Study on Community Care Needs and Influencing Factors of the Urban Elderly in Shandong Province, China

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Abstract

Objective: To understand community care needs of the urban elderly in Shandong Province. To analysis the influencing factors and community care needs of the urban elderly in Shandong Province. Methods: Shandong Province was divided into four levels according to the level of economic development, multi-stage stratified cluster random sampling method was used. Each city collected the old aged 60 years or older served by 5 community health service centers. A total of 3390 questionnaires were distributed, the recovery rate was 100%, it had 3363 effective questionnaires, and an effective rate was 99.20%. SPSS17.0 software was used for univariate and multivariate analysis. Results: Analysis results show that, the influencing factors of community care needs of health promotion dimension have medical time (t = 3.239, P = 0.001) and EQ-5D score (t = 9.104, P < 0.001). The influencing factors of community care needs of disease prevention dimension have education (t = 2.406, P = 0.016), EQ-5D score (t = −2.388, P = 0.017) and ADL score (t = −6.239, P < 0.001). The influencing factors of disease care dimension have economic income (t = −2.268, P = 0.023), prevalence of chronic diseases (t = −17.276, P < 0.001), medical time (t = 6.266, P < 0.001) and EQ-5D score (t = −3.762, P < 0.001). The influencing factors of community care needs total Score have prevalence of chronic diseases (t = −8.341, P < 0.001), medical time (t = 5.224, P < 0.001) and EQ-5D score (t = −6.929, P < 0.001). Conclusions: Community care needs of the urban elderly in Shandong Province are at a medium level and have many influencing factors, the scores of each dimension from high to low are health promotion, disease care and disease prevention. In community nursing work,
we should meet the care needs of the elderly, we need to enhance elderly self-care and safety awareness and promote the physical and mental health of the elderly.

**Keywords**
The Elderly, Community Care, Needs, Influencing Factors

1. Introduction

The aging of population is an important problem facing the world in the 21st century [1]. The arrival of aging society will inevitably bring great pressure to society, family and medical care. Similarly, in the 21st century, China’s aged care is an era of both opportunities and challenges. Nurses should update their concepts, expand the category of aged care and improve their overall service ability [2]. However, the community care for the elderly in China is still in its infancy, and the traditional community nursing service for the elderly cannot meet the requirements of the overall health management of the elderly, which has become the bottleneck restricting the sustainable development of community nursing for the elderly.

Breaking the traditional concept of “disease care”-centered nursing service, getting rid of the shackles of basic nursing modes such as single implementation of doctor’s advice and door-to-door intravenous infusion, and independently providing health promotion and disease prevention services for the elderly will become the development direction of community nursing [3]. Therefore, it is very important to analyze the community care needs and influencing factors of the elderly.

The purpose of this study was to understand the present situation of community care needs of the elderly through on-the-spot investigation, and to analyze the factors that affect the elderly choice of community care needs. It is hoped to provide reference for further effective community nursing for the elderly.

2. Methods

2.1. Study Design and Participants

Data of the current study (N = 3363) were collected from a large cross-sectional study on community care needs in urban areas of Shandong province, China. The random stratified cluster sampling method was applied to select the survey subjects. Four cities of Shandong province and five community health service centers in each city were chosen randomly according to the development of economy and the geographical location. Then, all the aged (≥60 years) under the jurisdiction of the twenty community health service centers were chosen as the survey respondents.

In order to control the information bias and loss to follow-up, the collabora-
2.2. Ethics Approval and Consent for Participate Statement

This study was approved by the Ethics Committee of Weifang Medical University, and written informed consent was obtained from all participants.

2.3. Statistical Analysis

The mean and standard deviation ($\overline{x} \pm SD$) and frequency (%) were used to describe the distribution of quantitative and qualitative data respectively. The T test and ANOVA test were used to compare the difference of community care needs between different groups. The multiple linear regression analysis was used to analyze the influencing factors of elderly community care needs. All analyses were two tailed and statistical significant probability was determined by $P \leq 0.05$. SPSS (Version 19.0) statistical analysis software was used to analyze data.

3. Results

3.1. Demographics Description of the Sample

There were 3390 eligible residents recruited in the current study and 3363 residents actually participated in. The participation rate was 99.20%. Demographic variables such as gender, age, education level, medical insurance, family annual income, chronic diseases, medical treatment time and living were shown in Table 1.

