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## Wiedza kobiet na temat nietrzymania moczu i sposobów radzenia sobie z chorobą

## The women`s knowledge about the urinary incontinence and ways of controlling the illness

### Streszczenie

**Wstęp.** Nietrzymanie moczu (NTM) uważa się za jedną z najczęściej występujących chorób przewlekłych u kobiet. Jest to stan niekontrolowanego wycieku moczu przez cewkę moczową. Dotyczy on 17-60% kobiecej populacji.

**Cel.** Celem pracy było poznanie wiedzy kobiet na temat problemu nietrzymania moczu oraz umiejętności jej praktycznego wykorzystania, tak aby przyczynić się do poprawy jakości życia.

**Material i metody.** W badaniu udział wzięło 101 pacjentek z Zamojskiej Kliniki Rehabilitacji (WSZiA). Respondentki były zróżnicowane pod względem wieku, miejsca zamieszkania oraz wykształcenia. Wiek badanych wynosił 30-87 lat. Średnia wieku osób badanych wynosiła 58,34 lat. Wyniki poddano analizie statystycznej.

**Wyniki.** Spośród respondentek 69,31% kobiet stwierdziło, że nietrzymanie moczu jest problemem wstydliwym, a 30,69% że nie. Czynniki, które w największym stopniu wpływają na NTM według badanych są: wiek – 35,64%, następnie przebyte ciąży – 27,72%, 12,87% – ciężka praca fizyczna, 11,88% – częste infekcje dróg moczowych, uwarunkowania genetyczne – 8,91%, nadwaga – 2,97%. Jako najczęściej stosowaną metodę radzenia sobie z problemem nietrzymania moczu respondentki wymieniają: ćwiczenia – 37,62%, wkładki/podpaski – 27,72%, farmakoterapia – 13,86%, operacja – 10,89%, unikanie wysiłku – 1,98%, 0,99% – częste opróżnianie, botoks, ograniczenie spożywania dużych ilości napojów.

**Wnioski.** Nietrzymanie moczu jest chorobą wstydliwą i skrywaną dlatego też, należy ułatwić dostępność informacji zarówno na terenach wiejskich jak i miejskich. W obu badanych grupach NTM ma wpływ na różne sfery życia oraz na jakość życia, więc jest to problem społeczno-ekonomiczny. Szczególnie narażone są kobiety, które przeżyły więcej niż jedną ciążę. Dlatego wśród tych kobiet powinien być skrupulatnie przeprowadzany program informacyjny na temat NTM.

**Słowa kluczowe:** kobiety, nietrzymanie moczu, leczenie zachowawcze.

### Abstract

**Introduction.** The urinary incontinence (UI) is considered one of the most often occurring chronic diseases in women. It consists in uncontrolled leakage of urine through the urethra. It concerns 17-60% of the female population.

**Aim.** The main aim of the present work was to investigate women`s knowledge about the problem of urinary incontinence and its practical application dealing with the problem, what would contribute to improving the quality of life.

**Material and methods.** There were 101 female patients surveyed from the Zamość Rehabilitation Center of University of Management and Administration. The population was diversified with regard to age, place of living and education. The age of the examined women varied from 30 to 87 years. The research tool used was an author`s questionnaire survey. In the statistical analysis of the results Microsoft Excel program was applied. The significance level was accepted for  $p < 0.05$ .

**Results.** For 69.31% respondents it was the embarrassing problem, but for 30.69% it was not. According to 35.64% women the age is the factor which influences UI to the highest degree. Next are the previous pregnancies (27.72%), hard physical labor (12.87%), frequent infections of the urinary tract (11.88%), genetic factors (8.91%), and excess weight (2.97%). The methods of dealing with the problem which respondents list most frequently are: exercises (37.62%), using of inserts/ sanitary towels (27.72%), pharmacotherapy (13.86%), operation (10.89%), avoiding effort (1.98%), frequent emptying, Botox, limiting consumption of drinks (0.99%).

**Conclusions.** In the opinion of the investigated women, UI was an embarrassing illness, often concealed, so the availability of information should be easier, both in urban and in rural areas. In both tested groups the respondents stated that UI exerted a negative influence on different spheres of life and on a quality of life, so it should be emphasized here that it is a social-economic problem. The tested women knew different methods of dealing with UI, but they didn`t know about such non-invasive methods as electrotherapy or biofeedback therapy. The women especially exposed to UI were those who were multipara. That is why a thoroughly prepared informing program about UI should be conducted among those women.

