

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

Bo Eun Kwon, Gi Yon Kim¹, Youn Jung Son², Young Sook Roh³, Mi Ae You⁴

Seoul Women's College of Nursing, Seoul, ¹Department of Nursing, Wonju College of Medicine, Yonsei University, Wonju,

²Department of Nursing, College of Medicine, Soonchunhyang University, Cheonan,

³Red Cross College of Nursing, Seoul, ⁴College of Nursing, Ajou University, Suwon, Korea

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 ScienDirect. 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-

Corresponding Author: Youn Jung Son

Department of Nursing, College of Medicine, Soonchunhyang University,
336-1 Ssangyongdong, Cheonan, Chung-Nam 330-090, Korea
Tel: +82-41-570-2487 / Fax: +82-41-570-2495 / E-mail: yjson@sch.ac.kr

Submitted: October 10, 2010 / Accepted (with revisions): October 26, 2010

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 Scencedirect 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

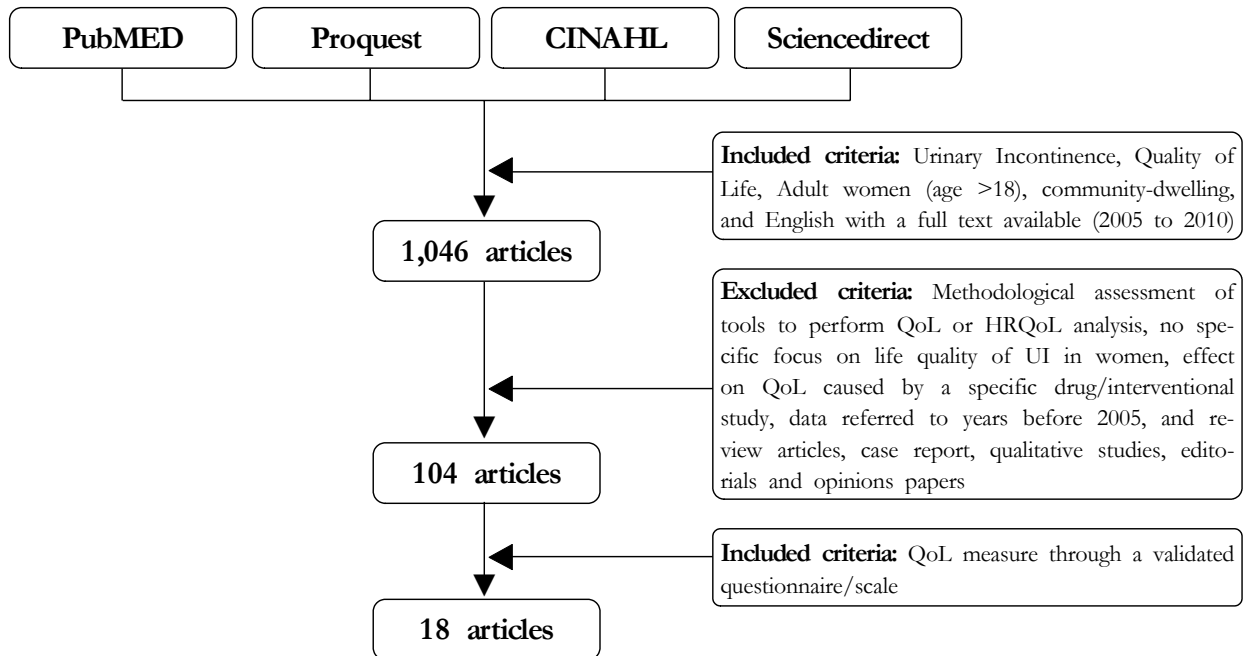


Figure 1. Literature search results and review process. QoL: quality of life, HR QoL: health-related quality of life

Table 1. Characteristics of the included studies.

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

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.

