Approval No.: 2020 Review 165).

Survey Instrument

The questionnaire was developed by the researchers based on the European Home Care Services Model Project' s home-based medical service institution

survey [7], adapted according to China' s home-based medical service policies [1, 4] and actual conditions. It comprised two sections: (1) A general information form for primary health service institutions covering location, name, nature, level, service area, whether chronic disease management services were provided, whether a specialized chronic disease management department had been established, and human resources information such as employment status, profession, and professional titles; and (2) An institutional home-based medical service implementation assessment form evaluating implementation status and hindering factors, including 8 items on whether home-based medical services were provided, whether a specialized department had been established, service duration, service delivery models, target populations, service hours, and workload. Hindering factors were designed based on literature review and included 9 items covering human resources, supporting policies, service standards or norms, and an open-ended "other" category. Seven experts were invited to evaluate content validity, yielding item-level content validity indices (I-CVI) of 0.86–1.0 and a scale-level content validity index (S-CVI) of 0.96.

Data Collection

After obtaining consent from leaders of selected primary health service institutions, electronic questionnaires with standardized instructions were distributed to relevant administrators representing each institution, with detailed explanations of the survey purpose and completion requirements. Administrators completed the questionnaire according to their institution' s actual conditions and returned it within one week. Researchers promptly reviewed questionnaire quality and contacted respondents to verify any issues. All 62 recruited institutions completed the survey, achieving a 100% response rate.

Statistical Analysis

Collected electronic questionnaires were checked, organized, and analyzed using SPSS 25.0. Categorical data were described using frequencies and proportions, with between-group comparisons performed using chi-square tests. Normally distributed continuous data were expressed as mean ± standard deviation, with comparisons between two groups using independent samples t-tests. Non-normally distributed data were expressed as median (P25, P75), with between-group comparisons using nonparametric tests. Statistical significance was set at $P < 0.05$.

Results

Organizational Characteristics of Primary Health Service Institutions

Among the 62 surveyed institutions, 24 (38.7%) were located in provincial capital areas and 41 (66.1%) served central urban districts. Thirty-five institutions

(56.5%) were named community health service centers, 53 (85.5%) were public institutions, and 39 (62.9%) had inpatient beds. Among those with beds, 16 (25.8%) had participated in hospital grading evaluations, including 3 (4.8%) affiliated with tertiary hospitals, 4 (6.5%) with secondary hospitals, and 9 (14.5%) graded as primary hospitals. Forty-five institutions (72.6%) had physicians as their primary administrators, while 12 (19.4%) had part-time medical staff from higher-level hospitals. Full-time medical staff numbers ranged from 10 to 316 (median: 40 [26, 66]), including 4–110 physicians (median: 14 [8, 23]) and 5-156 nurses (median: 19 [11, 33]). Medical staff accounted for 84.9% ± 11.3% of full-time employees. The physician-to-nurse ratio (nurses per physician) ranged from 0.43 to 2.63, averaging 1.44 ± 0.5. The median proportion of physicians with junior-level or lower titles was 45.5% (32.3%, 56.5%), while the median proportion of nurses with junior-level or lower titles was 71.9% (50.7%, 84.9%). Detailed data are presented in .

Further analysis of organizational characteristics by location and service area revealed statistically significant differences in participation in hospital grading evaluations, presence of part-time medical staff, availability of inpatient beds, proportion of medical staff, physician-to-nurse ratios, and proportions of medical staff by professional title ($P < 0.05$). Details are shown in .

Home-Based Medical Services and Their Relationship with Organizational Characteristics

Among the 62 institutions, 58 (93.5%) had implemented chronic disease management services, with 53 (85.5%) establishing specialized departments for this purpose. Fifty-one institutions (82.3%) provided home-based medical services, with 24 (47.1%) establishing specialized departments for home-based medical services. Family doctor contract services were the most common delivery model (98.0%). Twenty-six institutions (50.9%) had provided services for less than 3 years, 94.1% (48 institutions) served elderly chronic disease patients, who were also the primary service target (60.8%), and 16 institutions (31.3%) reported providing home-based medical services at least 3 days per week. Thirty-one institutions (60.8%) required medical staff to provide services during regular working hours. Detailed service information is presented in .