**Keywords:** women, urinary incontinence (UI), non-invasive treatment.

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## INTRODUCTION

The urinary incontinence (UI) is considered one of the most often occurring chronic diseases in women. It consists in an uncontrolled leakage of urine through the urinary tract [1]. It concerns from 17% to 60% of the female population. Alarming is, however, the fact that this disease affects younger and younger women (about 4.4% in the age of 20-29 years), whereas it affects about half of the population of women over 60 (after the menopause). It means, that the incidence of UI increases together with the respondents' age [2,3]. Its real incidence, however, may be even higher, because many women consider UI as an embarrassing problem and can hardly talk about it. The unintentional urinating incidents influence psychological and social aspects of their lives, because they hide their illness, what negatively affects their physical and mental state, causing neuroses and depressions. It also results in avoiding social contacts and sex life [1,4,5]

The risk factors include the post-menopausal period. The problem is also influenced by obesity, because there were found some interdependencies between the growing BMI and development of UI. It is influenced also by the number of natural parturitions, chronic constipations, chronic coughing, a hard physical labor, some extreme sports, connective tissue diseases, neuropathies and pelvic bottom innervations problems [1,6,7]

According to the classification by ICS, within the cases of urinary incontinence specified were: stress UI, bladder instability and urge UI [6,8].

The intensity of UI was divided into three degrees (by Stamey): I – the urine leak during coughing, laughing or sneezing; II – the urine leak during the normal physical labor, running, climbing upstairs; III – the urine leak during staying in bed [9].

The essence of effective treatment is the correct differential diagnosis for the evaluation of the classification of urinary incontinence. At first, the patients should be interviewed about the characteristics of their dysfunctions, number of pregnancies, gynecological surgeries, medicines taken and lifestyle. The patients should also write down the frequency and volume of urination [4]. Helpful for diagnostic reasons would also be the pad test (estimating the increase of the pad's weight after feeling an intensified urge to urinate). Moreover, the patient should undergo palpation test over the stomach, vagina, perineum and rectum. Using a neurological test, the innervations of lower urinary tract and the minor pelvis are evaluated. In order to exclude a urinary tract infection, a laboratory analysis of the urine should be performed. The most precise examination, however, is an urodynamic test (including the uroflowmetric analysis and cystometrics). The volume of urine, the time of urinating, pressure inside the bladder and abdominal cave, muscle strains of pelvic bottom and sphincters, are estimated [10-12].

Before starting the surgical treatment, a non-invasive therapy should be introduced, which is the safest and the cheapest method. It is important to educate the patients about UI and the behavioral therapy, consisting in modification of their lifestyle and weight reducing (the decrease in body mass causes lowering of the inter-abdominal ten-

sion). Among physiotherapeutic exercises, we can suggest several exercises for the pelvic bottom muscles, introduced by a gynecologist Arnold Kegel. He suggested applying of those exercises in the moment of appearing of the first symptoms of unintentional urine leak during sneezing, laughing or an effort. The exercises of pelvic bottom muscles improve the blood supply and flexibility of those muscles. Moreover, they can be applied in any age [13-15]. The next method, described by the quoted authors, is the electro-stimulation, giving similar results as the exercises [4,16-21]. The treatment may be carried out using a vaginal or rectal probe. Traditional electrodes may be also applied. The pelvic bottom muscles consist of about 70% of slow twitch fibers (Type I) and about 30% of fast twitch fibers (Type II). The fibers of type I can be stimulated by impulses with a frequency from 5 to 10Hz, whereas fibers of type II react to impulses with a frequency from 35 to 50Hz. In the treatment of stress urinary incontinence a frequency between 10 and 50Hz is recommended. Such a frequency can influence both kinds of fibers [4,20,21]. Using the electro-stimulation method, however, we should remember about contraindications, being as follows: pregnancy, the pacemaker, period, vaginal inflammations, infections of urinary tracts, heart dysfunctions and metal implants. Biofeedback training can be also effective [16]. It can be performed, using vaginal probe that enables visualizing even minor twitches of pelvic bottom muscles on the screen. The patients are encouraged to further work, if they can see results of the training.

The women want to feel comfortably, so they use panty liners, pads or tampons, but our National Health Fund limits reimbursements of those means.