Instrument	First developer (year)	Feature	Items	Dimensions	Reliability	Validity	Frequency*
Change in QoL	Mishra et al. (2006)	Generic	11	3 -Physical health -Psychosomatic state -Personal life	Not reported	reported	1
Euroqol-5D* (EQ-5D)	EuroQol group, (1990)	Generic	6	5 -Mobility -Self-care -Usual activity -Pain/discomfort -Anxiety/depression	reported	reported	1
International Consultation on Incontinence Questionnaire Short Form (ICIQ-SF)	Avery et al. (2001)	Specific	3	3 -Frequency -Severity -Impact on daily life	reported	reported	2
Incontinence Impact Questionnaire (IIQ)	Wyman et al. (1987)	Specific	26	4 -Physical activity -Travel -Social relationships -Emotional health	reported	reported	4
Incontinence Impact Questionnaire Short form (IIQ-7)	Uebersax et al. (1995)	Specific	7	2 -Impact on daily activities -Emotional impact	reported	reported	3
Incontinence Quality of Life Questionnaire (I-QoL)	Wagner et al. (1996)	Specific	22	3 -Avoidance and limiting Behaviors -Psychological Impact -Social Embarrassment	reported	reported	5
King's Health Questionnaire (KHQ)	Kelleher et al. (1997)	Specific	21	8 -general health -incontinence impact -role limitations -physical limitations -social limitations -personal limitations -emotional problems -sleep/energy disturbance	reported	reported	2
SF-36	Ware (1992)	Generic	36	8 -Physical functioning -Role-physical -Role-emotional -Mental health -Vitality -Bodily pain -General health -Social functioning	reported	reported	1

*Duplicated, 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

Table 3. Independent variables tested in studies on the HRQoL in women with urinary incontinence.

Categories	Independent variables	Statistical significance
Demographic	Ethnicity	Yes/No
	Age	Yes
	Menopause	Yes/No
	Economic status	Yes/No
Medical	Severity	Yes
	Comorbidity	Yes/No
	Number of UI episodes	Yes
Physical	Life style	Yes/No
	Body weight/Body mass index	Yes
Psychological	Stress	Yes
	Symptoms	Yes/No
Social	Help-seeking behavior	Yes
Health	Perceived health status	Yes/No
Intervention	Exercise position	No
	Pelvic floor muscle exercise	Yes/No
	Counselling	Yes

HRQoL: health-related quality of life

selected for analysis dealing with QoL assessment through the use of a validated questionnaire 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

- 1) Minassian VA, Drutz HP, Al-Badr A. Urinary incontinence as a worldwide problem. *Int J Gynaecol Obstet* 2003;82:327-38
- 2) Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardization of terminology of lower urinary tract function: report from the Standardization Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167-78
- 3) Corcos J, Beaulieu S, Donovan J, Naughton M, Gotoh M. Quality of life assessment in men and women with urinary incontinence. *J Urol* 2002;168:896-905
- 4) Moller LA, Lose G, Jorgensen T. The prevalence and bothersomeness of lower urinary tract symptoms in women 40-60 years of age. *Acta Obstet Gynecol Scand* 2000;79:298-305
- 5) Brocklehurst JC. Urinary incontinence in the community-analysis of a MORI poll. *BMJ* 1993;306:832-4
- 6) Stewart WF, Van Rooyen JB, Cundiff GW, Abrams P, Herzog AR, Corey R, et al. Prevalence and burden of overactive bladder in the United States. *World J Urol* 2003;20:327-36
- 7) Goode PS, Burgio KL, Redden DT, Makland A, Richter HE, Sawyer P, et al. Population based study of incidence and predictors of urinary incontinence in black and white older adults. *J Urol* 2008;179:1449-53
- 8) Offermans MP, Du Moulin MF, Hamers JP, Dassen T, Halfens RJ. Prevalence of urinary incontinence and associated risk factors in nursing home residents: a systematic review. *Neurourol Urodyn* 2009;28:288-94
- 9) Tennstedt SL, Link CL, Steers WD, Mckinlay JB. Prevalence of and risk factors for urinary leakage in a racially and ethnically diverse population of adults. *Am J Epidemiol* 2008;167:390-9
- 10) Thom DH, Hann MN, Van Den Eeden SK. Medically recognized urinary incontinence and risks of hospitalization, nursing home admission and mortality. *Age Ageing* 1997;26:367-74
- 11) Song HJ, Bae JM. Prevalence of urinary incontinence and lower urinary tract symptoms for community-dwelling elderly 85 years of age and older. *J Wound Ostomy Continence Nurs* 2007;34:535-41
- 12) Wennberg AL, Molander U, Fall M, Edlund C, Peeker R, Milsom I. A Longitudinal Population-based Survey of Urinary Incontinence, Overactive

