

Current Status of “Internet Plus Nursing Services” Needs among Elderly Diabetic Patients in Western Guangxi and Implications for Home-Based Nursing Interventions

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Abstract

Objective: To investigate the demand for “Internet + Nursing Services” among elderly diabetic patients, and to provide a reference for subsequent home-based nursing care for elderly diabetes. **Methods:** Four hundred elderly diabetic patients were selected for a questionnaire survey, with 380 subjects ultimately completing the questionnaire. **Results:** Two hundred ten subjects (55.26%) expressed demand for “Internet + Nursing Services”. The top ten service demands in descending order of priority were: blood glucose monitoring, insulin injection, diabetic foot screening, venous blood collection, accompaniment for exercise routines, diabetic foot care, cooking according to diabetic dietary guidelines, gua sha and/or cupping therapy, acupoint massage, and auricular point acupressure. **Patient concerns included:** inability of medical staff to provide timely services, inadequate professional competence, lack of fixed medical staff for each home visit, and insufficient emergency equipment. **Conclusion:** Relevant departments should improve medical insurance policies, cost management policies, medical emergency equipment, Internet platform construction, and skills training.

Full Text

Preamble

The Current Demand for “Internet Plus Nursing Services” Among Elderly Diabetic Patients in Western Guangxi and Its Implications for Home-Based Nursing Interventions

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Abstract

Objective To investigate the demand for “Internet Plus Nursing Services” among elderly diabetic patients and provide a reference for subsequent home-based nursing services for this population. **Methods** A questionnaire survey was administered to 400 elderly diabetic patients, with 380 participants completing the survey. **Results** A total of 210 participants (55.26%) expressed demand for “Internet Plus Nursing Services.” The top ten most demanded services, in descending order, were: blood glucose monitoring, insulin injection, diabetic foot screening, venous blood sampling, accompanied exercise instruction, diabetic foot care, cooking according to diabetic dietary requirements, gua sha and/or cupping, acupressure, and auricular point pressing. Primary concerns included delayed service response from medical staff, inadequate professional competence, inconsistent personnel across visits, and incomplete emergency equipment. **Conclusion** Relevant authorities should improve medical insurance policies, cost management regulations, emergency medical equipment, internet platform infrastructure, and skills training.

Keywords: Internet Plus Nursing Services; elderly diabetes mellitus; extended care; home-based nursing

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Introduction

Data from the seventh national population census bulletin of the National Bureau of Statistics of China indicate that in 2020, individuals aged 60 and above accounted for 18.7% of the total population (260.4 million) [1], with approximately 30% of older adults having diabetes (over 95% type 2 diabetes) [2]. Age-related conditions prevalent among elderly diabetic populations include physical and cognitive decline, increased risk of falls and fractures, and diminished capacity for self-protection against injuries. Incontinence, depression, cognitive im-

pairment, pain, and polypharmacy [1] are negatively impacting self-management capabilities among elderly diabetic patients [3].

In recent years, “Internet Plus Nursing Services” has emerged as a research hotspot [4-12]; however, investigations specifically addressing the demand for these services among elderly diabetic patients in western Guangxi remain scarce. This study surveyed elderly diabetic patients in western Guangxi to analyze their specific service demands, aiming to provide evidence for implementing “Internet Plus Nursing Services.”

1.1 Study Subjects

This cross-sectional study employed convenience sampling to survey 400 elderly diabetic patients who had visited a tertiary Grade A hospital in western Guangxi between March 2022 and March 2023. Inclusion criteria were: (1) meeting WHO diabetes diagnostic criteria (1999) [World Health Organization, 2006]; (2) aged 60-80 years [1]; (3) informed consent and voluntary participation; (4) ability to communicate normally, possess mobile communication devices, and complete questionnaires by scanning QR codes with smartphones. Exclusion criteria were: (1) consciousness or cognitive impairment; (2) speech difficulties or communication barriers; (3) severe visual or hearing impairment; (4) inability to participate due to deteriorating condition. This study was approved by the Medical Ethics Committee of Youjiang Medical College for Nationalities (Approval No.: YYFY-LL-2021-99).