When the ailment intensifies, the surgical treatment should be considered. The most often performed are Burch and sling operations [3,22].

## AIM

The main aim of the present work was cognition of the knowledge of women about their urinary incontinence and dealing with the problem, what would contribute to improving the life comfort in two tested groups.

The research tasks were the following:

1. To find and reveal the kinds of sources, which the tested women get their knowledge about the disorder from.
2. To find and introduce the kinds of problems met by the tested women.
3. To reveal the ways of dealing with the illness by the surveyed women from both groups
4. To present statistical significances of interdependences between UI and numbers of pregnancies, age, dwelling places and education of the respondents.

## MATERIAL AND METHODS

The research included 101 female patients from the Zamość Rehabilitation Center of University of Management and Administration. The respondents were divided into two main groups:

- Group I – the women reporting UI symptoms (45).
- Group II – the women without UI symptoms (56).

The age of tested women varied from 30 to 87 years, with the average values of 58.96 years in Group I and 57.57 years in Group II. The population was diversified with regard to age, dwelling places and education. Women living in the town accounted for 62.38%, whereas 37.62% were living in the country. Among country dwellers 52.63% suffered from UI and 39.68% of urban dwellers reported the same problems. Higher education concerned 22.22% of women from Group I, whereas 14.29% from Group II. Secondary education was reported by 42.22% of women from Group I and 48.21% in Group II. Elementary education concerned 15.56% of Group I women and 10.71% of Group II, respectively. The research tool was an author's questionnaire survey. In the statistical analysis of the results the Microsoft Excel program was used. The significance level was accepted for  $p < 0.05$ .

## RESULTS

The research results proved that all respondents (100%) heard about the urinary incontinence problems. Women learned about it from the TV/Internet (52.48%), from the literature/magazines (42.56%), from friends (31.68%), from the gynecologist (29.70%), whereas only 9.9% learned about it from a family doctor and 7.92% from parents. Very good level of knowledge about it was declared by 13.86% of respondents, whereas 78.22% regarded it as sufficient and 7.92% – as insufficient. In fact, the levels of knowledge about it were similar in both groups (Group I: 15.56%, 77.78%, 6.67%; Group II: 12.50%, 78.57%, 8.93%, respectively). Among the surveyed women, 69.31% regarded it as an embarrassing problem, whereas 30.69% didn't think so (Group I: 77.78%, 22.22%; Group II: 62.50%, 37.50%, respectively). Country dwellers affected with this problem were embarrassed and disconcerted to a higher degree (Group I: 85%, 15%; Group II: 83.33%, 16.67%, respectively). On the other hand, the responses of town dwellers were as follows: Group I: 72%, 28%; Group II: 52.63%, 47.37%. When asked about the scope of the phenomenon, 51.49% of the tested women answered, that every 10<sup>th</sup> woman suffers from this ailment; 23.76% thought it affected every 5<sup>th</sup> woman, according to 20.79% of respondents – every 50<sup>th</sup>, whereas in the opinion of 3.96% of respondents, affected was every 100<sup>th</sup> woman.

As far as the age was concerned, 75.25% of tested women confirmed the statement that the problem affects mainly elderly women and 24.75% of respondent didn't agree with it. In the majority of cases (68.32%) the tested women indicated the range between 41 and 64 years of age, whereas the age 65+ was emphasized by 28.71%; 2.97% of respondents pointed out the range between 26 and 40 years, whereas none of tested women marked the age below 25. When asked, what sphere of life is the most highly affected by UI – 35.64% of women indicated the professional sphere, 34.65% held a view, that it hindered social life, in opinion of 15.84% – family life, according to 11.88% – sexual life, whereas 1.98% indicated the option "other". Within the specified groups, in the Group I the greatest number of respondents indicated the option "professional life" (42.22%), social life (24.44%), sexual life (17.78%), family life 11.11%, other – 4.44%.

In the Group II women mostly supported social life (42.86%), professional life (30.36%), family life (19.64%) and sex life (7.14%).

Similar numbers of women thought that UI exerted a high influence upon their quality of life (55.56% in the Group I, 55.36% in the Group II). Women from the Group I (33.33%) pointed out its moderate influence, whereas 26.7% of women from the Group II shared the view. The opinion that UI had a little influence on their quality of life was confirmed by 6.67% women from the Group I and 16.07% from the II Group held a view, whereas in the opinion of 4.44% of women from the Group I and 1.79% from the Group II one, it had no influence at all.

