Quality of Life of Women with Urinary Incontinence: A Systematic Literature Review

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Purpose: The purpose of this study was to review studies that have examined the quality of life of women with urinary incontinence.

Materials and Methods: A review was conducted that used the databases PubMed, Proquest, CINAHL, and ScienceDirect. Articles were included that were published in English between 2005 and 2010 the key words use were urinary incontinence, women, and quality of life.

Results: A total of 18 studies were identified, and the prevalence of urinary incontinence varied depending on the definition of incontinence used and the age of the population studied. The Incontinence Quality of Life (I-QoL), Incontinence Impact Questionnaire-short form (IIQ-7), and King’s Health Questionnaire (KHQ) were the most commonly used instruments. Demographic, medical, physical, psychological, health, and intervention factors were reported as influencing factors on the quality of life of women with incontinence. Age, severity of urinary incontinence, type of urinary incontinence, number of urinary incontinence episodes, body weight, stress, and help-seeking behavior were statistically significant variables influencing quality of life.

Conclusion: Future studies are needed to identify factors related to quality of life among women with incontinence and to use validated instruments according to specific subjects. Int Neurourol J 2010;14:133-8.

Key Words: Urinary incontinence, Quality of life, Women

Introduction

Urinary incontinence (UI) is a common clinical condition worldwide that affects women of all ages and across different cultures and races [1], often increasing as women age. The International Continence Society defined UI as "the complaint of any involuntary leakage of urine" [2]. UI is not a disease, but rather a symptom resulting from impairment of the bladder or of the sphincter mechanism [3]. The most common causes of UI are stress, urge, and mixed [1].

Prevalence rates of UI in women vary widely because of differences in definitions, study characteristics, and target populations [4]. In a British survey, incontinence was estimated to be over twice as prevalent in women (14%) as in men (6.6%) [5]. Elderly women are the most affected, with a mean prevalence of 34%; elderly men, instead, report a mean prevalence of 22% [6]. Thus, UI affects more women than men. The preva-
lence of UI in community-dwelling women ranges from 10% to 40%. In general, the overall prevalence rate of UI increases with age. In people older than 65 years, the estimated prevalence of UI ranges from approximately 35% for those who reside in the community to more than approximately 60% for those who live in long-term care facilities [1,7-12].

Multiple studies have shown that UI is associated with a reduction in overall and health-related quality of life (QoL) [13,14]. QoL is a significant predictor of treatment-seeking for UI [15]. Understanding the critical link between UI and QoL is pivotal to the efficacy of routine screening and early intervention [16]. Despite growing concern about the underdiagnosis of incontinence, our understanding of the impact of UI on QoL and the determinants of treatment-seeking for this problem are limited [15]. In the past several decades, a variety of questionnaires for measuring the impact of UI on health-related QoL (HRQoL) have been developed and tested. Despite valid and reliable generic and condition-specific tools for measuring HRQoL, debate continues about the effect of UI on HRQoL, how best to measure and interpret the data, and how to extend the findings of HRQoL research to clinical practice [17]. Research on UI and QoL is scattered, inconsistent, and varies widely in methodological rigor and substantive focus. Nevertheless, despite the large amount of research, a review of the literature on QoL studies in women with UI is still lacking.

The aim of the present study was to collect all QoL studies conducted in women with UI and to critically discuss the measurement and evaluation of HRQoL in women with UI. We provide information likely to be helpful both in the choice of appropriate HRQoL instruments for research and in the evaluation of published HRQoL studies.

**Materials and Methods**

A comprehensive search of PubMED, Proquest, CINAHL, and Sciencedirect was conducted on August 31, 2010, for studies concerning the QoL of women with UI by using the following steps:

