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Case Report

The Prevelance and Risk Factors of Urinary Incontinance in Older Women - Nested Case-Control Study Running Head: Risk Factors of Urinary Incontinance

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Abstract

Backround: The aim of the study is to define the Urinary Incontinance in women over 65 living in the society and to analyze the risk factors in the created case-control groups.

Method: This is a nested case-control study. The study population was composed of women aged over the age of 65. Te research was conducted in the city of Konya, Turkey between May-June 2011. In total, 452 women were included in this study. The data was collected by the researchers during house visits, by using the survey form in face to face interview technic. Chi-square analysis, Estimated Relative Risk and Logistic Regression Analysis (backward method) was used to evaluate the relation between the dependent and independent variables.

Findings: 64.7 % of the women in the case group complained of a mixed type of urinary incontinence. 41.5% reported that urinary incontinence symptoms started 2-5 years ago. 39.1% say it affects them partially and a great portion of the women (70.5%) did not consult a doctor. As a result of the logistic regression analysis, being widowed or divorced (OR: 2.170 p=0.001), post-pregnancy urinary incontinence stories (OR=7.238, p=0.000), frequent constipation (OR=1.606 p=0.0429) and trouble walking (OR=1.849 p= 0.007) were defined as significant risk factors.

Conclusion: Prevention of constipation, doing kegel exercises in postpartum period and using walking assist devices (walker, walking stick …) are important for prevention of urinary incontinence.

INTRODUCTION

Developments in the field of medicine decreased the death rate, prolonged the expected lifetime from birth and resulted in an ever increasing senior population, both in the world and in our country [1]. In aging populations, various old age syndromes such as high blood pressure, cardio vascular diseases, chronic bronchitis, diabetes, various cancers, osteoporosis and mental problems surface, which all decrease the quality of life for the elderly [2]. Perhaps the most important and common of these old age syndromes is urinary incontinence (UI). UI prevalence is 30% in the elderly persons living in society, 50% in those living in institutions, and it increase with age [3,4]. Besides its commonness, in a conducted literary survey, UI was described as an important risk factor that may result in an increase in mortality, increase in institutional care and hospitalization, falling and decrease in physical functions [5].This geriatric syndrome also negatively effects the individual's perception of wellness and quality of life regarding health. The patients limit liquid consumption, do not participate in activities such as traveling, commuting that limit their access to toilets, negatively affect their social lives and decrease life satisfaction [6].

Age-bound variables that may cause urinary incontinence are being defined as increased bladder activity, prostate growth, increase in nighttime urine, decrease in blood build up in the vagina and urine track, increased amount of urine left in the bladder after micturition, decreased ability of holding the urine, decreased bladder volume and decreased contraction strength [7]. Among other risk factors that cause incontinence are: number of pregnancies, depression, temporary blood build up deficiencies in the brain, heart failure, constipation, obesity, lung diseases, coughing, diabetes, decrease in the mobile abilities [8].

A research [9], shows that advanced age, number of pregnancies, number of abortions, number of given births, difficulty of the birth given, frequent urine track infections, uterus prolapses, urogenital surgeries, diabetes, smoking and constipation are shown to increase the frequency of observing urinary incontinence, miscarriages, giving birth to large babies and application of urinary catheters do not have an effect on the frequency of urinary incontinence. Zhu *et al.,* [10], state that age, vaginal births and high number of births are the most important risk factors. Filiz *et al.,* [11], state that age, BMI, high number of pregnancies and births increase the UI risk. Few studies of urinary incontinence have focused on its treatment. Some studies in the relevant literature argue that certain interventions such as laparoscopic artificial urinary sphincter implantation, tension-free vaginal tape and drug therapy are effective [12-14].

Prevention of a problem and stopping its advancement are only possible through defining the risk factors and taking precautions against the risk factors. Besides the studies that determine the UI frequency, there is also the need to define the cause and effect relations and to take the necessary initiatives after the causal factors are defined. The aim of the study is to define the UI prevalence in women over 65 living in the society and to analyze the risk factors in the created case-control groups.

METHOD

It is a nested case control study the research was conducted in the city of Konya, in Family Health Center Number 15 between May-June 2011.

