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Revista de cercetare și intervenție socială

ISSN: 1583-3410 (print), ISSN: 1584-5397 (electronic)

Selected by coverage in Social Sciences Citation Index, ISI databases

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Revista de cercetare și intervenție socială, 2015, vol. 50, pp. 143-155

The online version of this article can be found at:

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Published by:

Expert Projects Publishing House



On behalf of:

„Alexandru Ioan Cuza” University,

Department of Sociology and Social Work

and

Holt Romania Foundation

REVISTA DE CERCETARE SI INTERVENTIE SOCIALA

is indexed by ISI Thomson Reuters - Social Sciences Citation Index

(Sociology and Social Work Domains)



The Assessment of Quality of Life and Biopsychosocial Implications in the Diagnosis of Women's Urinary Incontinence

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Abstract

Urinary incontinence is a major cause of morbidity and invalidism which influences the quality of life and affects women of all ages. Therefore, this represents a social or hygiene problem and can be objectively demonstrated. In this context, urinary incontinence can be considered a public health problem, as it causes a significant decrease in the quality of life and affects the patient's life socially, psychologically, occupationally, physically and sexually. The study addressed these women's quality of life, so that the result of the analysis would be an optimal collaboration with the patients in order to find the best possible diagnosis and treatment methods. As it is not a life-threatening condition, but rather a personal and social hygiene problem, the necessity of a treatment was perceived differently depending not only on the level of education, but on the degree of social and professional integration, too.

Keywords: urinary incontinence, quality of life, urogenital distress inventory, social implications

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Introduction

Urinary incontinence affects approximately 40-50% of the women, but if the numbers can slightly differ from one author to the other, all of them can agree that this condition is majorly underdiagnosed and one of the authors even went further to name it “a hidden epidemic” (Haylen *et al.*, 2010). Whether we are talking about the stress urinary incontinence - which is more frequently found (approximately 30%) in women between 40 and 60 years old, or urinary imperiousness - found in 15-20% of younger women, the symptoms rise psychosocial problems for patients (Rampazo & D’Elboux, 2010). Therefore, a very small number of them report this problem to a specialist (Bent, 2003). The women with stress urinary incontinence, most of whom have experienced natural births, think that this dysfunction is a normal consequence of aging; as a result, they disregard reporting this symptom to their doctor, even when they are consulted by the gynaecologist for other different reasons (Kearney *et al.*, 2006; Toozs-Hobson *et al.*, 2008). However, these women usually give affirmative answers when they are asked directly if they have experienced spontaneous urine leakages while sneezing or coughing, and the severity of the problem differs from one case to another (Nager & Albo, 2004).

Urinary incontinence- biopsychosocial (BPS) problem

In the cases of patients with urinary incontinence, the addressability is significantly influenced by a series of psychosocial factors (Bradway, 2003; Gotoh, 2007). The young patient between 40 and 50 years of age, with social and professional activity, is the one who takes initiative to ask for treatment, whereas the housewives and retired women over the age of 50 are reluctant to report their symptoms and find difficulties in adapting to the treatment scheme (Kelleher *et al.*, 1995). The most frequently asked questions are: “Is the surgery difficult?”, “Is it performed abdominally or vaginally?”, “How long will I have to stay in the hospital?”, “How long will the investigations take?”, “Are they painful?”, “But what will happen if I stay like this?” (Donovan *et al.*, 2002; Farrell, 2003; Coyne *et al.*, 2003).

Most of the patients are eager to know for how long they will have to miss the professional, social and family activities, as well as how long the postoperative recovery period is (Haessler *et al.*, 2009). There is a different perception regarding the benefits of the treatment in report with the effort of missing the daily activities for a while (Gill *et al.*, 2009). A very good adhesion to the investigation and treatment plan was obtained by offering the patients the option of a simple and easy to accept investigation such as the transperineal ultrasound, which can be successfully replaced by the micturating cystourethrography as imaging method,

and a minimally invasive surgery like the transobturator vaginal insertion of a synthetic polypropylene tape, which is more easily accepted than the classic abdominal Burch colposuspension surgery (Monz *et al.*, 2007). Also considered an advantage is the Romanian Urogynecology Society's recommendation of limiting the urodynamic studies to the difficult, unclear cases of mix urinary incontinence and to the surgical failures, clinically confirmed stress urinary incontinence which does not require laborious examinations and are not accessible in the majority of the country's urogynaecology clinical units (Oh & Ku, 2006). The methods of ultrasonography examination, the surgical technique and the obtained results have brought about maximum benefits as they are using minimally invasive methods that substantially reduce patient's discomfort and account, in the end, to a raise in the addressability of these women to their doctors.

