# The Investigation and Analysis on the Self-efficacy of the Elderly Diabetes Patients in the Community

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**Abstract:** In order to investigate the current situation and influence factors on the self-efficacy of the elderly diabetes patients in the community. 364 elderly patients with diabetes were questioned by using the diabetes self-efficacy scale. The total score of the diabetes patients is(81.39±17.75)，the scores of the five factors are dietary self-efficacy(19.12±5.12), exercise self-efficacy(12.37±3.09)，drug self-efficacy(10.28±3.73),the self-efficacy of blood glucose monitoring(11.73±4.35), the self-efficacy of the prevention and treatment of foot care and high and low blood glucose(27.90±9.01). The influence factors like economic sources，occupations before retirement，times of hospitalization and medical sources have effect on the self-efficacy. The level of the self-efficacy of the elderly diabetes patients in the community of Changchun city is on the medium level，need to further improve， the self-efficacy of blood glucose monitoring is worse. Therefore，the nursing staff in the community should carry out the health education about diabetes actively，help the patients learn the self-management knowledge and skill，at the same time improve the self-efficacy.

## 1. Introduction

The incidence of diabetes mellitus in China is 2.5% and is increasing at the rate of 10% per year. Diabetes mellitus is a lifelong chronic disease. Controlling blood sugar requires not only comprehensive treatment, but also long-term good self-management [1]. Self-efficacy refers to an individual's subjective judgment of his or her ability to perform a particular behavior, that is, the individual's confidence in his or her ability to perform a specific behavior and achieve the desired results [2]. Bandura, an American psychosociologist, argues that the stronger the perceived expectation of effectiveness, the harder the individual will take measures to solve the problem. Therefore, self-efficacy is a good predictor of behavior [3]. The improvement of self-efficacy is helpful to promote patients to adopt a positive way to cope with the disease and promote patients' self-management behavior. This study investigated the self-efficacy of elderly diabetic patients in community and analyzed its influencing factors.

## 2. Object and Method

### 2.1 Research object

From April to October 2015, a questionnaire survey was conducted among elderly diabetic patients in Changchun community. 364 patients with type 2 diabetes mellitus aged 60 and over who took medicine for more than 3 months in 6 community health service centers were investigated by convenience sampling method.

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### 2.2 Research tool

(1) Self-compiled general situation questionnaire: designed by the researcher, mainly including age, sex, spouse or not, living condition, education level, monthly income, financial source, pre-retirement occupation, duration of disease, combined with chronic diseases, types of hypoglycemic drugs, hospitalization times, sources of medical expenses, etc. (2) Diabetes Self-efficacy Scale[4, 5]: the scale consists of 26 items and 5 dimensions. The final score ranged from 26 to 130. The higher the score, the better the self-efficacy is. The scale has good reliability and validity.

### 2.3 Quality control

Conduct unified training for investigators, explain the relevant indicators in the process of investigation, reduce the concerns of the respondents, ensure the authenticity of the questionnaire, and do a good job of questionnaire recovery. A total of 400 questionnaires were issued and 364 valid questionnaires were collected, with a recovery rate of 91%.

### 2.4 Statistical method

With Excel as the input of the original data, the data were preliminarily checked and sorted out. SPSS16.0 software was used for statistical analysis. The statistical methods included descriptive statistics, t-test, variance analysis and multiple regression analysis.

## 3. Results

### 3.1 Basic information of the respondents

A total of 364 elderly diabetic patients in community were investigated, including 164 males (45.1%) and 200 females (54.9%); 162 (44.5%) aged 60-69 years, 146 (40.1%) aged 70-79 years, 56 (15.4%) aged over 80 years; 189 (51.9%) with junior middle school education, 106 (29.1%) with senior high school or secondary school education, 39 (29.1%) with college education, 30 (8.2%) with undergraduate education and above. There were 260 cases (71.4%) from retirement pension, 62 cases (17.0%) from relatives and 42 cases (11.5%) from others; 117 cases (32.1%) from cadres before retirement, 156 cases (42.9%) from workers, 39 cases (10.7%) from farmers and 52 cases (14.3%)from others; 148 cases (40.7%) without hospitalization, 131 cases (36.0%) with 1 to 2 times in hospital, 85 cases (23.4%) with 3 times and above; 101 cases (27.4%) were public fees, 44 (12.1%) were self-expenditure, 79 (21.7%) were partial self-expenditure and 140 (38.5%) were medical insurance.

### 3.2 Basic Situation of Self-efficacy of Elderly Diabetic Patients in Community

The total score of self-efficacy of diabetic patients was (81.39±17.75). The five factors from high to low were self-efficacy of foot care and prevention and treatment of hypoglycemia (27.90±9.01), dietary self-efficacy (19.12±5.12), exercise self-efficacy (12.37±3.09), blood sugar monitoring self-efficacy (11.73±4.35), drug self-efficacy (10.28±3.73). See Table 1.