Study Population and Sample

The population of the research is composed of the 452 women over 65 recorded in Family Health Center Number 15. All of these women have been included in the research without sampling. Thus the study group of the research was composed of 402 women who are over 65 and are living in their homes, who are not bed bound/do not have loss of mental abilities, who had given at least 1 birth and who accepted to participate in the research.

Defining the cases

169 women who had UI problems who were defined in the scan made within the universe that represent the society comprised the case group of the research. Those answering with `yes` to one of the questions below have been defined as cases with UI problems.

1. `During the last one month, have you urinary incontinence (wetting the underpants) problems when coughing, laughing or doing any other activity?`

2. `During the last one month, have you ever been unable to hold your urine before sitting on/reaching the toilet and wet your underpants?`

Those answering both questions positively were defined as `mix incontinence`, those saying yes to only the first question were defined as `stress incontinence` and those saying yes to only the second question were defined as `urge incontinence`.

Defining the Controls

All of the other women who were included in the universe of the research who were not defined to have UI problems comprised the research's control group, and a total of 233 women were included in the control group.

Questionnaire-based survey

The data was collected by the researchers through a survey form aiming at defining the individuals' socio-demographic and health status and to define their incontinence situation.

The Survey Form

The survey form, which was created by the researchers based on the literature [3-5,11,17,48], had age, marital status, education status, perceived economic status, healthcare guarantees, location lived in the longest, other people living in the house with the individual, marriage age as the socio demographic specifications. Furthermore, the total pregnancy number, miscarriage stories, first age when birth was given, last age when birth was given, multiple pregnancy stories, vaginal-caesarian birth, episiotomy opening status, large baby stories, surgeries for gynecological diseases, post-menopausal HRT usage, incontinence during pregnancy, incontinence after pregnancy were inquired. Chronic diseases, constipation, persistent caught and mobility problems were inquired regarding healthcare status.

Since vaginal-caesarian birth and post-menopausal HRT usage rates are low, they were excluded from the analysis and since the women could not fully recollect the episiotomy opening status during the birth status and answering rate was low, they were not used in the data evaluation stage.

Procedure

The data was collected by the researchers during house visits, by using the survey form in face to face interview technic. This study was been done under the permission of the Local Governor's Office and individuals' approval was provided before participating in the study. It was approved by the Selçuk University Faculty of Health Sciences Research ethics committee.

Statistical analyses

Number and percentages were used as descriptive statistics in the research. Socio-economic specifications and the variables that were guessed to be risk factors for urinary incontinence were used as independent variables, having or not having urinary incontinence was used as the dependent variable. Chi-square analysis, Estimated Relative Risk and Logistic Regression Analysis (backward method) was used to evaluate the relation between the dependent and independent variables. In the

backward method, analysis inclusion criterion was defined as 0.01, exclusion criterion was accepted to be 0.05. Variables thought to create risks were coded with 1 and were defined with the (+) sign in (Table 2-3).

Findings

Average age for the women in the research was 72.21±6.21, and 42.0% of the women (n=169) were in the case group and were in the control group, and 58.0% of the women (n=233) were in the case group and were in the control group and case-control groups' age average were found to be close to each other (p>0.05). When certain specifications of the case group with respect to urinary incontinence was reviewed (Table 1), 64.7% had mix type urinary incontinence, 41.5% of them had urinary incontinence symptoms-evidence 2-5 years ago, and 49.1% have a urinary incontinence frequency of several times a day. 36.1% of the women say urinary incontinence affects their daily lives greatly, 39.1% say it affects them partially and a great portion of the women (70.5%) did not consult a doctor. The reasons for not consulting a doctor are led by not caring (%32.8) and embarrassment (%22.7).

Table 1: Certain characteristics of the case group with respect to urinary incontinence.

