Int J Clin Exp Med 2016;9(2):4380-4387
www.ijcem.com /ISSN:1940-5901/IJCEM0017591

Original Article

Quality of life, disease recognition and care-seeking intention in women with urinary incontinence: an observational study in China

Changqin Jiang, Ming Xu, Li Zhang, Cheng Yang, Chaozhao Liang

Department of Urology, The First Affiliated Hospital of Anhui Medical University and Institute of Urology, Anhui Medical University, Hefei, Anhui, China

Received October 10, 2015; Accepted December 25, 2015; Epub February 15, 2016; Published February 29, 2016

Abstract: Objective: The aim of this study was to evaluate the quality of life, awareness of UI, and influential factors of care-seeking intention of women with urinary incontinence in China. Methods: From April 2013 to November 2013, subjects were selected from four cities in Anhui province, China. They participated in this survey by completing a detailed verbal questionnaire regarding their demographic data, medical history, and the International Consultation on Incontinence Questionnaire for Urinary Incontinence-Short Form questionnaire (ICIQ-UI-SF) and incontinence quality of life (I-QOL) questionnaire. Results: 1,653 women were recruited in this study, and 60.48% of the women with UI did not seek medical advice, and the major reasons for women without care-seeking intention were assuming UI as a normal phenomenon (58.0%) and embarrassment (27.33%). Positive factors for promoting care-seeking among patients with UI included the in-depth disease recognition, urge UI (UUI), mixed UI (MUI), and higher educational level. Conclusions: QOL in women with SUI was better than those with UUI and MUI. Almost half of the patients had limited knowledge about UI. The influential factors regarding to care-seeking intention among patients with UI was associated with disease recognition, embarrassment, assuming UI as a normal phenomenon, the type of UI, and educational level.

Keywords: Quality of life, disease recognition, care-seeking intention, urinary incontinence

Introduction

UI is the complaint of any involuntary leakage of urine and is also a worldwide public-health problem [1]. Studies indicate an estimated 8.2% of the 2008 worldwide population was affected by UI. By 2018, 21.6% of the individuals will be affected by UI. The age standardized prevalence of urinary incontinence in women in the combined surveys was significantly higher than that in men. Specifically, the prevalence of urinary incontinence peaks at age 50-54. The variation in prevalence rates might be related to differences in the studied populations, methods of data collection, and definitions of UI [2-4]. Although urinary incontinence was not life-threatening, it affected a woman's ability to take part in a variety of recreational and social activities, and had negative psychological effects. In addition, urinary incontinence increased the economic burden of the patients as well as the society, especially in developing regions [2-5]. Urinary incontinence was a frequent problem of women that affect negatively their quality of life, whose extent differed because of social and cultural factors [6]. UI can affect the social, psychological, domestic, occupational, physical, and sexual aspects of patients' lives [8-10]. In the study, Mixed UI was the one that had the greatest impact on their QOL, whereas the mixed and stress types had the greatest impact on their sexual function [7]. Although QOL was impaired in women with UI, their care-seeking intention was low [8]. It was revealed that improvement of quality of life, reduction of anxiety and depression in patients with stress urinary incontinence could be achieved by surgery [9]. Although adequate treatment is available, intention of care-seeking is still low [10].

The study of European and North American countries found the care-seeking rate of UI was 12%~53%, and the care-seeking rate of female is lower than that of male [8, 11]. Due to the

social and cultural background, some patients of UI had different degree of shame and embarrassment, thus hindering their intention of care-seeking [12]. Many women assumed UI as a symptom or condition that was a normal part of aging or that could be explained by parturition, thus did not need treatment by a medical provider [13, 14]. There was no study to evaluate the quality of life and status of care-seeking of women with UI in china. Moreover, Chinese women is influenced by traditional concepts and ethics, so some of them were conservative, less educated, and possessed limited medical knowledge. Therefore, in this study we investigated these issues in the Anhui province of China.