If necessary, 51.11% of respondents from the Group I (48.21% from the Group II) would ask a family doctor for an advice; 46.67% from the Group I (50% from the Group II) would ask a gynecologist. Only 2.22% from the Group I (1.79% from the Group II) would ask their partners for help, whereas none of the respondents would ask either their friends, or parents. According to the surveyed women, UI was influenced to the highest degree by age (35.64%), pregnancies (27.72%), hard manual labor (12.87%), frequent infections of urinary tracts (11.88%), genetic factors (8.91%), excessive weight (2.97%). None of respondents marked chronic constipations as a factor influencing the occurrence of UI. The women stated, that incidents of an unintentional urination occurred most often during sneezing 63.37% (with 66.67% Group I, 60.71% Group II), physical effort 27.72% (22.22% Group I and 32.14% Group II), laughter 8.91% (11.11% Group I and 7.14% Group II). None of the respondents marked running or going up the stairs. Knowing the methods of coping with UI was stated by 65.35% of respondents, whereas for 35.65% respondents it was not known. In the Group I 73.33% women declared knowing the methods, whereas 26.67% didn't know (in the Group II 58.93% and 41.07%, respectively). The methods of dealing with the UI problem mentioned by the respondents were most often exercises (37.62%), panty liners/pads (27.72%), pharmacotherapy (13.86%), surgical treatment (10.89%), avoiding efforts (1.98%), frequent urinating, Botox, limitation of the volume of drunk liquids (0.99 each).

The study examined statistical significance of the relationship between the previous pregnancies and UI; the significance level was  $p < 0.05$ . No significant relation was found, however, between UI and place of dwelling, age or education (Table 1-4).

**TABLE 1. The analysis of statistical significance of the relationship between the history of pregnancies and urinary incontinence.**

Previous pregnancies	With UI		Without UI		Chi <sup>2</sup> test
	Number of respondents	%	Number of respondents	%	
0	3	21.43	11	78.57	0.0209
1	6	54.55	5	45.45	
2	14	36.84	24	63.16	
3	20	66.67	10	33.33	
4 and more	2	25.00	6	75.00	
Chi <sup>2</sup> test < 0.05					

**TABLE 2. Statistical analysis between the place of living and urinary incontinence.**

Place of living	With UI		Without UI		Chi <sup>2</sup> test
	Number of respondents	%	Number of respondents	%	
Town	25	39.68	38	06.32	0.20465128
Country	20	52.63	18	47.37	
Chi <sup>2</sup> test>0.05					

**TABLE 3. Statistical analysis between age and urinary incontinence.**

Age	With UI		Without UI		Chi <sup>2</sup> test
	Number of respondents	%	Number of respondents	%	
30-39	2	25.00	6	75.00	0.4724
40-49	7	70.00	3	30.00	
50-59	15	41.67	21	58.33	
60-69	14	43.75	18	56.25	
70-79	4	40.00	6	60.00	
80-89	3	60.00	2	40.00	
Chi <sup>2</sup> test>0.05					

**TABLE 4. Statistical analysis between education level and urinary incontinence.**

Education level	With UI		Without UI		Chi <sup>2</sup> test
	Number of respondents	%	Number of respondents	%	
Elementary	7	53.85	6	46.15	0.6993
Vocational	9	39.13	14	60.87	
Secondary	19	41.30	27	58.70	
Higher	10	52.63	9	47.37	
Chi <sup>2</sup> test>0.05					

## DISCUSSIONS

The conducted analysis shows that all of the women have heard about UI problems. The majority of respondents (78.22%) declared their knowledge as sufficient, although not all of them realized the effects and gravity of this illness. It was confirmed by the fact that more than 2/3 of respondents considered negative influence of UI on social (34.65%) and professional life (35.64%), whereas nearly 1/3 on family life, sex life and others (15.84%, 11.88%, 1.98%, respectively). More than a half (55.45%) of the tested women held a view that it exerted a significant influence on the quality of life, whereas nearly 1/3 (29.70%) regarded that influence as a moderate one. Those results show the problem in a rather wide range. It has to be emphasized that it is a social and economic problem.