Types of Urinary Incontinence (n=169)	Number	(%.z)
Strese	25	(14.6)
Urge	35	(20.7)
Mixed	109	(64.7)
Start time of Urinary incontinence symptoms		
1 year and below	43	(25.4)
2-5 year	70	(41.5)
6-8 year	8	(4.7)
9 year ve above	48	(28.4)
The frequency of of urinary incontinence		
Several times a month	27	(15.0)
Several times a week	59	(34.9)
Several times a day	83	(49.1)
Influence of incontinence on daily life		
Not affect	42	(24.8)
Having some impact	66	(39.1)
Very affect	61	(36.1)
the situation of consult a doctor		
Yes	50	(29.5)
No	119	(70.5)
Resons (n=119)		
Disregard	39	(32.8)
Embarrassment	27	(22.7)
Weakness of economical	24	(20.2)
Weakness of physical	12	(10.2)
Inability to get help	6	(5,1)
Fed up with disease	11	(9.2)
Knowledge of Kegel exercise		
Yes	1	(0.6)
No	168	(99.4)
Practice of Kegel exercise		
Yes	0	(0)
No	169	(100)
Total	**169**	**(100)**

Case-control work done to assess the risk factors for urinary incontinence shows that among the socio-demographic variables, **marital status**, education status, placed lived in the longest and economic status perception affect the UI risk. According to relative risk calculation, widows/divorced women have 0.5 times the UI risk compared with married women, illiterate women have 1.5 times the UI risk compared with educated women, women who lived in villages/towns have 1.6 times the UI risk compared with women lived in city centers for the longest time and women with bad perception of their economic status have 1.8 times the UI risk compared with women who perceive their economic status as okay or good.

When some of the factors in the reproduction health and general health story of the participating women were evaluated to see whether they pose a risk factor for UI; it was found out that marriage age, number of pregnancies, first and last age when birth was given, multiple pregnancies, large babies, miscarriage, surgeries due to gynecological diseases, persistent coughing and other similar factors do not pose a risk (p>0.05). But according to relative risk calculations, having incontinence during pregnancy increases UI risk by 1.7 times, post-pregnancy urinary incontinence stories increase UI risk by 7.1 times, frequent constipation increases UI risk by 1.8 times and trouble walking increases UI risk by 2.1 times.

According to relative risk calculations, logistic regression analysis was conducted to evaluate the joint effect of variables that were defined to be risk factors for urinary incontinence. According to the analysis done through logistic regression, being widowed or divorced (OR: 2.170 p=0.001), post-pregnancy urinary incontinence stories (OR=7.238, p=0.000), frequent constipation (OR=1.606 p=0.0429) and trouble walking (OR=1.849 p= 0.007) were defined as significant risk factors.

DISCUSSION

The research shows that frequency of having urinary incontinence was found to be 42%. Evaluating the work in this field show the UI frequency in women differ between 21%-72.8% [3,4,15-18].The difference between these observed frequencies may be interpreted to result from the research group based certain individual specifications and due to the definition of urinary incontinence. Generally the UI observation frequency may increase in line with increasing average age, it also change based on living within the society or in nursing homes. Observation frequency in society based research was found to be 35% [19], and in elderly women living in nursing homes %59,8-72,8 [4,16]. When the average age of the women in the study (72.21±6.21) and having a society based study are considered, the UI observation frequency can be considered to be in line with literature. According to the findings obtained from the research, mix type UI is more common among women. The relevant

Table 2: Socio-demographic risk factors in urinary incontinence.

Risk Factors	Case group	Control group	Odd ratio	(%95 Confidence Interval)
Marital status	**Number (%)**	**Number (%)**		
Married	66(39.1)	128(54.9)	**0.526**	**(0.35-0.786)**
widowed/divorced (+)	103(60.9)	105(45.1)		
Education status				
İlliterate (+)	117(69.2)	137(58.8)	**1.577**	**(1.038-2.395)**
Literated/primaryschool graduates	52(29.8)	96(41.2)		
Placed lived in the longest				
Villages/towns (+)	53(31.4)	51(21.9)	**1.630**	**(1.040-2.556)**
City center	116(68.6)	182(78.1)		
Healthcare guarantees				
Yes	150(88.8)	212(91.0)	0.782	(0.406-1.505)
No (+)	19(11.2)	21(9.0)		
Perception of economic status				
Good/midle	129(76.3)	199(85.4)	**1.815**	**(1.092-3.016)**
Bad (+)	40(23.7)	34(14.6)		
Other people living in the house with the individual				
Alone (+)	48(28.4)	55(23.6)	1.284	(0.818-2.015)
Wtih family	121(71.6)	178(76.4)		
Total	**169**	**233**	**402**	

(+) Variable accepted to be a positive effect in Relative Risk and confidence interval calculations.