3.2. Community Care Needs of the Elderly

3.2.1. Overall Situation

In this study, there were 22 items (22 - 110 points) of community care needs of the elderly in three dimensions. The community care needs of the elderly in urban communities were at a medium level (61.40 ± 15.924). The scores of each dimension from high to low were health promotion (20.69 ± 6.215), disease care (20.40 ± 5.757) and disease prevention (20.29 ± 3.952). The requirements of health promotion, disease prevention and disease care were 33.7%, 33.2% and 33.1% respectively. As shown in Table 2.

3.2.2. Distribution of Community Care Needs of the Elderly

According to the proportion of needs, the top six items of community care need are regular health assessment (96.2%), self-health monitoring guidance (75.1%),
Table 1. Distribution of the demographics variables.

| Demographic Variables | Frequency | Percent (%) |
|-----------------------|-----------|-------------|
| **Gender**            |           |             |
| Male (1)              | 1419      | 42.2        |
| Female (2)            | 1944      | 57.8        |
| **Age (year)**        |           |             |
| 60 - 64 (1)           | 848       | 25.2        |
| 65 - 69 (2)           | 918       | 27.3        |
| 70 - 74 (3)           | 708       | 21.2        |
| 75 - 79 (4)           | 538       | 16.0        |
| >80 (5)               | 351       | 10.4        |
| **Education level**   |           |             |
| Primary school (1)    | 1757      | 52.2        |
| Middle school (2)     | 925       | 27.5        |
| Above middle school (3)| 680     | 20.2        |
| Medical insurance     |           |             |
| Yes (1)               | 3279      | 97.5        |
| None (2)              | 84        | 2.5         |
| **Family Annual Income (RMB/person)** | | |
| <10,000 (1)           | 148       | 5.1         |
| 10,000 - 20,000 (2)   | 807       | 27.8        |
| 20,000 - 30,000 (3)   | 879       | 30.3        |
| 30,000 - 40,000 (4)   | 560       | 19.3        |
| >40,000 (5)           | 510       | 17.6        |
| **Chronic diseases**  |           |             |
| Yes (1)               | 2184      | 64.9        |
| No (2)                | 1179      | 35.1        |
| **Medical treatment time (min)** | | |
| <5 (1)                | 88        | 2.6         |
| 5 - 10 (2)            | 2474      | 73.6        |
| >10 (3)               | 801       | 23.8        |
| **Living**            |           |             |
| Individual (1)        | 419       | 12.5        |
| With spouse (2)       | 2175      | 64.7        |
| With children (3)     | 315       | 9.4         |
| With spouse and children (4) | 447 | 13.3     |
Table 2. General situation of community care needs.

| Dimension          | Number of items | Score range | Score     |
|--------------------|-----------------|-------------|-----------|
| Health promotion   | 8               | 8 - 40      | 20.69 ± 6.215 |
| Disease prevention | 7               | 7 - 35      | 20.29 ± 3.952 |
| Disease care       | 7               | 7 - 35      | 20.40 ± 5.757 |
| Overall needs      | 22              | 22 - 110    | 61.39 ± 11.676 |

general disease care (72.8%), nutrition and diet (69.5%), community emergency rescue (68.8%) and dynamic management of filing information (67.4%) as shown in Table 3.

3.3. Comparative Analysis of Community Care Needs of the Elderly

Table 4 showed the influence of different factors on the community care needs of the elderly. The factors related to the needs of the elderly for health promotion were age, chronic diseases, medical treatment time, living, EQ-5D, ADL. Some factors related to the needs of the elderly for disease prevention were as follows: age, education level, EQ-5D, ADL. The factors related to the needs of the elderly for disease care were age, family annual income, chronic diseases, medical treatment time, living, EQ-5D, ADL. Some factors related to the needs of the elderly for overall needs were as follows: age, family annual income, chronic diseases, medical treatment time, living, EQ-5D, ADL.