Analysis of the relationship between organizational characteristics, chronic disease management, and home-based medical services showed that only chronic disease management had a statistically significant association with whether home-based medical services were provided (see). Institutional location, service area, nature, name, and human resource status showed no statistically significant associations with service provision or specific service conditions ($P > 0.05$).

Hindering Factors for Implementing Home-Based Medical Services

The 62 institutions reported a total of 9 types of hindering factors, with each institution reporting between 1 and 9 factors (median: 6). The top three hindering factors were insufficient human resources (96.8%), inadequate supporting policies (82.3%), and lack of corresponding standards and norms (74.2%). Details are presented in .

Further analysis of the relationship between service implementation and hindering factors revealed that only insufficient professional competence of medical staff showed a statistically significant association with whether services were provided to children under 3 years of age ($P < 0.05$).

Discussion

Current Status of Organizational Characteristics in Primary Health Service Institutions

Among the 62 surveyed institutions, nearly two-fifths (24, 38.7%) were located in provincial capital areas, slightly fewer than those in prefecture-level cities. Institutions serving central urban districts (41, 66.1%) outnumbered those serving suburban and rural areas. The majority were community health service centers (56.5%), followed by community hospitals (27.4%) and township health centers (16.1%). Community hospitals represent a special form of community health service centers and township health centers, piloted in 2019 according to relevant regulations [8]. Most institutions (85.5%) were public, reflecting China' s government-led approach to primary health service provision, whereas private and commercial home care agencies are more common in some European regions such as Germany and the Netherlands, with some exceeding public institutions in scale [2]. Nearly two-thirds of surveyed institutions (39, 62.9%) had inpatient beds, with the vast majority (36, 92.3%) having fewer than 100 beds, complying with national regulations for primary hospitals [9]. Two-fifths of bed-equipped institutions (16) participated in hospital grading evaluations, including those affiliated with secondary and tertiary hospitals, suggesting that relatively few primary health service institutions undergo primary-level hospital evaluation, though this was significantly more common in provincial capital areas than in prefecture-level cities. Provincial capital areas also had significantly more part-time medical staff from higher-level hospitals, indicating better implementation of quality medical services at the grassroots level and potentially superior primary health services in provincial capital regions. Conversely, institutions without inpatient beds (23) predominantly served central urban districts (22), explaining the difference in hospital grading evaluation participation between institutions serving central versus non-central urban areas.

The survey revealed that 27.4% of primary health service institutions had non-physician administrators, with 17.7% led by nurses, indicating strengthened

nursing roles in primary health services. Only a minority (12, 19.4%) had part-time medical staff from higher-level hospitals, suggesting that quality medical services at the grassroots level could be further enhanced through medical consortia or internet-based approaches. Human resource scale varied considerably across institutions. The average proportion of medical staff among full-time employees was 84.9%, generally meeting the requirement that professional technical personnel constitute no less than 80% of total staff in primary health service institutions [10, 11], though a minority (25.8%) failed to meet this standard. In terms of physician and nurse proportions, nurses outnumbered physicians in primary health service institutions. The physician-to-nurse ratio also varied substantially (0.43–2.63), with an average ratio (1.44 ± 0.5) higher than the 2018 Sichuan provincial primary care ratio [12] (0.67) and meeting the *National Nursing Development Plan (2021–2025)* target (1.2) [3], indicating significant improvement in the historical physician-nurse imbalance. However, the community hospital construction standard requires a physician-to-nurse ratio of 1.5 [8], and half of the community hospitals surveyed (9, 52.9%) failed to meet this threshold, necessitating increased nursing staff. Regarding professional titles, junior-level and lower titles predominated among both physicians (45.5%) and nurses (71.9%), followed by intermediate and senior titles. The proportion of junior-level physicians was significantly lower than the 2018 Sichuan provincial primary care figure (76.39%) [12], with markedly increased intermediate and senior-level proportions, and 56 institutions (90.3%) met the "Grade A" evaluation requirement for senior-level physicians in primary health service institutions [8]. Similarly, compared with 2017 survey results for Sichuan community nurses, the proportion of junior-level nurses (80%) decreased while intermediate and senior-level proportions increased [13], demonstrating notable improvements in primary care human resource quality. However, significant differences existed in physician and nurse proportions across institutions serving different areas: central urban districts had fewer physicians but relatively more nurses, higher physician-to-nurse ratios, and higher proportions of senior and intermediate-level medical staff, suggesting more rational staffing and higher professional competence in urban-serving institutions. Therefore, strengthening human resource development in suburban and rural primary health service institutions is essential for comprehensively improving service capacity.