Step 1: The search was limited by key words
Table 1. Characteristics of the included studies.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Country</th>
<th>Study design</th>
<th>Sample size</th>
<th>Age (years)</th>
<th>Type of UI</th>
<th>Prevalence of UI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kocak et al. (2005)</td>
<td>Turkey</td>
<td>Cross-sectional study</td>
<td>1,012</td>
<td>Mean:43.60±16.5 (range 18-92)</td>
<td>Stress/Urge/Mixed</td>
<td>23.9% (n=242)</td>
</tr>
<tr>
<td>Oh et al. (2005)</td>
<td>Korea</td>
<td>Prospective study</td>
<td>109</td>
<td>Mean: 54.9 (range 31-77)</td>
<td>Stress/Urge/Mixed</td>
<td>All</td>
</tr>
<tr>
<td>Huang et al. (2006)</td>
<td>U.S</td>
<td>Cross-sectional study</td>
<td>2,019</td>
<td>Mean:57±9</td>
<td>Stress/Urge/Mixed</td>
<td>29.9% (n=603)</td>
</tr>
<tr>
<td>Borello-France et al. (2006)</td>
<td>U.S</td>
<td>Randomized controlled trial</td>
<td>44</td>
<td>Mean: 54.9 (range 38-70)</td>
<td>Stress</td>
<td>All</td>
</tr>
<tr>
<td>Shaw et al. (2006)</td>
<td>UK</td>
<td>Cross-sectional study</td>
<td>3,273</td>
<td>Unknown</td>
<td>Stress/Urge/Mixed</td>
<td>45.7% (n=1,495)</td>
</tr>
<tr>
<td>Koops et al. (2006)</td>
<td>Netherlands</td>
<td>Prospective cohort study</td>
<td>809</td>
<td>Unknown</td>
<td>Stress</td>
<td>16.2% (n=131)</td>
</tr>
<tr>
<td>Monz et al. (2007)</td>
<td>EU</td>
<td>Prospective study</td>
<td>1,055</td>
<td>Mean:60.7±13.5</td>
<td>Stress/Urge/Mixed</td>
<td>Stress (29%) Urge (13%). Mixed (58%)</td>
</tr>
<tr>
<td>Rett et al. (2007)</td>
<td>Brazil</td>
<td>Experimental study</td>
<td>26</td>
<td>Mean: 42.5 (range 31-52)</td>
<td>Stress</td>
<td>All</td>
</tr>
<tr>
<td>Kincade et al. (2007)</td>
<td>US</td>
<td>Experimental study</td>
<td>525</td>
<td>Mean: 55±13.6</td>
<td>Unknown</td>
<td>44.3%</td>
</tr>
<tr>
<td>Borello-France et al. (2008)</td>
<td>US</td>
<td>Randomized controlled trial</td>
<td>28</td>
<td>Range 38-70</td>
<td>Stress</td>
<td>All</td>
</tr>
<tr>
<td>Azuma et al. (2008)</td>
<td>Japan</td>
<td>Cross-sectional study</td>
<td>975</td>
<td>Mean: 47.6</td>
<td>Stress/Urge/Mixed</td>
<td>Stress (19.3%) Urge(4.2%) Mixed(7.8%)</td>
</tr>
<tr>
<td>Liebergall-Wischnitzer et al. (2009)</td>
<td>Israel</td>
<td>Randomized controlled trial</td>
<td>245</td>
<td>Range 20-65</td>
<td>Stress</td>
<td>All</td>
</tr>
<tr>
<td>Milne et al. (2009)</td>
<td>Canada</td>
<td>Cross-sectional study</td>
<td>18</td>
<td>Range 43-80</td>
<td>Stress</td>
<td>All</td>
</tr>
<tr>
<td>Diniz et al. (2009)</td>
<td>Brazil</td>
<td>Cross-sectional study</td>
<td>43</td>
<td>Range 20-60</td>
<td>Unknown</td>
<td>All</td>
</tr>
<tr>
<td>Mishra et al. (2009)</td>
<td>UK</td>
<td>Prospective study</td>
<td>983</td>
<td>Range 48-54</td>
<td>Stress/Urge</td>
<td>69.2% (n=680)</td>
</tr>
<tr>
<td>Lasserre et al. (2009)</td>
<td>France</td>
<td>Cross-sectional study</td>
<td>2183</td>
<td>Mean: 55</td>
<td>Stress/Urge/Mixed</td>
<td>26.8% (n=584)</td>
</tr>
<tr>
<td>Miu et al. (2010)</td>
<td>China</td>
<td>Cross-sectional study</td>
<td>144</td>
<td>Mean: 78</td>
<td>Unknown</td>
<td>33.3% (n=48)</td>
</tr>
<tr>
<td>Kang et al. (2010)</td>
<td>USA</td>
<td>Cross-sectional study</td>
<td>149</td>
<td>Range 30-65</td>
<td>Unknown</td>
<td>81.9%</td>
</tr>
</tbody>
</table>

UI: urge incontinence

such as urinary incontinence, quality of life, adult women (age >18 years), and community-dwelling. Articles were limited to those in English with the full text available since 2005. A total 1046 studies were selected.