Hunkaar et al. surveyed 29500 women from France, Germany, Spain and Great Britain. They found an average incidence of UI in the surveyed women to be 35%. So it is a common phenomenon that results in considerable financial and social costs. Introducing more effective methods of prophylaxis and treatment of that ailment should be con-

sidered [23]. The social report "Core Wellness – the internal force", containing results of surveys on 300 women indicates that only 14% of the respondents affected with the UI problem, declared their knowledge about the problem as sufficient. This report shows that an action oriented to education of Poles about possibilities of active life with UI should be taken [24,25].

The respondents regarded UI as an embarrassing illness. Moreover, the significant part (85%) of women affected with that problem comes from the country, whereas 72% women holding such opinion are urban dwellers. It suggests that the educational action should be oriented to rural areas. TV and the Internet (52.48%) and literature/magazines (43.56%) proved to be the most popular sources of information for women, whereas the information about UI should be spread to a wider range in gynecologists and family doctors' surgeries, where women are looking for help and advice. The knowledge of medical staff on this subject is limited, though [22,26].

More than half of the respondents knows how to deal with UI problems and realizes what the most frequent causes of unintentional urine leaking are. Among the most popular and easy-to-apply methods one can mention exercises, panty liners, avoiding efforts and excessive quantities of drinks. The research of Hunskaar showed that more than half of respondents used panty liners, but only 30% of them sought medical advice [23].

Much less known methods are an electrotherapy as well as the biofeedback, whereas there have been published many reports about their positive influence [4,16-21]. According to Burs research conducted among the UI-affected persons who performed the exercises, in 54% of them a health improvement was found. In the group of patients performing biofeedback training, the improvement was found in 64% of them [27].

The analysis of statistical significance of relations between numbers of undergone pregnancies and UI showed that the number of pregnancies influenced the occurrence of UI. Similar conclusions were introduced by Jolley. According to him, there is a linear interdependence between intensification of urination control malfunctions and the number of parturitions [28]. Also Thomas et al. found a higher incidence of urinary incontinence among multiparas than in nulliparas [29].

If we want to obtain positive effects in therapeutic process, we should apply a complex therapy. Surgery, physiotherapy, pharmacotherapy and behavioral therapy should complement each other, as well as the co-operation of a physiotherapist, medical doctor, psychologist and patient.

## CONCLUSIONS

1. In the opinion of the surveyed women, UI was an embarrassing illness, often concealed, so the availability of information should be easier, both in urban, as in rural areas.
2. In both tested groups the respondents stated that UI exerted a negative influence on different spheres of life and on a quality of life, so it should be emphasized here that it was a social-economic problem.

3. The surveyed women knew different methods of dealing with UI, but they didn't know about such non-invasive methods as electrotherapy or biofeedback therapy.
4. Especially exposed to UI were women who had been pregnant more than once. That's why among those women a thoroughly prepared dissemination program about UI should be conducted.
5. A special attention should be paid to preventive means and actions in order to make women aware of the UI problem and its potential risk factors.