Home-Based Medical Services and Influencing Factors in Primary Health Service Institutions

The *Sichuan Province Implementation Plan for Strengthening Home-Based Medical Services for Older Adults (Trial)* [4] explicitly requires leveraging the advantages of primary health service institutions to further increase the supply of home-based medical services for older adults. This survey found that home-based medical services were widely implemented in primary health service institutions (82.3%), higher than the reported implementation rate in China' s secondary and tertiary hospitals (60.7%) [14], though not yet universal. Nearly half of institutions (47.1%) had established specialized departments for home-

based medical services, indicating strengthened management. Approximately half had provided services for more than 3 years, accumulating considerable experience. While service delivery models were diverse, traditional approaches predominated, with family doctor contract services being most common, followed by family doctor team home visits and service delivery based on patient needs. Family sickbeds, promoted by the government, were relatively underdeveloped, and services utilizing modern information technology were even less common. In contrast, developed domestic regions such as Shanghai, Guangdong, and Zhejiang more commonly use modern information technology for home-based medical services, exemplified by platforms like "U-Nurse," "Medical Care Connect," and "Nurse to Home" [15, 16]. Although China established family sickbeds as early as the 1950s [17] and they represent a highly characteristic home-based medical service model [18], this survey found they were not widely implemented at the primary level, warranting further investigation into specific reasons.

The survey indicated that home-based medical services primarily target special populations in communities, especially elderly chronic disease patients aged 60 and above, consistent with both the large elderly population with substantial healthcare needs and relevant policy requirements [4]. Cancer and postoperative patients also demonstrate high demand for home-based medical services [19–21], and primary health service institutions could expand service beneficiaries by providing continuous medical and nursing care for discharged patients from higher-level hospitals through medical consortia or medical communities. Regarding service timing, most institutions (60.8%) required services during regular working hours, while some allowed medical staff to choose service times autonomously, demonstrating flexibility. However, considering weekly service volume, most institutions had relatively low service frequency (less than 3 days per week), suggesting that despite high patient demand, actual supply remains limited, possibly due to information gaps between doctors and patients, shortages of general practitioners, constraints of home environments, and difficulties in liability risk determination [18, 22].

Chronic disease management services are mandated national basic public health services requiring implementation by primary health service institutions. However, this survey found these services were not universally covered, and institutions' chronic disease management work significantly influenced whether they provided home-based medical services ($P < 0.05$). Institutions not providing chronic disease management services may have more traditional healthcare delivery models, potentially explaining their lack of home-based medical services. Conversely, institutions providing chronic disease management services demonstrated greater attention to elderly chronic disease patients in their service areas, and high demand could drive home-based medical service implementation. Four institutions in this survey neither provided chronic disease management nor home-based medical services, though the *China Chronic Disease Prevention and Control Medium- and Long-Term Plan (2017–2025)* issued by the State Council explicitly requires prioritizing chronic disease patients in home-based medical

service systems to achieve whole-process health management [23], indicating that service functions in a small minority of primary health service institutions remain inadequate.

Multiple Hindering Factors for Home-Based Medical Service Development, with Human Resource Management Being Most Prominent

Human resource shortages constitute a common challenge for primary health service institutions in China and globally [24], and this survey confirmed human resources as the most prominent hindering factor. Sichuan's community medical workforce generally reports low income and job satisfaction [13], and the need to balance regular community duties with home-based medical services increases workload and pressure, resulting in high staff turnover and resignation rates. Institutions could be encouraged to open part-time positions to attract highly educated, experienced medical staff from other hospitals to provide home-based medical services during their available time, using per-visit payment according to national fee standards to motivate staff and utilizing information tools such as telemedicine to improve human resource utilization. Second, literature reports indicate that lack of corresponding standards, norms, and supporting policies represents important hindering factors for home-based medical services [25, 26], consistent with this study' s findings. Although the state vigorously promotes home-based medical services, many norms and supporting policies remain incomplete, limiting the scope of some service items and creating a situation of "high demand but low utilization." Urgent action is needed from government and administrative departments to formulate and implement relevant policies, improve incentive and guarantee mechanisms, and reduce medical staff turnover. Additionally, insufficient professional competence among medical staff was a significant hindering factor affecting whether services were provided to children under 3 years of age. Drawing from Japan' s practice of establishing home-based medical care curricula in university education [17], China could gradually introduce home-based medical concepts from the student stage, strengthen relevant training for medical staff, enhance their professional knowledge and operational capabilities, and promote the sustainable development of home-based medical services.