Table 1. Overall score of self-efficacy in diabetic patients ($\bar{x} \pm s$)

| Factors | Minimum | Maximum | Scores |
|---|---|---|---|
| dietary self-efficacy | 6 | 30 | 19.12 ± 5.12 |
| exercise self-efficacy | 4 | 17 | 12.37 ± 3.09 |
| drug self-efficacy | 3 | 15 | 10.28 ± 3.73 |
| blood sugar monitoring | 4 | 20 | 11.73 ± 4.35 |
| foot care and prevention and treatment of hypoglycemia | 9 | 45 | 27.90 ± 9.01 |
| generalized self-efficacy | 31 | 123 | 81.39±17.75 |

### 3.3 Single factor analysis of self-efficacy of elderly diabetic patients in community

There were significant differences in four variables (P < 0.05), including economic source, pre-retirement occupation, hospitalization times and medical expenses. See Table 2.

Table 2. Single factor analysis of self-efficacy of elderly diabetic patients in community（$\bar{x} \pm s$）

| Variable | Classification | n | Self-efficacy | *t/F* | *P* |
|---|---|---|---|---|---|
| Economic source | Pension | 260 | 83.14±17.37 | 6.772 | 0.001 |
| | Relatives provide | 62 | 74.05±18.37 | | |
| | Other | 42 | 81.40±16.80 | | |
| Preretirement Career | Cadre | 116 | 85.04±16.93 | 2.872 | 0.036 |
| | Worker | 157 | 80.55±17.50 | | |
| | Farmer | 39 | 79.23±16.07 | | |
| | Other | 52 | 77.38±20.41 | | |
| hospitalization times | Never | 148 | 83.30±16.63 | 3.138 | 0.045 |
| | once or twice | 131 | 81.85±19.76 | | |
| | 3 times or over | 85 | 77.35±15.82 | | |
| medical expenses | Free | 101 | 79.16±16.24 | 12.13 | <0.001 |
| | Self-expenditure | 44 | 70.27±19.09 | | |
| | Partial self-expenditure | 79 | 80.41±14.21 | | |
| | Medical insurance | 140 | 87.05±18.21 | | |

### 3.4 Multivariate analysis of self-efficacy of elderly diabetic patients in community

Self-efficacy was taken as dependent variables. Four significant variables, including economic source, pre-retirement occupation, number of hospitalizations and source of medical expenses, were taken as independent variables. Multiple linear regression analysis was carried out in the model. Dumb variables were set as a whole by multi-classified disorder variables and integrated into the equation at the same time. The assignment of independent variables was shown in Table 3.

Table 3. Independent variable assignment

| independent variable | mutator methods |
|---|---|
| Economic source | |
| Economic source 1 | 0= Other / Relatives provide，1= Pension |
| Economic source 2 | 0= Other / Pension，1= Relatives provide |
| Preretirement Career | |
| Preretirement Career 1 | 0= Other / Worker / Farmer，1= Cadre |
| Preretirement Career 2 | 0= Other / Cadre / Farmer，1= Worker |
| Preretirement Career 3 | 0= Other / Cadre / Worker，1= Farmer |
| hospitalization times | 1= Never，2= once or twice，3=3 times or over |
| medical expenses | |
| medical expenses 1 | 0= Free / Partial self-expenditure / Medical insurance，1= Self-expenditure |
| medical expenses 2 | 0= Free / Self-expenditure / Medical insurance，1= Partial self-expenditure |
| medical expenses 3 | 0= Free / Partial self-expenditure / Self-expenditure，1= Medical insurance |

In addition to the three factors of forced entry (source of income, pre-retirement occupation, source of medical expenses), the number of hospitalizations had an impact on self-efficacy of diabetic patients, as shown in Table 4.

Table 4. Multivariate regression analysis of influencing factors on self-efficacy of elderly diabetic patients in community

| independent variable | *R* | $R^2$ | *F* | *B* | *SE* | *Beta* | *t* | *P* |
|---|---|---|---|---|---|---|---|---|
| Equation model | 0.398 | 0.158 | 7.383 | | | | | |
| Economic source 1 | | | | -0.896 | 3.279 | -0.023 | -0.273 | 0.785 |
| Economic source 2 | | | | -7.146 | 3.398 | -0.151 | -2.103 | 0.036 |
| Preretirement Career 1 | | | | 8.075 | 3.087 | 0.191 | 2.615 | 0.009 |
| Preretirement Career 2 | | | | 2.491 | 2.602 | 0.070 | 0.957 | 0.339 |
| Preretirement Career 3 | | | | 0.070 | 1.606 | 0.003 | 0.043 | 0.965 |
| medical expenses 1 | | | | 1.008 | 1.526 | 0.035 | 0.660 | 0.510 |
| medical expenses 2 | | | | 11.116 | 2.737 | 0.260 | 4.062 | <0.001 |
| medical expenses 3 | | | | 13.631 | 2.141 | 0.374 | 6.367 | <0.001 |
| hospitalized times. | | | | -4.784 | 1.230 | -0.211 | -3.888 | <0.001 |