Table 3: Reproduction health in urinary incontinence and associated risk factors in certain health specification (+) Variable accepted to be a positive effect in Relative Risk and confidence interval calculations.

Risk Factors	Case group	Control	Odds Rtio	Risk Factors	Case group	Control	Odds Rtio
	Num. (%)	**Num.(%)**	**(%95 CI)**		**Num(%)**	**Num(%)**	**(%95 CI)**
Marriage age				**Surgeries for gynecological diseases**			
19 years and below (+)	142(84.0)	193(82.8)	1.090	Yes (+)	19(11.2)	24(10.3)	1.103
20 yearsa and above	27(16.0)	40(17.2)	(0.639-1.859)	No	150(88.8)	209(89.7)	(0.583-2.086)
The total pregnancy number				**Incontinence during pregnancy**			
5 and above (+)	124(73.4)	158(67.8)	1.308	Yes (+)	30(17.8)	25(10.7)	**1.796**
4 and below	45(26.6)	75(32.2)	(0.844-2.027)	No	139(82.2)	208(89.3)	**1.013-3.183**
First age when birth was given				**Incontinence after pregnancy**			
19 years and below (+)	115(68.0)	141(60.5)	1.390	Yes (+)	50(29.6)	13(5.6)	**7.111**
20 yaers and above	54(32.0)	92(39.5)	(0.916-2.108)	No	119(70.4)	220(94.4)	**(2.713-13.616)**
Last age when birth was given				**Chronic diseases**			
35 years and above (+)	105(62.1)	144(61.8)	1.014	Yes (+)	117(69.2)	159(68.2)	1.047
34 years and below	64(37.9)	89(38.2)	(0.674-1.525)	No	52(30.8)	74(31.8)	(0.683-1.606)
Multiple pregnancy stories				**Frequent recurrent constipation**			
Yes (+)	11(6.5)	14(6.0)	1.089	Yes (+)	81(47.9)	77(33.0)	**1.865**
No	158(93.5)	219(94.0)	(0.482-2.462)	No	88(52.1)	156(67.0)	**(1.241-2.801)**
Large baby stories				**Persistent caught**			
Yes (+)	12 (7.1)	9(3.9)	1.902	Yes (+)	54(32.0)	55(23.6)	1.520
No	157(92.9)	224(96.1)	(0.783-4.623)	No	115(68.0)	178(76.4)	(0.976-2.366)
Abortion				**Mobility problems**			
Var (+)	83(49.1)	106(45.5)	1.156	Yes (+)	100 (59.2)	94(40.3)	**2.143**
Yok	86(50.9)	127(54.5)	(0.876-1.780)	No	69(40.8)	139(59.7)	**(1.432-3.207)**
Total	**169**	**233**	**402**	**Total**	**169**	**233**	**402**

Table 4: The risk factor of urinary incontinance.

Risk Factors	B	Odds Ratio	(%95 Cı)	P -values
Being widowed or divorced	0.775	2.170	(1.397-3.371)	0.001
Post-pregnancy urinary incontinence stories (Yes)	1.979	7.238	(3.692-14.191)	0.000
Freuquent constipasyon (Yes)	0.473	1.606	(1.018-2.531)	0.042
Mobility problems (trouble walking)	0.614	1.849	(1.184-2.887)	0.007

*The variables included in logistic regression backward stepwise model are marital status, education status, place lived in the longest and perception of economic situation, urinary incontinence during pregnancy, urinary incontinence in post-birth period, frequent constipation and having trouble walking.
**Model inclusion criterion is taken as 0.01, model exclusion criterion is taken as 0.05.