1.2 Research Instruments

This cross-sectional study utilized a self-designed questionnaire developed through literature review and clinical guideline consultation, finalized after expert consultation and pilot testing. The questionnaire comprised three sections: (1) General demographic data including gender, age, marital status, disease duration, number of diagnosed conditions (including diabetes), self-care ability, education level, occupation, medical insurance type, living arrangement, healthcare-seeking behavior during illness, primary caregiver during illness, nearby medical facilities, and monthly household income—14 items total with fill-in-the-blank, single-choice, and multiple-choice formats. (2) A survey on willingness to use “Internet Plus Nursing Services” containing 2 dimensions with 7 items using single or multiple-choice formats. (3) A survey on specific service project demands containing 39 items formatted as a matrix scale using a 5-point Likert scale: “very needed” (5 points), “needed” (4 points), “neutral” (3 points), “not needed” (2 points), and “not needed at all” (1 point). Higher scores indicated greater demand. The first two sections consisted of fill-in-the-blank and unordered choice questions, thus not requiring reliability and validity testing; the third section underwent psychometric evaluation.

Ten diabetes care experts were consulted for questionnaire revision, including 2 chief physicians, 1 chief nurse, 2 deputy chief nurses, and 5 supervising nurses.

Two chief physicians were male; all others were female, with over 10 years of experience in diabetes care. A pilot survey of 38 elderly diabetic patients was conducted. Through expert consultation and statistical analysis, the Cronbach's α coefficient for the third section was 0.917.

1.3 Data Collection Methods

This cross-sectional study distributed 400 questionnaires through Wenjuanxing (an online survey platform). Trained investigators used tablets to explain instructions and assist participants. Respondents completed surveys anonymously and voluntarily following standardized instructions. A skip logic was implemented: if participants answered “no demand” for “Internet Plus Nursing Services” in the final question of Section 2, the system automatically skipped Section 3 and prompted submission; otherwise, participants proceeded to Section 3.

1.4 Quality Control

The system set a minimum completion time of 3 minutes (when Section 3 was not required) and maximum of 10 minutes (when Section 3 was required). Data underwent dual entry and verification by two researchers who also analyzed logical consistency. The Wenjuanxing platform automatically verified input accuracy and logic. For incomplete responses, the system prompted participants to complete missing items before submission. Of 400 distributed questionnaires, 20 were excluded based on minimum time requirements or illogical responses, yielding 380 valid questionnaires (95% valid response rate).

1.5 Statistical Methods

SPSS 23.0 was used for statistical analysis. Categorical data were expressed as frequencies and percentages (%). Normally distributed continuous data were expressed as mean \pm standard deviation (“ $\bar{x} \pm s$ ”), while non-normally distributed data were expressed as median (interquartile range) “M (P25, P75).” Demand analysis across different demographic characteristics was described using constituent ratios (%).

Results

2.1 Demographic and Disease Characteristics

A total of 380 elderly diabetic patients completed the questionnaire. General demographic characteristics are presented in Table 1 .

2.2 Willingness to Use “Internet Plus Nursing Services”

Survey results on willingness are detailed in Table 2 .

2.3 Demand for Specific Service Projects

Among the 210 patients (55.26%) expressing demand for “Internet Plus Nursing Services,” specific project demands are detailed in Table 3 .

Discussion

3.1 Demographic Characteristics and Implications for Home-Based Nursing Interventions

Table 1 shows participants aged 60-80 years (mean 67.16 ± 12.64), with 211 individuals (55.53%) aged 60-70 and 169 (44.47%) aged 70-80. Males comprised 200 participants (52.36%). All had primary school education or higher (100%). Disease duration exceeded 5 years for 337 participants (88.68%). All 380 participants (100%) had employee medical insurance, rural cooperative medical insurance, or urban resident insurance. Monthly household income was \$ \$10,000 RMB for 216 participants (56.84%). A total of 342 participants (90%) had three or more comorbidities; 171 (45%) were not fully self-sufficient in daily activities; 280 (73.7%) could not independently seek medical care when ill. Primary caregivers during illness were spouses for 171 participants (45%), followed by children for 99 (26.05%), with remaining participants relying on self-care, hired caregivers, or siblings. Most participants (92.63%) lived with spouses and/or children, 28 (7.37%) lived alone, and 20 (5.26%) resided in other arrangements (nursing homes, shared housing, etc.).

These demographic and disease characteristics indicate: (1) predominantly elderly male patients with disease duration >5 years and multiple complications; (2) difficulty seeking independent medical care; (3) relatively low household income. Implications for home-based nursing interventions: relevant departments and personnel should increase attention to elderly diabetic populations, assessing demographic and disease characteristics—including living alone, social engagement, loneliness, and caregiver burden [13]—to comprehensively understand patients’ situations and tailor service priorities accordingly.