As shown in Table 3, in the multivariate analysis of influencing self-efficacy of diabetic patients, economic source 1~2, pre-retirement occupation 1~3, medical cost source 1~3, hospitalization times entered the equation. The partial regression coefficients of variables were -0.896, -7.146, 8.075, 2.491, 0.070, 1.008, 11.116, 13.631 and -4.784, respectively. From the standardized partial regression coefficient, the influencing factors of the above variables were source of medical expenses 3, source of medical expenses 2, number of hospitalizations, pre-retirement occupation 1, source of economy 2, pre-retirement occupation 2, source of medical expenses 1, source of economy 1, pre-retirement occupation 3. The coefficient of determination R2 = 0.158 , this indicated that it could predict 15.8% variability of self-efficacy in diabetic patients. Among them, the partial regression coefficients of pre-retirement occupations and medical expenses sources were positive, indicating that these two variables had a positive predictive effect on self-efficacy of diabetic patients; the partial regression coefficients of economic sources and hospitalization times were negative, indicating that these two variables had a negative predictive effect on self-efficacy of diabetic patients.

## 4. Disscusion

The total score of self-efficacy and each factor score of diabetic patients were obtained. The average score of self-efficacy of diabetic patients was 81.39 (62.6%), which was lower than that of Aixia Ma[6] (68.0%). The scores of five factors were: dietary self-efficacy 19.12 (63.7%), exercise self-efficacy 12.37 (61.9%), drug self-efficacy 10.28 (68.5%) and blood glucose monitoring self-efficacy 11.73 (58.7%). Self-efficacy of foot care and prevention and treatment of hyperglycemia and hypoglycemia was 27.90% (62%). It shows that the self-efficacy level of elderly diabetic patients in community is on the medium level, and the self-efficacy of blood sugar monitoring is poor, which is consistent with the results of Jie Wei [7]. Brassington [8] research shows that people with high self-efficacy are better able to overcome difficulties, keep exercising, and people with high self-efficacy will choose higher health goals and work harder to achieve health goals. Therefore, in the process of community health education, by improving the self-efficacy of the elderly in the community, to help the elderly adopt positive and correct decision-making in self-management, and adopt healthy behavior to enhance their health [9].

According to the analysis of this study, the factors influencing self-efficacy of elderly diabetic patients are economic sources, pre-retirement occupation, hospitalization times and medical

expenses. Therefore, community nursing workers and managers should pay more attention to the above factors when they implement diabetes management, in order to improve the self-efficacy of elderly diabetic patients in the community. The self-efficacy score of patients provided by relatives is low. Community nurses should encourage some elderly people who have the ability to do some work in their spare time after retirement, not relying on the financial support provided by their children and relatives, not only to exercise, but also to increase self-confidence in their work, so as to adopt a positive way to deal with diseases and improve self-efficacy. To actively carry out community health lectures and other knowledge propaganda to help patients improve self-efficacy while learning self-management knowledge and skills; payment of medical fees has a great impact on self-efficacy of elderly diabetic patients. Community nursing workers and managers should focus on those elderly diabetic patients who do not have medical insurance at their own expense and encourage them to participate in medical treatment. Medical insurance should set up the idea that patients with minor illness should go to the community and those with serious illness should go to the hospital, reduce the number of hospitalizations, and strengthen their confidence to overcome the illness so as to improve their self-efficacy.

The self-efficacy level of elderly diabetic patients in community is on the medium level, which is related to many factors. The change process should go through the stage of "obedience, assimilation and internalization" attitude change, and follow the behavior change mode of "knowledge, faith and action" of health education. Implementing self-management model of diabetes based on patient's active participation, the core of this model is to stimulate the subjective initiative of diabetic patients. Therefore, community health service centers should intensify community mobilization, give lectures on health education of diabetes-related knowledge, formulate reasonable and feasible intervention measures, and improve medical service system and medical insurance reimbursement system, so as to minimize the number of hospitalizations for elderly diabetic patients in the community, improve the community health and recreational facilities, provide the reasonable conditions and environment for elderly fitness, and enhance the confidence in overcoming diseases, thereby slowing down the development of diabetes and reducing complications.

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