Materials and methods

Subjects

This cross-sectional correlation study was conducted from September to November 2013. Anhui is a province of China with more than 68 million inhabitants, with a population demographically representative of the population throughout China. Based on the stratified sampling, four cities (Huaibei City, Anqing City, Chuzhou City and Luan City) were selected randomly to represent the northern, southern, eastern, and western parts of Anhui province, China. A total of 1,950 men were selected from the health examination center, which represented the women population of Anhui province in terms of population distribution across geographic regions, adage groups. The inclusion criteria were: 1. 18 years of age or older and living in the community for at least 1 year; 2. capable of understanding study procedures and research questions. The exclusion criteria were: 1. currently pregnant or gave birth within the past 3 months; 2. patients with pelvic organ prolapse; 3. current urinary tract infection, chronic inflammatory diseases such as the bladder calculi, pelvic cancer; 4. terminal illness/hospice care.

Study design and procedure

Since several subjective and sensitive personal questions were included in this study, a pre-survey was given to a small population (N = 30) to modify the originally designed items to ensure that the questionnaire was comprehensive and easily understood. This survey was reviewed and approved by the Anhui Medical University Research Subject review board. All women were informed about the study and confirmed verbal and written consent. The questionnaires were handed out to the subjects by the unified training investigators. The questionnaire collected the following data: (i) age, body mass index (BMI), educational, and history of gynecological operation; (ii) ICIQ-UI-SF questionnaire; (iii) I-QOL questionnaire. The reliability of these instruments (the ICIQ-UI-SF and I-QOL) was assessed with Cranach's alpha coefficient. The internal consistencies of the ICIQ-UI-SF and I-QOL were 0.80 and 0.82, respectively.

The Chinese version of the question 6 of the ICIQ-UI-SF was applied to assess the types of UI [15]. UUI describes a sudden urge to urinate, and sometimes urine is leaked before even getting to the toilet, the questionnaire to differentiate between prevalent UI types in women using question 4 as an indicator for urge (response to question 6.2, 6.4, 6.6). SUI is the most common type of incontinence, any increase in abdominal pressure (e.g. through coughing or sneezing) leads to the relaxation of the external urinary sphincter and results in leakage of urine from the bladder, stress (response to question 6.3, 6.5). Mixed incontinence occurs when the person has the symptoms of both stress and urge incontinence, mixed (response to question 6.2, 6.3, 6.4, 6.5, 6.6, simultaneously) or other (response to question 6.7, 6.8) types of incontinence [16].

A standard Chinese version of the I-QOL was used in this study [17]. Wagner, Patrick, Bavendam, Martin, and Buesching developed the first version of the I-QOL tool with 28 questions for the purpose of determining the QOL of patients with UI in the USA. Patrick et al. revised the tool and, in the development of the European version, decreased the number of questions to 22 following psychometric measurement analyses [18]. I-QOL questionnaire was developed to measure the specific impact of UI on HRQOL in women. I-QOL comprises 22 items that cover 3 domains or aspects of quality of life: social embarrassment, psychosocial impact, and avoidance and limiting behaviors. Items are scored on a 5-point Likert scale ranging from 1 (extremely) to 5 (not at all). Scores are then transformed to a range of 0 to 100;

Table 1. Demographic and other characteristics of the people with UI and without UI

Variables	All (N = 1653)	With UI (N = 248)	Without UI (N = 1405)	*P*	SUI (N = 158)	UUI (N = 51)	MUI (N = 39)	*P*
Age (years)**	48.89±13.49	47.30±15.25	49.18±13.14	0.069	47.30±15.27	44.71±12.89	51.23±17.45	0.130
BMI (kg/m^2)**	22.76±2.70	22.48±3.19	22.81±2.60	0.121	22.73±3.26	22.26±3.31	21.75±2.61	0.194
Educational level§				0.148				0.100
Elementary school	674 (40.77)	104 (41.94)	570 (40.57)		73 (46.20)	16 (31.37)	15 (38.46)	
Middle school	548 (33.15)	70 (28.23)	478 (34.02)		47 (29.75)	13 (25.49)	10 (25.64)	
High school or higher	431 (26.70)	74 (29.84)	357 (25.41)		38 (24.05)	22 (43.14)	14 (35.90)	
Gynecological operation§	504 (30.49)	104 (41.9)	400 (28.47)	< 0.001	67 (42.41)	19 (37.25)	18 (46.15)	0.684
Awareness of UI§				< 0.001				0.002
Yes	1072 (64.85)	116 (46.80)	956 (68.04)		87 (55.06)	18 (35.29)	11 (28.21)	
No	581 (35.15)	132 (53.23)	449 (31.96)		71 (44.94)	33 (64.71)	28 (71.79)	