## REFERENCES

1. Rechberger T. Rola tkanki łącznej w etiopatogenezie nietrzymania moczu u kobiet. In: Materiały Sympozjum Naukowego Sekcji Ginekologii Operacyjnej PTG. Białystok; 1999. p.31-7.
2. Bo K. Urinary incontinence, pelvic floor dysfunction, exercise and sport. *Sports Med.* 2004;34:451-64.
3. Culligan PJ, Goldberg RP, Sand PK. A randomized controlled trial comparing a modified Burch procedure and a suburethral sling: long term follow up. *Int Urogynecol J Pelvic Floor Dysfunct.* 2003;14:229-33.
4. Bujnowska-Fedak M, Kassolik K, Andrzejewski W, Steciwko A. Nietrzymanie moczu. In: A. Steciwo. Fizjoterapia w chorobach układu moczowo-płciowego. Wrocław: Wydawnictwo AWF; 2004. p.74-9.
5. Rechberger T, Skorupski P. Nietrzymanie moczu – problem medyczny, społeczny i społeczny. In: T. Rechberger, J. Jakowicki (ed). Nietrzymanie moczu u kobiet patologia diagnostyka leczenie. Lublin: Wydawnictwo BiFolium; 2005. p.29-38.
6. Bo K. Risk factors for development and recurrence of urinary incontinence. *Curr Opin Urol.* 1997;7:193-6.
7. Thom DH, Eeden SK, Brown JS. Evaluation of parturition and other reproductive variables as risk factors for urinary incontinence in later life. *Obstet Gynecol.* 1997;90:983-9.
8. Swift SE, Tate SB, Nicholas J. Correlation of symptoms with degree of pelvic organ support in a general population of women: what is pelvic organ prolapse? *Am J Obstet Gynecol.* 2003;189:372-9.
9. Włazłak E, Surkont G. Wybrane aspekty leczenia farmakologicznego nietrzymania moczu. *Przew Lek.* 2005; 2:62-73.
10. Aukee P, Usenius JP, Kirkinen P. An evaluation of pelvic floor anatomy and function by MRI. *Eur J Obstet Gynecol Reprod Biol.* 2004;112:84-8.
11. Pannu HK, Genadry R, Kaufman HS. Computed tomography evaluation of pelvic organ prolapse. Techniques and applications. *J Comput Assist Tomogr.* 2003;27:779-85.
12. Tunn R, Petri E. Introital and transvaginal ultrasound as the main tool in the assessment of urogenital and pelvic floor dysfunction: an imaging panel and practical approach. *Ultrasound Obstet Gynecol.* 2003;22:205-13.
13. Strupińska E. Fizjoterapia w nietrzymaniu moczu – techniki i metodyka ćwiczeń. *Prz Urologiczny.* 2007;46:17-9.
14. Surkont G, Włazłak E, Stetkiewicz T, et al. Wpływ różnych sposobów analizy efektów leczenia nieoperacyjnego wysiłkowego nietrzymania moczu na końcowe wnioski. *Prz Menopauzalny.* 2005;4:77-82.
15. Kegel A. Progressive resistance exercise in the functional restoration of perineal muscle. *Am J Obstet Gynecol.* 1948;56:238-49.
16. Paczkowska A, Friebe Z, Koszła M. Skojarzone leczenie mieszanych postaci nietrzymania moczu elektrostymulacją i biofeedback. *Prz Urologiczny.* 2002;6:57-9.
17. Koszła M. Fizjoterapia szansą dla pacjentek z NTM. *Kw. NTM.* 2006;1:4.
18. Franek A. Nowoczesna elektroterapia. Katowice: Śląska Akademia Medyczna; 2001.
19. Łazowski J. Podstawy fizykoterapii. Wrocław: Wydawnictwo AWF; 2002.
20. Robertson V, Ward A, Low, Reed A. Fizjoterapia. Aspekty kliniczne i biofizyczne. Wrocław: Elsevier Urban & Partner; 2009.
21. Pages IH. Komplexe Physiotherapie der Weiblichen Harninkontinentz-Grundlagen, Durchführung, Bewertung. *Phys Med Rehab Kuror.* 1996;2:19-24.
22. Williams KS, Assassa RP, Smith NK, et al. Educational preparation: specialist practice in continence care. *Br J Nurs.* 1999;8:1198-207.
23. Hunskaar S, Lose G, Sykes D, Voss S. The prevalence of urinary incontinence in women in four European countries. *BJU Int.* 2004;93:324-30.
24. Ogólnopolskie badanie „Polki wobec nietrzymania moczu” opracowane w kwietniu 2008 r. na grupie 300 kobiet cierpiących na nietrzymanie moczu. Badanie zrealizowano na zlecenie firmy SCA Hygiene Products, organizatora ogólnopolskiego programu edukacyjnego „CoreWellness – wewnętrzna siła”.
25. Agency for Health Care Policy and Research (AHCPR). Urinary incontinence in adults. Acute and chronic management. US Department of Health and Human Services. Public Health Service. Agency for Health Care Policy and Research. AHCPR publication No. 96-0682;1996.
26. Villet R, Salet-Lizee D, Zafropulo M. Wysiłkowe nietrzymanie moczu u kobiet. Warszawa: PZWL; 2003.
27. Kwon CH, Culligan PJ, Koduri S, et al. The development of pelvic organ prolapsed following isolated Burch retropubic uretrophexy. *Int Urogynecol J Pelvic Floor Dysfunct.* 2003;14:321-5.
28. Jolley JV. Reported prevalence of urinary incontinence in women in a general practice. *Br Med J.* 1988;296:300-2.
29. Thomas TM, Prymat KR, Blannin J, Meade TW. Prevalence of urinary incontinence. *Br Med J.* 1980;281:1243-5.

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