Step 2: Exclusion criteria such as methodologic assessment of tools to perform QoL or HRQoL analysis, no specific focus on the life quality of
Table 2. Type of HRQoL questionnaire and critical appraisal.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>First developer (year)</th>
<th>Feature</th>
<th>Items</th>
<th>Dimensions</th>
<th>Reliability</th>
<th>Validity</th>
<th>Frequency*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in QoL</td>
<td>Mishra et al. (2006)</td>
<td>Generic</td>
<td>11</td>
<td>-Physical health -Psychosomatic state -Personal life</td>
<td>Not reported</td>
<td>reported</td>
<td>1</td>
</tr>
<tr>
<td>Euroqol-5D* (EQ-5D)</td>
<td>EuroQol group, (1990)</td>
<td>Generic</td>
<td>6</td>
<td>-Mobility -Self-care -Usual activity -Pain/discomfort -Anxiety/depression</td>
<td>reported</td>
<td>reported</td>
<td>1</td>
</tr>
<tr>
<td>International Consultation on Incontinence Questionnaire Short Form (ICIQ-SF)</td>
<td>Avery et al. (2001)</td>
<td>Specific</td>
<td>3</td>
<td>-Frequency -Severity -Impact on daily life</td>
<td>reported</td>
<td>reported</td>
<td>2</td>
</tr>
<tr>
<td>Incontinence Impact Questionnaire (IIQ)</td>
<td>Wyman et al. (1987)</td>
<td>Specific</td>
<td>26</td>
<td>-Physical activity -Travel -Social relationships -Emotional health</td>
<td>reported</td>
<td>reported</td>
<td>4</td>
</tr>
<tr>
<td>Incontinence Impact Questionnaire Short form (IIQ-7)</td>
<td>Uebersax et al. (1995)</td>
<td>Specific</td>
<td>7</td>
<td>-Impact on daily activities -Emotional impact</td>
<td>reported</td>
<td>reported</td>
<td>3</td>
</tr>
<tr>
<td>Incontinence Quality of Life Questionnaire (I-QoL)</td>
<td>Wagner et al. (1996)</td>
<td>Specific</td>
<td>22</td>
<td>-Avoidance and limiting Behaviors -Psychological Impact -Social Embarrassment</td>
<td>reported</td>
<td>reported</td>
<td>5</td>
</tr>
<tr>
<td>King’s Health Questionnaire (KHQ)</td>
<td>Kelleher et al. (1997)</td>
<td>Specific</td>
<td>21</td>
<td>-general health -incontinence impact -role limitations -physical limitations -social limitations -personal limitations -emotional problems -sleep/energy disturbance</td>
<td>reported</td>
<td>reported</td>
<td>2</td>
</tr>
<tr>
<td>SF-36</td>
<td>Ware (1992)</td>
<td>Generic</td>
<td>36</td>
<td>-Physical functioning -Role-physical -Role-emotional -Mental health -Vitality -Bodily pain -General health -Social functioning</td>
<td>reported</td>
<td>reported</td>
<td>1</td>
</tr>
</tbody>
</table>

*Duplicates, QoL: quality of life, SF: short-form health survey

UI in women, effects on QoL caused by a specific drug or interventional study, data referring to years before 2005, review articles, case reports, qualitative studies, editorials, and opinions papers were applied to select 104 studies.

Step 3: Among the 104 studies, 18 studies were
selected for analysis dealing with QoL assessment through the use of a validated questionnaire or scale in women with UI. All potentially relevant papers were gathered and reviewed independently by 4 reviewers. If the information provided in the search results was insufficient to determine study eligibility, agreements were extracted between the reviewers for further screening. The review process for selecting studies is shown in fig. 1.

The following data were extracted and entered into an Excel database for all included studies: author(s), publication year, target country(s), study design, sample size, age, types of UI, prevalence of UI, HRQoL assessment tool, and analysis of results.

**Results**

**Characteristics of the included studies**

The characteristics of the included studies were assessed in several dimensions: type of study, demographic variables, types of UI, and prevalence of UI (table 1). In the research design category, 9 of the 18 studies were cross-sectional, 5 were randomized controlled trials, and 4 were prospective. UI studies related to HRQoL were performed in various countries, and stress, urge, and mixed types of UI were most common. The range of the prevalence rate of UI was wide, from 16.2% to 81.9% as reported in 11 studies.

**Instruments to assess HRQoL in women with UI**

Eight different instruments were identified and split into two categories: generic and condition-specific instruments (table 2). The Incontinence Quality of Life (I-QoL), Incontinence Impact Questionnaire-short form (IIQ-7), and King’s Health Questionnaire (KHQ) were the most commonly used.

**Independent variables tested in studies on HRQoL in women with UI**

The independent variables of HRQoL in women with UI dealt with various areas: demographic, medical, physical, psychological, health, and intervention. The statistically significant variables were age, severity of UI, number of UI episodes, body weight, stress, help-seeking behavior, and counseling, but ethnicity, menopause, economic status, comorbidity, lifestyle, symptoms, perceived health status, and pelvic floor exercise.
showed different research values compared with the results of previous studies. In particular, exercise position as an intervention variable was not statistically significant in 2 studies.