literature show that mix type is more common among women and stress and urge type UI follow this [20-21]. A large portion of the women stated that urinary incontinence affect their daily lives more or less. The literature also shows that various areas such as the quality of life, daily life, social life for women are negatively affected by urinary incontinence [22]. Despite this, a large percent of the women (70.5%) did not consult a healthcare facility to ask for help. When the reasons for not consulting are reviewed, it is observed that not caring about the problem or being embarrassed are in the spotlight. The study done show that woman regards urinary incontinence as a normal outcome of old age. Furthermore, although these are revealed differently in the cultures, embarrassment was among the reasons for not consulting professional help [17,18,23-25]. In many researches, the importance of this problem is being emphasized but the attitude towards this does not change throughout the years. The efforts of healthcare professionals to change this behavior can be considered as insufficient as well. The women experiencing urinary incontinence being unfamiliar with Kegel exercises and not applying them is an important indicator that these women in the society cannot be accessed and are not taught preventive measures. It is thought that besides handling urinary incontinence in clinics, it should be among the primary healthcare protecting initiatives and primary healthcare workers should especially evaluate urinary incontinence in women and elderly health.

According to estimated relative risk calculations, illiterate women who lived in villages/towns for the longest time and perceive their economic conditions as bad have an increased risk. Having higher risk in those who are socio-economically disadvantaged may result from the fact that this group also have low education level, high parity level, having short breaks between pregnancies and having a low first birth age that were considered to be relative to urinary incontinence in other studies [9,23,26,27] as well. Furthermore, having urinary incontinence during and after pregnancy, frequent constipation and having difficulty walking is found to increase urinary incontinence risks. Many situations relevant to pregnancy and giving birth were observed to conceive urinary incontinence problems. High number of pregnancies [26], intervened births [28,29], episiotomy spontaneous ruptures [27], long birth giving durations [29], may considered to be among these situations. It is stated that the pelvic support being effected by pregnancy and giving birth may cause urinary incontinence [28,30], and connected with the complications in births in Turkey can affect the pelvic muscles [23]. A study shows that urinary incontinence during pregnancy is relevant with living urinary incontinence problems. Frequent constipation is a major risk factor defined in the literature [26]. Frequent constipation is important as it causes problems in the pelvic muscle structure.

According to relative risk calculations, logistic regression analysis was conducted to evaluate the joint effect of variables that were defined to be risk factors for urinary incontinence. According to the analysis done through logistic regression, its observed that post-pregnancy urinary incontinence stories increase UI risk by 7.1 times, being widowed or divorced increases UI risk by 2.1 times, having trouble walking increases UI risk by 1.8 times and frequent constipation increases UI risk by 2.1 times. Having being widowed/divorced as a risk factor may be a result from the fact that women in this group also belong to an older age group. When the risk factors defined in this study are considered, it can be said that the women should be routinely checked for post-birth urinary incontinence stories. The women should be taught the Kegel exercises in this period and whether they apply them or not should be monitored. Preventing initiatives that cause damage to the pelvic muscles during giving birth and having deliveries with the help of experienced doctors / midwifes in a hospital setting for this purpose seems important. Similarly, preventing repeating constipation situations, ensuring a complete constipation treatment is applied to all women experiencing constipation, reviewing their nutrition habits and providing them with a regular exercise habit is required. When monitoring elderly individuals, it may be beneficial to monitor them from the perspective of difficulty in walking and providing those with walking difficulties with using assistance tools and other suitable solutions. The toilets should have suitable arrangements for those having difficulty walking or keeping their balance. When these risk factors are evaluated, it was concluded that through taking precautions especially in the birth-giving ages and by according the elderly individual with the physiological changes occurring in the aging process will result in decreasing urinary incontinence that negatively affect the women's health.

CONCLUSION

The study found that urinary incontinence was a common health problem for elderly women. Being widowed or divorced, post-pregnancy urinary incontinence stories, frequent constipation (OR=1.606 p=0.0429) and trouble walking (OR=1.849 p=0.007) were defined as significant risk factors. Moreover, socio-economically disadvantaged women were included in the risk group for urinary incontinence. This condition was more common among women who were widowed or divorced, lived in a village or town and perceived their economic

status as negative. Considering these results, health professionals who work in primary health care should carefully monitor the reproductive health of socio-economically disadvantaged women and take the necessary precautions regarding this issue. Diagnosing urinary incontinence during home visits to women by health professionals is especially important since the rate of hospital visits by women for urinary incontinence is very low. Urinary incontinence is a problem that should be tackled while considering family environments and social benefits.

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