- Bladder, and Other Lower Urinary Tract Symptoms in Women. *Eur Urol* 2009;55:783-91
- 13) Ko Y, Lin SJ, Salmon JW, Bron MS. The impact of urinary incontinence on quality of life of the elderly. *Am J Manag Care* 2005;11:S103-11
 - 14) Teunissen D, van den Bosch W, van Weel C, Lagro-Janssen T. "It can always happen": the impact of urinary incontinence on elderly men and women. *Scand J Prim Health Care* 2006;24:166-73
 - 15) Huang AJ, Brown JS, Thom DH, Fink HA, Yaffe K. Urinary incontinence in older community dwelling women: the role of cognitive and physical function decline. *Obstet Gynecol* 2007;109:909-16
 - 16) Kang Y, Phillips LR, Kim SS. Incontinence quality of life among Korean-American women. *Urol Nurs* 2010;30:130-6
 - 17) Symonds T. A review of condition-specific instruments to assess the impact of urinary incontinence on health related quality of life. *Eur Urol* 2003;43: 219-25
 - 18) Botlero R, Urquhart DM, Davis SR, Bell RJ. Prevalence and incidence of urinary incontinence in women: review of the literature and investigation of methodological issues. *Int J Urol* 2008; 15:230-4
 - 19) Kocak I, Okyay P, Dundar M, Erol H, Beser E. Female Urinary Incontinence in the West of Turkey: Prevalence, Risk Factors and Impact on Quality of Life. *Eur Urol* 2005;634-41
 - 20) Mishra GD, Croudaceb T, Cardozoc L, Kuha D. A longitudinal investigation of the impact of typology of urinary incontinence on quality of life during midlife: Results from a British prospective study. *Maturitas* 2009;64:246-8
 - 21) Liebergall-Wischnitzer M, Hochner-Celnikier D, Lavy Y, Manor O, Shveiky D, Paltiel O. Randomized Trial of Circular Muscle Versus Pelvic Floor Training for Stress Urinary Incontinence in Women. *J Womens Health (Larchmt)* 2009;18:377-85
 - 22) Rett MT, Simoes JA, Herrmann V, Pinto CL, Marques AA, Morais SS. Management of Stress Urinary Incontinence With Surface Electromyography-Assisted Biofeedback in Women of Reproductive Age. *Phys Ther* 2007;87:136-42
 - 23) Oh SJ, Hong SK, Son H, Paick JS, Ku JH. Quality of life and disease severity in Korean women with stress urinary incontinence. *Urol* 2005;66:69-73
 - 24) Monz B, Chartier-Kastler E, Hampel C, Samsioe G, Hunskaar S, Espuna-Pons M, et al. Patient Characteristics Associated with Quality of Life in European Women Seeking Treatment for Urinary Incontinence: Results from PURE. *Eur Urol* 2007; 51:1073-81
 - 25) Azuma R, Murakami K, Iwamoto M, Tanaka M, Saita N, Abe Y. Prevalence and risk factors of urinary incontinence and its influence on the quality of life of Japanese women. *Nurs Health Sci* 2008; 10:151-8
 - 26) Bradway C. Urinary Incontinence among Older Women: Measurement of the Effect on Health-Related Quality of Life. *J Gerontol Nurs* 2003;29: 13-9
 - 27) Howard F, Steggall M. Urinary incontinence in women: quality of life and help-seeking. *Br J Nurs* 2010;19:742, 744, 746, 748-9.
 - 28) Shaw C, Gupta RD, Bushnell DM, Assassa RP, Abrams P, Wagg A, et al. The extent and severity of urinary incontinence amongst women in UK GP waiting rooms. *Fam Pract* 2006;23:497-506
 - 29) Kincade JE, Dougherty MC, Carlson JR, Wells EC, Hunter GS, Busby-Whitehead J. Factors Related to Urinary Incontinence in Community-Dwelling Women. *Urol Nurs* 2007;27:307-17
 - 30) Borello-France DF, Zyczynski HM, Downey PA, Rause CR, Wister JA. Effect of Pelvic-Floor Muscle Exercise Position on Continence and Quality-of-Life Outcomes in Women With Stress Urinary Incontinence. *Phys Ther* 2006;86:974-86
 - 31) Borello-France DF, Downey PA, Zyczynski HM, Rause CR. Continence and Quality-of-Life Outcomes 6 Months Following an Intensive Pelvic-Floor Muscle Exercise Program for Female Stress Urinary Incontinence: A Randomized Trial Comparing Low- and High-Frequency Maintenance Exercise. *Phys Ther* 2008;88:1545-53
 - 32) Oh SJ, Park HG, Lim SH, Hong SK, Martin ML, Ting BL, et al. Translation and Linguistic Validation of Korean Version of the Incontinence Quality of Life (I-QoL) Instrument. *J Korean Continence Soc* 2002;6:10-23