3.4. Influencing Factors of Community Care Needs of the Elderly

As shown in Table 5, we used multiple stepwise linear regression models to test the factors that affect the community care needs of the elderly. The collinearity diagnosis results showed that the model was not collinear (Tolerance, TOL > 0.9; Variance Inflation Factor, VIF < 1.2). The linear trend test of scatter plot of continuous variables shows that the linear relationship is good, which can be directly introduced into the equation. The test level α of the regression equation was 0.05, and the α of the elimination equation was 0.10.

The results showed that as follows: Community care needs of the elderly in health promotion dimension = 23.079 + 2.019 × EQ-5D + 0.479 × medical treatment time; Community care needs of the elderly in disease prevention dimension = 22.006 + 0.836 × ADL + 0.208 × education level + 0.342 × EQ-5D; Community care needs of the elderly in disease care dimension = 25.12 − 3.452 × chronic + 0.825 × medical treatment time + 0.757 × EQ-5D + 0.159 Income; Community care needs of the elderly in overall needs = 68.029 − 3.482 × chronic + 2.909 × EQ-5D + 1.436 × medical treatment time.

4. Discussion

As the elderly grow older, their physical functions decline, and the probability of
| Dimension/Items                          | No     | Neutral | Yes    | Frequency (%) | Frequency (%) | Frequency (%) |
|-----------------------------------------|--------|---------|--------|---------------|---------------|---------------|
| Health promotion                        |        |         |        |               |               |               |
| Nutrition and diet                      | 713    | 315     | 2335   | 21.2          | 9.4           | 69.5          |
| Exercise                                | 1055   | 458     | 1850   | 31.4          | 13.6          | 55.0          |
| Sleep                                   | 1504   | 561     | 1398   | 44.7          | 16.7          | 38.6          |
| Health education                        | 2526   | 440     | 397    | 75.1          | 13.2          | 11.8          |
| Family and personal hygiene             | 1850   | 387     | 1126   | 55.0          | 11.5          | 33.5          |
| Sanitation                              | 2056   | 444     | 863    | 61.1          | 13.2          | 25.6          |
| Behavior and safety                     | 1484   | 377     | 1502   | 44.1          | 11.2          | 44.6          |
| Psychological counseling                | 2168   | 560     | 635    | 64.5          | 16.7          | 18.9          |
| Disease prevention                      |        |         |        |               |               |               |
| Regular health assessment               | 88     | 38      | 3237   | 2.6           | 1.1           | 96.2          |
| Community health diagnosis (assistance) | 1488   | 680     | 1195   | 44.2          | 20.2          | 35.6          |
| Chronic disease prevention propaganda   | 1749   | 1296    | 318    | 52.0          | 38.5          | 9.5           |
| Infectious disease prevention education | 2181   | 486     | 695    | 64.9          | 14.5          | 20.7          |
| Self-monitoring guidance               | 589    | 250     | 2524   | 17.5          | 7.4           | 75.1          |
| vaccine                                 | 2045   | 488     | 829    | 60.8          | 14.5          | 24.6          |
| Dynamic management of filing information| 690    | 406     | 2267   | 20.5          | 12.1          | 67.4          |
| Disease care                           |        |         |        |               |               |               |
| General disease care                    | 619    | 295     | 2449   | 18.4          | 8.8           | 72.8          |
| Care of senile syndrome                 | 1569   | 651     | 1143   | 46.7          | 19.4          | 34.0          |
| Care of chronic diseases                | 1183   | 486     | 1694   | 35.2          | 14.5          | 50.4          |
| Community emergency rescue              | 760    | 289     | 2314   | 22.6          | 8.6           | 68.8          |
| Rehabilitation care for the disabled elderly | 1748   | 359     | 1265   | 52.0          | 10.7          | 37.3          |
| Long-term care for disabled elderly     | 1330   | 288     | 1745   | 39.5          | 8.6           | 51.9          |
| Traditional Chinese medicine care       | 1900   | 440     | 1023   | 56.5          | 13.1          | 30.4          |
Table 4. Comparative analysis of community care needs of the elderly ( X ± SD).