**Data are expressed as the mean ± standard deviation; §Data are expressed as the number (percentage); Differences between with UI and without UI groups were assessed by Chi-square test or t-test; Differences among the three types of UI were assessed by ANOVA or chi-square test; UI = urinary incontinence; SUI = stress urinary incontinence; UUI = urge urinary incontinence; MUI = mixed urinary incontinence; I-QOL = Incontinence Quality of Life questionnaire; BMI = body mass index.

Table 2. Distribution of I-QOL scores and care-seeking intention according to the three types of UI

Variables	UI (N = 248)	SUI (N = 158)	UUI (N = 51)	MUI (N = 39)	*P*
I-QOL**					
Limiting behaviors	67.50±20.83	74.74±19.22†,‡	59.31±17.58*	50.48±20.83*	< 0.001
Psychosocial impacts	72.09±20.92	77.32±20.04†,‡	64.54±19.48*	60.75±19.09*	< 0.001
Social isolation	65.54±21.42	72.75±19.10†,‡	54.61±20.66*	50.64±17.55*	< 0.001
Total I-QOL	69.02±20.10	75.35±18.65†,‡	60.38±10.05*	54.72±16.82*	< 0.001
Care-seeking Intention§					< 0.001
Yes	98 (39.52)	44 (27.85)†,‡	30 (58.82)*	24 (61.54)*	
No	150 (60.48)	114 (72.15)†,‡	21 (41.18)*	15 (38.46)*	

**Data are expressed as the mean ± standard deviation; §Data are expressed as the number (percentage); *Significant difference compared with SUI; †Significant difference compared with UUI; ‡Significant difference compared with MUI; UI = urinary incontinence; SUI = stress urinary incontinence; UUI = urge urinary incontinence; MUI = mixed urinary incontinence; I-QOL = Incontinence Quality of Life questionnaire.

higher scores indicate better HRQOL. I-QOL is an internationally applied assessment with high reliability and acceptable in 30 languages, the I-QOL is widely used in clinical trials and has demonstrated responsiveness to clinical interventions [19, 20].

In addition, we have designed some questions. Do you know urine incontinence? The responses are 'yes' or 'no'. Do you think urine leakage needs help from health professionals such as doctors and nurses? It was a dichotomous variable with responses 'yes' or 'no'. What do you think about care-seeking of urine leakage? The answers are as following: 1. assuming urine leakage as a normal, no need for medical treatment phenomenon; 2. no cure for urine leakage, no effect for medical treatment; 3. embarrassed to visit a male doctor; 4. consulting a doctor actively.

Statistical analysis

All statistical analyses were performed using SPSS software (SPSS Inc., Chicago, IL, USA) version 16.0. Descriptive statistics were used to summarize the subject's characteristics. Data were expressed as mean ± standard deviation or number (percentage) when appropriate. Difference of demographic and other characteristics between with UI and without UI groups and among the three types of UI were assessed by independent t-test or chi-square test or ANOVA. Differences of I-QOL scores and care-seeking among the three types of UI were assessed by ANOVA or chi-square test. The chi-square test and multivariate logistic model was performed to determine independent risk factors for UI care-seeking. A *P*-value less than 0.05 was considered to be statistically significant.