Conclusion

Home-based medical services are widely implemented in Sichuan Province but require improvement in delivery models, target populations, and workload. Institutions should address current challenges based on their specific circumstances, formulate corresponding countermeasures with reference to national and provincial policies, clarify standards and norms for home-based medical services, emphasize chronic disease management and institutional team building, and further promote the sustainable development of home-based care.

Author Contributions: Zhou Luling and Liu Suzhen were responsible for conceptualization and design, statistical analysis, results interpretation, manuscript writing and revision, quality control, and overall responsibility for the article. Zhou Luling, Liu Suzhen, and Li Hang were responsible for survey implementation and data collection and organization.

Conflict of Interest: The authors declare no conflict of interest.

References

[1] National Health Commission. Notice on Strengthening Home-Based Medical Services for Older Adults (National Health Office Medical Affairs [2020] No. 24) [EB/OL]. (2020-12-29) [2022-11-05]. http://www.nhc.gov.cn/yzygj/s7653pd/202012/19a2617ba8e641bea9ac24

[2] Van E L, Declercq A, Onder G, et al. Substantial between-country differences in organising community care for older people in Europe—a review[J]. European journal of public health, 2016, 26(2): 213-219. DOI: 10.1093/eurpub/ckv152.

[3] National Health Commission. *National Nursing Development Plan (2021-2025)* (National Health Medical Affairs [2022] No. 15) [EB/OL]. (2022-05-07) [2022-11-05]. http://www.nhc.gov.cn/yzygj/s7653pd/202205/441f75ad347b4ed68a7d2f2972f78e67.shtml.

[4] Sichuan Provincial Health Commission. *Sichuan Province Implementation Plan for Strengthening Home-Based Medical Services for Older Adults (Trial)* [EB/OL]. (2021-05-28) [2022-11-05]. http://wsjkw.sc.gov.cn/scwsjkw/sclljk/2021/5/28/e087ec5b275d42acaab7

[5] Johansson N, Fangstrom K, Warner G. Social workers' perspectives on a medical home model for children and adolescents in out of home care—an interview study[J]. BMC Health Services Research, 2021, 21(1): 804. DOI: 10.1186/s12913-021-06737-1.

[6] World Health Organization, 2002. Innovative Care for Chronic Conditions: Building Blocks for Action. World Health Organization, Geneva (Accessed 8 September, 2017). http://www.who.int/chp/knowledge/publications/icccglobalreport.pdf?ua=1.

[7] Van E L, Van d R H, Onder G, et al. Organizational home care models across Europe: A cross sectional study[J]. International Journal of Nursing Studies, 2018, 77: 39-45. DOI: 10.1016/j.ijnurstu.2017.09.013.

[8] Sichuan Provincial Health Commission. *Sichuan Province Community Hospital Construction Pilot Implementation Plan (Trial)* (Sichuan Health Letter [2019] No. 98) [EB/OL]. (2019-04-26) [2022-11-05]. http://wsjkw.sc.gov.cn/scwsjkw/zcwj11/2019/5/20/070a16

[9] National Health Ministry. *Basic Standards for Medical Institutions (Trial)* [S/OL]. (2019-06-12) [2022-11-05]. https://www.renrendoc.com/paper/217640014.html.

[10] National Health Commission. *Community Health Service Center Service Capacity Standards (2022 Edition)* (National Health Primary Care Letter [2022] No. 117) [S/OL]. (2022-07-20) [2022-11-05]. http://www.nhc.gov.cn/jws/s7874/202207/03f2e43540384209b67cce25a6cd9ae2.shtml.