| Variables                  | Health promotion | Disease prevention | Disease care | Overall needs |
|----------------------------|------------------|-------------------|-------------|--------------|
| **Gender**                 |                  |                   |             |              |
| Male (1)                   | 20.56 ± 6.224    | 20.28 ± 3.887     | 20.58 ± 5.644 | 61.63 ± 11.426 |
| Female (2)                 | 20.79 ± 6.208    | 20.31 ± 3.973     | 20.26 ± 5.836 | 61.36 ± 11.859 |
| t                          | 1.103            | 0.215             | 1.590       | 0.463        |
| **Age (year)**             |                  |                   |             |              |
| 60 - 64 (1)                | 20.77 ± 6.284    | 20.56 ± 3.896     | 20.35 ± 5.643 | 61.68 ± 11.512 |
| 65 - 69 (2)                | 20.25 ± 6.013    | 20.08 ± 3.930     | 19.88 ± 5.823 | 60.21 ± 11.513 |
| 70 - 74 (3)                | 20.59 ± 6.123    | 20.10 ± 3.893     | 20.61 ± 5.728 | 61.30 ± 11.497 |
| 75 - 79 (4)                | 21.18 ± 6.353    | 20.35 ± 4.086     | 20.97 ± 5.875 | 62.49 ± 12.521 |
| >80 (5)                    | 21.23 ± 6.214    | 20.40 ± 3.889     | 20.84 ± 5.690 | 62.47 ± 11.363 |
| F                          | 2.528*           | 2.309*            | 3.721**     | 4.230**      |
| **Education level**        |                  |                   |             |              |
| Primary school (1)         | 20.73 ± 6.277    | 20.14 ± 3.864     | 20.30 ± 5.786 | 61.18 ± 11.836 |
| Middle school (2)          | 20.52 ± 6.154    | 20.32 ± 4.050     | 20.40 ± 5.744 | 61.25 ± 11.685 |
| Above middle school (3)    | 20.79 ± 6.141    | 20.66 ± 3.947     | 20.62 ± 5.703 | 62.09 ± 11.236 |
| F                          | 0.476            | 4.397*            | 0.766       | 1.564        |
| **Medical insurance**      |                  |                   |             |              |
| Yes (1)                    | 20.67 ± 6.233    | 20.29 ± 3.927     | 20.38 ± 5.766 | 61.35 ± 11.698 |
| No (2)                     | 21.39 ± 5.414    | 20.46 ± 4.317     | 20.82 ± 5.393 | 62.65 ± 10.776 |
| t                          | 1.011            | 0.391             | 0.685       | 1.008        |
| **Family Annual Income**   |                  |                   |             |              |
| (RMB/ person)              |                  |                   |             |              |
| <10,000 (1)                | 20.87 ± 6.368    | 20.54 ± 3.865     | 21.32 ± 5.396 | 62.75 ± 11.738 |
| 10000 - 20000 (2)          | 20.46 ± 5.990    | 20.16 ± 3.917     | 19.76 ± 5.947 | 60.39 ± 11.948 |
| 20,000 - 30,000 (3)        | 20.72 ± 6.204    | 20.07 ± 4.080     | 20.30 ± 5.880 | 61.10 ± 11.774 |
| 30,000 - 40,000 (4)        | 20.84 ± 6.144    | 20.46 ± 3.839     | 20.60 ± 5.593 | 61.91 ± 10.920 |
| >40,000 (5)                | 20.51 ± 6.403    | 20.33 ± 3.900     | 19.91 ± 5.785 | 60.76 ± 11.684 |
| F                          | 0.591            | 1.921             | 7.938***    | 4.494**      |
| **Chronic diseases**       |                  |                   |             |              |
| Yes (1)                    | 20.89 ± 6.153    | 20.23 ± 3.874     | 21.63 ± 5.338 | 62.76 ± 11.342 |
| No (2)                     | 20.31 ± 6.316    | 20.42 ± 4.053     | 18.04 ± 5.794 | 58.78 ± 11.869 |
| t                          | 2.588**          | 1.387             | 17.534***   | 9.506***     |
Continued

### Medical treatment time (min)

|   |   |   |   |
|---|---|---|---|
|   |   |   |   |
| <5 (1) | 19.88 ± 6.085 | 20.11 ± 4.155 | 19.02 ± 5.871 | 59.02 ± 12.284 |
| 5 - 10 (2) | 20.89 ± 6.251 | 20.36 ± 3.831 | 21.07 ± 5.515 | 62.33 ± 11.208 |
| >10 (3) | 21.28 ± 6.206 | 20.38 ± 3.864 | 20.73 ± 5.800 | 62.40 ± 11.418 |