3.2 Demand for “Internet Plus Nursing Services” and Implications for Home-Based Nursing Interventions

Table 2 indicates that 241 participants (62.42%) had never heard of “Internet Plus Nursing Services.” Relevant departments should strengthen publicity to improve awareness among elderly diabetic patients [14]. A total of 210 participants (55.26%) expressed demand for these services, with 196 (51.58%) stating they would still be very willing to use them even without medical insurance reimbursement, particularly when mobility was limited. This substantial demand aligns with findings from Gong Y et al.’s observational study in Shanghai [15]. Regarding pricing, 251 participants (66.05%) considered category-based charges for treatment and nursing services most reasonable, and 229 (60.26%) preferred medical insurance reimbursement, providing valuable references for

policy development.

When asked about preferred service providers, 157 participants (41.32%) preferred their original hospitalization medical staff due to familiarity with their condition, suggesting hospitals should assign primary physicians or nurses when possible. Primary concerns included: delayed service response (71.1%), inadequate professional competence (57.9%), inconsistent personnel across visits (50%), incomplete emergency equipment (47.4%), privacy breaches (35.53%), and inadequate emergency response capabilities (32.37%). These findings are consistent with Zhao B et al. [14].

Implications for home-based nursing interventions include: (1) relevant departments should improve policy support, medical insurance systems, and standardized fee structures; (2) hospitals may reference successful domestic and international experiences [16] to strengthen platform infrastructure, optimize application processes, and establish unified service standards to eliminate safety hazards; (3) nursing administrators should enhance professional training for practitioners to ensure safe, high-quality services; (4) nurses providing online services should strengthen their clinical competencies to address patient concerns and improve satisfaction.

3.3 Demand for Diabetes-Specific Nursing Technical Projects and Implications for Nursing Interventions

Table 2 shows 210 elderly diabetic patients (55.26%) expressed demand for “Internet Plus Nursing Services.” Table 3 reveals the top ten most urgently needed specific projects, ranked by demand intensity: blood glucose monitoring, insulin injection, regular diabetic foot screening, venous blood sampling, accompanied exercise instruction, diabetic foot care, cooking according to diabetic dietary requirements, vital signs monitoring, gua sha, and auricular point pressing. When ranked by mean scores, the top ten were: insulin injection and blood glucose monitoring (tied for first), regular diabetic foot screening, venous blood sampling, accompanied exercise instruction, diabetic foot care, acupressure and gua sha and cupping (tied for sixth), auricular point pressing, safety nursing, self-care ability training, and daily living care. Additionally, 89 participants (42.38%) urgently needed psychological assessment and nursing care, indicating substantial demand for traditional Chinese medicine techniques and mental health support.

Implications for home-based nursing interventions: online nurses should develop individualized self-management plans based on patients’ specific conditions, considering their medical history, treatment needs, comprehension level, and self-care abilities. For home-based care involving traditional Chinese medicine or psychological support, “Internet Plus Nursing Service” coordinators should consult with specialists from traditional Chinese medicine and/or psychology departments, enabling diabetes specialist nurses to collaborate with these experts during home visits. This multidisciplinary approach ensures high-quality, reli-

able services that enhance care quality and patient satisfaction across multiple dimensions.

Summary and Outlook

“Internet Plus Nursing Services” in western Guangxi remains in the exploratory stage. Despite urgent patient demand, numerous concerns persist regarding implementation details, including service timeliness, operational safety, emergency equipment availability, and healthcare personnel competence. We recommend tripartite improvements: (1) government-level refinement of medical insurance and cost management policies; (2) hospital-level enhancement of emergency equipment, internet platform infrastructure, and skills training; and (3) individual nurses’ continuous professional development. Through coordinated efforts addressing patient needs and concerns [14] and referencing successful experiences from developed regions [16], satisfaction with home-based care can be improved, thereby promoting “Internet Plus Nursing Services.”

Limitations

This single-center study had a small sample size and limited independent variables. Future research should employ multi-center, large-sample designs to explore additional factors influencing “Internet Plus Nursing Services,” providing further references for policy development.

Conflict of Interest

All authors declare no conflicts of interest.

Author Contributions

Li Yijuan and Meng Lianxin: conceptualized the study and designed the research protocol; Li Yijuan, Ou Yuna, Xie Weiping, and Lao Caiyan: conducted experiments and investigations; Li Shuangqi, Xie Weiping, and Li Yijuan: collected, organized data, and performed statistical analysis; Li Yijuan, Lu Liuxue, Meng Lianxin, Li Shuangqi, Xie Weiping, Lao Caiyan, and Ou Yuna: drafted the manuscript; Lu Liuxue: provided overall supervision and manuscript revision.

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

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