Table 3. Factors associated with care-seeking intention in women with UI

Variables	UI (N = 248)	Care-seeking		$[X^2]$, *P*
		Yes (N = 98)	No (N = 150)	
Age (years)§				
18-44	115	58 (50.43)	57 (49.57)	[15.776], < 0.001
45-59	79	30 (37.97)	49 (62.03)	
≥ 60	54	10 (18.52)	44 (81.48)	
BMI (kg/m^2)§				
< 24	176	72 (40.91)	104 (59.09)	[0.492], 0.483
≥ 24	72	26 (36.11)	46 (63.89)	
Educational level§				
Elementary school	104	19 (18.27)	85 (81.73)	[34.501], < 0.001
Middle school	70	36 (51.43)	34 (48.57)	
High school or higher	74	43 (58.11)	31 (41.89)	
Gynecological operation§				
Yes	104	43 (41.35)	61 (58.65)	[0.025], 0.616
No	144	55 (38.19)	89 (61.81)	
Awareness of UI§				
Yes	105	72 (44.76)	60 (55.24)	[26.671], < 0.001
No	116	26 (22.41)	90 (77.59)	
Type of UI§				
SUI	158	44 (27.85)	114 (72.15)	[24.868], < 0.001
UUI	51	30 (58.82)	21 (41.18)	
MUI	39	24 (61.54)	15 (38.46)	

§Data are expressed as the number (percentage); UI = urinary incontinence; SUI = stress urinary incontinence; UUI = urge urinary incontinence; MUI = mixed urinary incontinence; BMI = body mass index.

Results

Demographic information

Of 1,950 people who met the inclusion criteria, 1,653 completed the questionnaire, yielding a response rate of 84.8% (1653/1950). The mean age and BMI were 48.89±13.49 years and 22.97±3.05 kg/m^2, respectively. Women discontinued the study for the following reasons: "withdrawal of consent" (n = 121), and "incomplete information" (n = 176). Among the entire female population, the prevalence of UI was 15.0% (284/1653). Proportion of the three types of UI was as follows: SUI, 63.70% (158/248); UUI, 20.60% (51/248); and MUI, 15.70% (39/248). Moreover, compared with the overall population of 1,653 women, the prevalence of the three UI subtypes was SUI, 9.56% (158/1653); UUI, 3.09% (51/1653); and MUI, 2.36% (39/1653). The proportion of awareness of UI in women with UI was 53.23%. A significant difference was found between women with and without the UI with respect to the gynecological operation, and awareness of UI ($P < 0.001$ for all). Similarly, there was also a significant difference among the three UI syndromes with respect to awareness of UI. The rates of awareness of UI in women with SUI were lower than those in women with other UI syndromes. Detailed demographic characteristics of all subjects are summarized in (**Table 1**).

Outcomes of I-QOL scores and care-seeking intention in women with the three types of UI

The women's total scores from the 22-item I-QOL were 69.02±20.10 and for domains of limiting behaviors, psychosocial impacts, social isolation were 67.5±20.83, 72.09±20.92, and 65.54±21.42, respectively. Total I-QOL score and for 3 domains showed a significant difference among three groups of UI ($P < 0.001$ for all). Total and domain scores of I-QOL in women with SUI were higher than those in women with other subtypes of UI ($P < 0.001$ for all), but there was no significant differences between the types of UUI and MUI ($P > 0.05$). 60.48% (150/248) of subjects never sought medical help from a health care provider. Their major reasons for not care-seeking were assuming UI as a normal phenomenon (58.0%), followed by embarrassment (27.33%). The percentage of women who had care-seeking had a significant difference among three types of UI ($P < 0.001$). The proportion of women who had care-seeking in SUI was lower than those in women with other subtypes of UI ($P < 0.001$) (**Table 2**).

Table 4. Risk factors revealed by multiple logistic regression for care-seeking intention in women with UI

Variables	OR	95% CI	*P*
Age (years)			
≥ 60	1		
45-59	1.30	0.47-3.57	0.609
18-44	1.25	0.40-3.87	0.698
Educational level			
Elementary school	1		
Middle school	4.51	1.79-11.41	0.001
High school or higher	4.50	1.75-11.53	0.002
Awareness of UI			
No	1		
Yes	2.98	1.61-5.50	< 0.001
Type of UI			
SUI	1		
UUI	3.13	1.52-6.44	0.002
MUI	3.82	1.64-8.88	0.002

UI = urinary incontinence; SUI = stress urinary incontinence; UUI = urge urinary incontinence; MUI = mixed urinary incontinence.