**F** 12.924*** 1.428 41.209*** 28.775***

### Living

|   |   |   |   |
|---|---|---|---|
|   |   |   |   |
| Individual (1) | 21.68 ± 6.168 | 11.96 ± 4.025 | 20.85 ± 5.609 | 62.51 ± 11.557 |
| With spouse (2) | 20.51 ± 6.141 | 20.31 ± 3.947 | 20.14 ± 5.776 | 60.97 ± 11.546 |
| With children (3) | 20.11 ± 6.386 | 20.13 ± 3.727 | 20.24 ± 5.756 | 60.49 ± 12.060 |
| With spouse and children (4) | 20.98 ± 6.408 | 20.65 ± 3.933 | 21.29 ± 5.710 | 62.93 ± 12.011 |

**F** 4.305*** 1.795 4.508*** 4.095**

### EQ-5D

|   |   |   |   |
|---|---|---|---|
|   |   |   |   |
| No problem (1) | 19.90 ± 6.125 | 20.24 ± 3.831 | 19.83 ± 5.817 | 59.98 ± 11.463 |
| Have a problem (2) | 22.06 ± 6.155 | 20.38 ± 4.113 | 21.38 ± 5.515 | 63.82 ± 11.647 |

**t** 9.823*** 5.934* 7.686*** 9.297***

### ADL

|   |   |   |   |
|---|---|---|---|
|   |   |   |   |
| Complete self-care (1) | 20.32 ± 6.382 | 21.05 ± 4.422 | 19.91 ± 6.010 | 61.35 ± 12.719 |
| A little self-care (2) | 20.72 ± 6.142 | 20.05 ± 3.715 | 20.47 ± 5.658 | 61.25 ± 12.279 |
| Great dependence (3) | 22.29 ± 5.952 | 19.91 ± 3.895 | 21.26 ± 5.478 | 63.47 ± 11.450 |
| Complete dependence (4) | 24.06 ± 6.394 | 19.33 ± 4.253 | 23.80 ± 5.523 | 67.20 ± 11.597 |

**F** 5.683*** 14.265*** 5.768*** 3.416*

*P < 0.05, **P < 0.01, ***P < 0.001. EQ-5D, EuroQol Five Dimensions Questionnaire; ADL, Activity of Daily Living.

### Table 5. Multiple stepwise linear regression analysis.

|   |   |   |   |
|---|---|---|---|
|   |   |   |   |
| Dimension/Variables | β | Standardization Coefficients | t |
|   |   |   |   |
| **Health promotion** |   |   |   |
| Constant | 23.079 | 44.907*** |   |
| EQ-5D | 2.029 | 0.157 | 9.104*** | 0.968 1.033 |
| Medical treatment time | 0.479 | 0.056 | 3.239*** | 0.968 1.033 |

| **Disease prevention** |   |   |   |
| Constant | 22.006 | 54.765*** |   |

Collinearity Diagnosis

|   |   |
|---|---|
| **TOL** | **VIF** |
|   |   |

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|                | Coefficient | Standard Error | t-value | p-value | Lower | Upper |
|----------------|-------------|----------------|---------|---------|-------|-------|
| ADL            | 0.836       | 0.110          | -6.239***| 0.952   | 1.051 |
| Education level| 0.208       | 0.042          | 2.406*  | 0.982   | 1.018 |
| EQ-5D          | 0.342       | 0.042          | -2.388* | 0.957   | 1.045 |
| Disease care   |             |                |         |         |       |       |
| Constant       | 25.12       |                |         |         |       |       |
| Medical treatment time | 0.825   | 0.104          | 6.266***| 0.940   | 1.034 |
| EQ-5D          | 0.757       | 0.063          | -3.762***| 0.940   | 1.064 |
| Income         | 0.159       | 0.037          | -2.268* | 0.995   | 1.005 |
| Overall needs  |             |                |         |         |       |       |
| Constant       | 68.029      |                |         |         |       |       |
| Medical treatment time | 1.436   | 0.089          | 5.224***| 0.967   | 1.034 |

*P < 0.05, **P < 0.01, ***P < 0.001.