[11] National Health Commission. *Township Health Center Service Capacity Standards (2022 Edition)* (National Health Primary Care Letter [2022] No. 117) [S/OL]. (2022-07-20) [2022-11-05]. http://www.nhc.gov.cn/jws/s7874/202207/03f2e43540384209b67cce25a6cd9

[12] ZHOU Z F, YANG S J, GAO B, et al. Current situation of health human resource allocation in Sichuan Province from the regional perspective[J]. Journal of Preventive Medicine Information, 2022, 38(04): 538-543.

[13] TAO L, LIU S Z, LI J P. Correlation of community nurses' service execution frequency and job satisfaction in Sichuan province[J]. Journal of Nursing Science, 2017, 32(16): 87-90. DOI: 10.3870/j.issn.1001-4152.2017.16.087.

[14] MA J J, NIU S Z, WANG L, et al. Survey on the status quo of home rehabilitation nursing services for chronic diseases in 145 secondary tertiary hospitals China[J]. Journal of Nurses Training, 2021, 36(21): 1966-1971. DOI: 10.16821/j.cnki.hsjx.2021.21.010.

[15] WANG L, FU A D, YI L, et al. Application of internet-based health station in the management of patients with type 2 diabetes[J]. Chinese General Practice, 2019, 22(15): 1836-1841. DOI: 10.12114/j.issn.1007-9572.2019.00.004.

[16] MI J M, CHEN X Y, CHEN T T, et al. Development status quo of "internet+nursing" door-to-door service[J]. Chinese Nursing Research, 2018, 32(22): 3499-3502. DOI: 10.12102/j.issn.1009-6493.2018.22.004.

[17] WU B H, CHEN T, YAO N L, Modern home care medicine and holistic home health care[J]. Chinese General Practice, 2021, 24(19): 2373-2378. DOI: 10.12114/j.issn.1007-9572.2021.00.205.

[18] BAI M, GE H T, YAO N L, et al. Home health care delivery models in China: an exploratory comparative study[J]. Chinese General Practice, 2021, 24(19): 2379-2384. DOI: 10.12114/j.issn.1007-9572.2021.00.229.

[19] DAI L L, DUAN Y Q, ZHANG M, et al. Demand for home care services in the elderly in the community: a structural study[J]. Chinese General Practice, 2021, 24(25): 3238-3243. DOI: 10.12114/j.issn.1007-9572.2021.00.226.

[20] HU S J, SUN J, PENG F C, et al. Care needs in lung transplant recipients at home: a meta-synthesis of qualitative research[J]. Chinese Journal of Nursing, 2021, 56(10): 1576-1583. DOI: 10.3761/j.issn.0254-1769.2021.10.022.

[21] CHEN S Q, MA H L, WANG Q. Application of mobile education APP in postoperative home care of patients with laryngeal cancer surgery[J]. Chinese Nursing Research, 2021, 35(12): 2245-2247. DOI: 10.12102/j.issn.1009-6493.2021.12.036.

[22] CHEN T, YAO N L. Legal risks strategies to develop home-based medical in China[J]. Medicine & Philosophy, 2019, 40(24): 64-67. DOI: 10.12014/j.issn.1002-0772.2019.24.17.

[23] General Office of the State Council. Notice of the General Office of the State Council on Issuing the China Chronic Disease Prevention and Control Medium-

and Long-Term Plan (2017–2025) (State Office [2017] No. 12) [EB/OL]. (2017-02-14) [2022-11-05]. http://www.gov.cn/zhengce/content/2017-02/14/content_{5167886}.htm.

[24] Buescher A, Schroeder D, Gruber E M. Staffing situation in home-care services: A qualitative study on current and future challenges[J]. Pflege, 2022, 35(5): 269-277. DOI: 10.1024/1012-5302/a000881.

[25] MEI Y Y, PANG S Q, CAI L H. Qualitative research on status quo and expectations of home care service quality control[J]. Journal of Nursing Science, 2021, 36(19): 16-19. DOI: 10.3870/j.issn.1001-4152.2021.19.016.

[26] WANG L T, TANG L J, YUE L C, et al. The study on work experience of nurses in internet home-care service[J]. Chinese Journal of Nursing, 2020, 55(07): 1067-1071. DOI: 10.3761/j.issn.0254-1769.2020.07.020.

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