Factors associated with care-seeking intention in women with UI

The results showed that the proportion of care-seeking intention in UI patients was significantly associated with age (X^2 = 15.776, P < 0.001), educational level (X^2 = 34.501, P < 0.001), awareness of UI (X^2 = 26.671, P < 0.001), and type of UI (X^2 = 24.868, P < 0.001). However, the following factors did not show difference: BMI (X^2 = 0.492, P = 0.483), gynecological operation (X^2 = 0.025, P = 0.616) (**Table 3**). As reported in **Table 4**, multiple logistic regression showed that risk factors for the care-seeking intention among patients with UI included educational level of Middle school (OR 4.5, CI 1.79-11.41), or High school or higher (OR 4.50, CI 1.75-11.53), UI type of UUI (OR 3.13, CI 1.52-6.44), or MUI (OR 3.82, CI 1.64-8.88), and awareness of UI (OR 2.98, CI 1.61-5.50).

Discussion

This is the first population-based study to systematically evaluate the quality of life and influential factors of care-seeking intentions with UI in the Anhui province of China. In our study, in the I-QOL score of the three subscales in women with UI, psychosocial impact had higher scores overall, with lower scores for the sample for the social isolation subscales. The quality of life had a significant difference among three groups of UI. The quality of life in women with SUI was better than those in women with UUI and SUI. Three types of UI indicated a significant difference of intention for care-seeking. The proportion of women who had care-seeking in SUI was lower than those in women with other subtypes of UI. The type of UI, educational level, and disease recognition were the risk factors for the care-seeking among patients with UI.

In our study, the total I-QOL scores in women with UI were 65.54. Of the three subscales, psychosocial impact had higher scores overall (72.09), with lower scores for the sample for the social isolation subscales (65.54). Anifantaki et al. investigated urinary incontinence affected quality of life in women with UI, using the same questionnaire of quality of life. In Greek and Turkish, total I-QOL scores were 81.8 and 64.6, among which psychosocial impact had higher scores than other subscales [6]. Papanicolau et al. used the same questionnaire and evaluating I-QOL among incontinent women in France, Germany, Spain, and UK. The data indicated total I-QOL scores were 71.5, 73.5, 68.6, and 66.3, respectively. Of the three subscales, psychosocial impact had higher scores overall (89.6), with lower scores for the sample for the social isolation subscales (71.9). Results from their studies further confirmed our findings [21]. Therefore, it is necessary to understand quality of life and care-seeking intention of patient, and patients may benefit from early intervention and therapy. In our study, in addition to the comparison of the quality of life among three types of patients, we also carried out the comparison among different types of urinary incontinence. Quality of life in women with SUI was better than those in women with UUI and SUI. Women with stress UI may have more control over incontinent episodes and typically smaller amount of urine leakage, whereas women with urge UI are less able to predict and control micturition and have larger amounts of leakage and therefore, harder to handle [6].

In our study, 60.48% of subjects never sought medical help from a health care provider. Their major reasons for patients without care-seek-

ing intention were assuming UI as a normal phenomenon (58.0%), followed by embarrassment (27.33%). In a study of 429 United Arab Emirates women, Elbiss et al. determined social impact and healthcare-seeking behavior among women with urinary incontinence. Their study suggested 50.5% of the affected women did not seek medical advice, stating the following reasons: believed that UI was a normal occurrence among women (31.5%); embarrassed to visit a male or female clinician (35.9%) [22]. Urszula et al. identified barriers in entering treatment among women with urinary incontinence. The barriers in care-seeking were as follows: conviction that UI is not treated as it is a normal part of aging (56.7%), considering UI a transient condition, which "will pass on its own" (61.0%), Shame (53.2%) [23]. Only 39.52% of subjects sought medical help from a health care provider in our study. This may result from various social-cultural factors. With the influence of traditional Chinese culture, Chinese women may form a subtle, unobtrusive style of expressing emotion, interests and needs. In addition, Chinese people pay more attention to serious disease (such as cardiovascular and cerebrovascular diseases), they might not perceive UI as a health problem because UI is not life-threatening [24].