**Discussion**

The present study reviewed UI and QoL in women. UI and other related lower urinary symptoms (e.g., nocturia, urinary urgency, and frequency) are common in women. UI not only affects a woman’s physical well-being, but also has a significant impact on the psychological and socioeconomic aspects of a woman’s life [18].

Our findings showed that incontinence in women is a global health problem. The 18 studies that we reviewed by research purpose were conducted in 12 countries. Most studies were undertaken in the United States.

The results of the present study confirmed that the prevalence of UI in women varies depending on the definition of incontinence used and the age of the population studied. There were studies with diverse ranges, such as a wide age range from 18 to 92 years [19] and a narrow age range from 40 to 54 years [20]. Botlero et al (2008) reviewed the prevalence and incidence of UI in Australian women and reported that the age group in which the prevalence was reported to be highest varied between studies. The methods used to collect the data, specifically, the way in which UI was identified, also contributed to differences in findings [18]. Therefore, further studies are needed to establish a more exact prevalence in each country through large-scale, population-based studies and to develop standard international criteria on symptom frequency and bothersomeness to identify type of UI.

Half of the studies were descriptive in design and reported prevalence, disease severity, risk factors, and impact of QoL, and 5 studies were experimental in design. Pelvic floor muscle exercise is commonly recommended as first-line therapy for women with stress UI [21]. Rett et al (2007) [22] showed a significant improvement in the QoL of women after a biofeedback-assisted pelvic-floor muscle exercise program in a study without a control group. Liebergall-Wischnitzer et al (2009) [21] compared the effect between pelvic floor muscle exercise (PFMT) and circular muscle exercises (Paula method). There was no significant difference in QoL according to the intervention, but both the Paula method and PFMT were efficacious in reducing urinary leakage in women with stress UI and in improving subjective assessments of stress UI and QoL. All studies of interventions were conducted only for women with stress UI. Therefore, it is necessary to develop various interventions for other types of UI.

Generic health scales have poor content validity for UI and would therefore be expected to be less sensitive to change than a disease-specific instrument [23]. Except for three studies [20,24,25], other studies measured QoL by use of specific QoL scales. In general, generic HRQoL questionnaires assess well-being and can be used to make comparisons across groups and populations, but may be less sensitive to the characteristics of UI and its effect. Condition-specific instruments more specifically address UI issues and are more sensitive to changes over time, but are less well suited for comparison among a general population or other groups [26]. Also, whether the type of UI is linked to HRQoL remains uncertain [27]. Mixed incontinence was found to have a significantly higher impact on HRQoL than stress or urge incontinence [28]. The I-QoL total score was significantly higher in patients with stress UI than in those with mixed UI [23].

HRQoL in women with UI is increasingly considered an essential outcome for clinical trials and patient management. In recent years, a vast number of HRQoL instruments have been developed, including several instruments for the UI populations. In our study, I-QoL [16,21,23,24,28] and IIQ [15,29,30,31] were the most frequently used in measuring HRQoL among women with UI. The Korean version of the I-QoL has been developed and is being used in clinical practice [32]. However, in order to evaluate QoL in women with UI, a reliable and validated instrument that considers cultural differences should be used. Furthermore, it is necessary to make an appropriate choice considering the purpose of the study.

We found that demographic, medical, physical, psychological, health, and intervention factors
were reported as influencing factors on the QoL of women with incontinence. Age, severity of UI, type of UI, number of UI episodes, body weight, stress, and help-seeking behavior were statistically significant variables for QoL. By contrast, the results of other factors such as ethnicity, menopause, economic status, comorbidity, lifestyle, symptoms, and perceived health status were inconsistent within and across the studies. Particularly, perceived severity of UI was reported as a risk factor of a poorer QoL [24], and the factor that most influenced the I-QoL score in women with UI was the degree of symptom severity [23]. Therefore, further studies are necessary on the factors related to QoL among women with incontinence with a comprehensive assessment of risk factors, including obstetric factors.

Conclusions

For many women, UI is distressing and has a negative effect on HRQoL. Overall, most instruments used to assess HRQoL in women with UI were tested for the appropriate features of reliability and validity with many showing sufficient properties. However, researchers and health care providers must recognize that women and their responses to UI are heterogeneous and that multiple techniques may be necessary to document the full range of responses to UI. Therefore, before deciding on an instrument, the content of the instrument’s items should be thoroughly reviewed to ensure that a particular aspect of HRQoL does not need additional assessment. Also, in the various aspects, influencing factors on HRQoL in female UI patients should be investigated in future studies. Potentially, identification and characterization of factors related to HRQoL in women with UI may accelerate the development of preventive, diagnostic and therapeutic strategies for the improvement of HRQoL in this population.

Conflicts of Interest:

The authors have nothing to disclose.

References

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