Some basic chronic diseases of the elderly also increases significantly. Therefore, the elderly have a high demand for community care [4]. Community care is an important part of community health service. As a set of multi-level and comprehensive service system, its influencing factors are also very complicated [5]. In the actual statistical analysis process, due to the complex relationship among various factors, there might be interaction, which would affect the judgment of the overall result. In order to control the interaction among various factors of community care needs and find out the main influencing factors of community care needs of the elderly in urban communities, multiple linear regression analysis was carried out. Specifically, this study has the following valuable findings.

The scores of nursing needs in each dimension from high to low were health promotion, disease care and disease prevention. It might be that the elderly are too negligent about healthy lifestyle and preventive measures in their daily life. They rush to see a doctor only when the symptoms of discomfort are obvious, and they expect to get more knowledge about disease prevention in the process of receiving disease care. According to the proportion of needs, the top six items of community nursing needs were regular health assessment, self-health monitoring guidance, general disease care, nutrition and diet, community emergency rescue, and dynamic management of filing information, which was similar to the research results of Jin L [6] and others. The nursing needs in the top six places were all more than 60%, which showed that people’s health awareness is enhanced and more and more people pay attention to their own health problems [7]. Therefore, community health service centers should focus on health promo-
tion projects, enhance the self-care and safety awareness of the elderly, and promote their physical and mental health; At the same time, institutions should carry out project services according to the needs of the elderly, especially health assessment, self-health monitoring guidance and general disease care, are carried out, so that every elderly person in the jurisdiction can truly feel the community health service.

The influencing factors of community care needs in health promotion dimension were medical treatment time and EQ-5D. The longer the medical treatment time, the worse the Activity of Daily Living of the elderly, and the higher the care needs for health promotion. The influencing factors of community care needs in disease prevention dimension were education level, ADL and EQ-5D. The worse the self-care ability and Activity of Daily Living, and the higher the education level of the elderly, the higher the care needs for disease prevention. The influencing factors of community care needs in disease care dimension were income, chronic, medical treatment time, ADL and EQ-5D. The worse the Activity of Daily Living, the longer the medical treatment time, the higher the income of the elderly and the elderly suffering from chronic, the higher the needs for disease care. It was basically consistent with the research results of Wang H [8], Zhang Z [9] and Wu Y [10]. Therefore, community health service centers could provide community care for different dimensions according to different influencing factors, e.g. it provides all-round care for the elderly with worse quality of life; provides care for the elderly with poor self-care ability and higher education level in disease prevention; and provides disease care needs for the elderly with higher income and chronic diseases.

The influencing factors of community care needs in overall needs were chronic, medical treatment time and EQ-5D. The worse the Activity of Daily Living, the longer the medical treatment time of the elderly and the elderly suffering from chronic, the higher the overall needs for community care. Therefore, community health service centers could carry out overall community service projects for the elderly with chronic diseases, long medical treatment time and poor quality of life. At the same time, it should provide first-class community medical care and community nursing services for the elderly, and improve the quality of life of the elderly [11].

To sum up, the urban elderly have diverse and deep-seated community nursing needs, and we need to gradually improve the community nursing service system to meet the actual needs of the elderly. This study has important theoretical and practical significance for promoting the continuous, personalized and comprehensive community nursing service based on the health management of the elderly, promoting the sustainable development of community nursing service for the elderly and promoting the health of the elderly.

This study has several limitations that should be mentioned. First of all, this study obtained the information of the study subject through a questionnaire, and information bias might be introduced during the respondent’s self-report. For example, the ADL and EQ-5D scales are self-report-based screening tools rather
than clinical diagnostic measures, which may deviate from the actual situation. Besides, this study is a cross-sectional design, caution should be taken when interpreting the findings, and it may be difficult to confirm the causal relationships of depressive symptoms and their determinants.

5. Conclusion

Community care needs of the urban elderly in Shandong Province are at a medium level and have many influencing factors. The scores of each dimension from high to low are health promotion, disease care and disease prevention. In community nursing work, we should meet the care needs of the elderly, we need to enhance elderly self-care and safety awareness and promote the physical and mental health of the elderly.

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Conflicts of Interest

All authors declare that they do not have any conflict of interest on this research.

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