In addition to the analysis of the factors affecting care-seeking intention of patients with urinary incontinence, we also conducted a risk factor analysis in patients. General lack of knowledge about incontinence was declared by 46.8% of women in our study. The more in-depth awareness of UI can be used as the promotion factor for care-seeking intention in UI patients. The lack of knowledge about UI was often linked with a viewpoint that UI was not abnormal which needed to be treated. Once UI is assumed to be normal, those patients who experience UI were unlikely to discuss it, learn about treatment modalities, and seek relevant medical care. Similarly, due to the lack of awareness of UI, patients had negative attitude towards the treatment of disease. Thus, improving the patients with UI knowledge of urinary incontinence could obviously promote the appropriate care-seeking of patients.

In our study, the rate of care-seeking intention among the three UI subtypes was MUI (53.85%), UUI (58.82%), and SUI (27.85%). The proportion of women who had care-seeking intention in SUI was lower than those with other subtypes of UI. The care-seeking by women with urinary incontinence in Brazilian women with MUI reported symptoms to the doctor (36%), only 18% of the women with SUI looked for medical treatment [25]. Unlike the previous reports, although care-seeking intentions may be closely related to medical care, intentions do not mean reality. Generally, the patients who had the care-seeking intentions might be much more than who had undergone the medical care. Due to the characteristics of UI, women with different types UI have different intention of care-seeking. Women with stress UI may have more control over incontinent episodes and typically smaller amount of urine leakage, whereas women with urge UI are less able to predict and control micturition and have larger amounts of leakage [21].

Educational level can be used as the promotion factor for care-seeking in UI patients in our study. Women with higher education level may have more access to learn knowledge of UI and available interventions. A better conception of UI and knowing available and effective treatment options would facilitate care-seeking. Moreover, education may contribute to the acquisition of positive psychological, social and economic skills, and assets such as positive attitudes about health, which could facilitate care-seeking intentions and behaviors [4, 21].

Several limitations of the present study should be mentioned. Firstly, because approximately 15.2% of the men discontinued the study, potential sampling bias should be considered in the study. Secondly, the study was cross-sectional, although care-seeking intentions may be closely related to actual behaviors, intentions do not signify what actual behaviors in seeking help might be. Thirdly, although we conducted a pre-survey in a small population to ensure that the questionnaire was comprehended and easily understood, the face-to-face interview that might make respondents embarrassed to give socially acceptable answers should be considered. Finally, more research is needed to further investigate the relation between UI severity and actual care-seeking behaviors.

Conclusions

This is the first population-based study to systematically evaluate the quality of life and influ-

ential factors of care-seeking intentions of women with UI in Anhui province of China. The quality of life was obviously impaired in women with UI in China. Among the three subscales of I-QOL score in women with UI, psychosocial impact had the highest scores, with lower scores for the sample for the social isolation subscales. The quality of life in women with SUI was better than those with UUI and SUI. Many patients had limited knowledge about UI. The proportion of women who had care-seeking had a significant difference among three types of UI, and the proportion of women who had care-seeking in SUI were lower than those in women with other subtypes of UI. The care-seeking intention among patients with UI is associated with disease recognition, embarrassment, assuming UI as a normal phenomenon, the type of UI, and educational level.

Acknowledgements

We are deeply appreciative of the participants in this study and would like to thank all staffs for their support and assistance. This study is supported by Clinical Key Subjects Program of the Ministry of Public Health (Urology), National Natural Science Foundation of China (81170-698, 81370856), the cultivation project for NSFC at Anhui Medical University (No. 2013-KJ13).

Disclosure of conflict of interest

None.

Address correspondence to: Chaozhao Liang, Department of Urology, The First Affiliated Hospital of Anhui Medical University and Institute of Urology, No. 218 Jixi Road, Hefei 230022, China. Tel: +86-551-62923861; Fax: +86-551-63633742; E-mail: liang_chaozhao@163.com

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