The involvement of a high degree of subjectivity in the evaluation and diagnosis of this pathology, along with the social, educational and hygienic factors play a key role in the addressability of these women to a specialised medical consult, and, as a result, in finding the correct diagnosis and treatment method (Avery *et al.*, 2004). The subjective personal perception regarding the normality and the modifications that are thought to be natural effects of aging are the causes of a real struggle in determining the incidence of urinary incontinence for the general population (Katz & Blaivas, 1983). One consequence is the wide range of numbers reported by different authors regarding the frequency of the condition among the general population. The percentages are ranging between 20 and 40%, the maximum incidence arising around the age of 50 (Khullar, 2003). Of these, less than half of the women have avoided reporting and asking the doctor for a treatment and have experienced a severe case of incontinence and a significantly decreased quality of life (Reiter-Theil & Agich, 2008). Then, it can be clearly seen that this pathology is highly neglected and underdiagnosed and, consequently, due to the rise in life expectancy, an increasing part of the population is both personally and socio-professionally affected (Papanicolaou *et al.*, 2005; Coyne *et al.*, 2011). In order to enhance the addressability of the patients towards the specialised services, an active implication of the general practitioner is needed, who must act primarily on the psychological factor (embarrassment, reluctance to discuss the symptoms), along with the creation of an examination and treatment protocol which is simple, minimally invasive, easily accepted by the patients and which is not time-consuming, requires short hospitalisation time, quick recovery and an easy and short socio-psychological and family rehabilitation (Corrigan, 2000; Dooley *et al.*, 2008).

Depending on the degree of the condition and keeping in mind the physical and psychical condition of the woman, a few changes may occur in her activity and social behaviour (Grimby *et al.*, 1993). Some epidemiological aspects regarding the percentage and extent of damage to the female population in our country should be mentioned. On the other hand, stress urinary incontinence itself, which

can or cannot be linked to various pelvic-perineal floor disorders, can be the subject of a scientific debate as there are still some unclear aspects such as the semantics or the criteria for reporting the therapeutic results (Haylen *et al.*, 2010). Furthermore, we considered that the study is motivated by psychosocial aspects which are imposed, with special meanings, by the new modern living conditions (Robinson *et al.*, 1998; Vandoninck *et al.*, 2004). Countless times, amongst the patients in Romania, there is a mental reluctance to declare, even to a doctor, the problems relating to the urinary incontinence, the pelvic statics and sexual life. This is even more likely to occur when the patient is asked for permission to take part in a scientific study which could be made public.

Research methodology

The study involved 67 patients with mild, moderate and severe stress urinary incontinence, of whom 37 women with moderate and severe incontinence, who had had surgery, represent the operated subgroup. For the comparison, there has been introduced in the study a control group which comprised of 32 patients who did not have urinary incontinence symptoms. The study groups were homogenous. In all cases, a transperineal echography and measurements have been done; for the operated group, these measurements had been done before and after the correction surgery. In general, echography is a method of imaging diagnosis very easily accepted by the patients, and this type of transperineal examination is less invasive even than a simple gynaecologic consultation. For this reason, none of the clinically examined patients introduced in one of the study groups, has refused this procedure; therefore, we were able to have a very good collaboration for the surgery, where it was needed. The mean age of the patients in the study groups was 51.6 years old \pm 7.7SD. The study included patients between 36 and 72 years old, 50% of the women being under the age of 51. Moreover, the patients had different obstetrical backgrounds, from nulliparous women with one or two natural births (mostly), to multiparous women and women with births by caesarean section.

As treatment, there was proposed a minimally invasive surgery which involved the transobturator vaginal insertion of a synthetic polypropylene tape. After studying the specialised literature, this procedure has been chosen as it has a similar efficiency as the retropubic TVT implant (some of the authors say between 70-89%), but presents less risks when it comes to bleeding (frequently in the Retzius space for TVT), bladder injuries and postoperative urine retention (De-lorme, 2001). Another important aspect is the faster curve of learning and control of surgical technique in the case of the transobturator method. Another frequent question of the patients is if the doctor has previously performed such interventions and if the results exceeded the expectations; therefore, for the psychological

comfort and the good cooperation of the patients, it has been explained to them that this technique has been practiced for 6 years in our team, with vast experience in this field, favourable results and without any major complications.

Assessment of quality of life of patients with urinary incontinence using IIQ-7 (Incontinence Impact Quality of Life) and UDI-6 (Urogenital Distress Inventory)

Quality of life is a subjective concept, mediated by the social and cultural values (Kelleher *et al.*, 1995). The questionnaires applied for measuring a patient's perception on the quality of life have an increased risk of misinterpretation due to the population's characteristics and different cultural aspects (Khullar, 2003). The Incontinence Impact Quality of Life questionnaire (IIQ-7) and the Urogenital Distress Inventory (UDI-6) questionnaire have been developed and combined in order to evaluate the impact of urinary incontinence on the quality of life (Shumaker *et al.*, 1994).

These questionnaires comprise of 30, respectively 19 questions and, even if they are valid to evaluate the treatment for stress urinary incontinence, this has been proven to be impossible due to the time needed for them to be done. Therefore, shorter versions of IIQ and UDI have been proposed, which have only 7 and 6 questions. These valid questionnaires have been proven to have a high degree of correlation with the extended versions (Uebersax *et al.*, 1995).

The result of the questionnaire which evaluates in 6 questions the patient's quality of life (UDI-6 – Urogenital Distress Inventory) assessed the impact of the urinary symptoms on the quality of life: urinary frequency, urinary imperiousness, stress incontinence, accidental urine leaks, difficulties in urinating and pain. There has been used the Lickert scale to evaluate the influence of urinary symptoms on the quality of life, and the results were: not at all, slightly, moderately and greatly.

The IIQ-7 questionnaire (Incontinence Impact Quality of Life) consists of 7 questions which assess: housework, physical state, social activities, ability to be away from home, emotional state and frustration. Each question is graded with 4 points: 0-not at all, 1-slightly, 2-moderately, 3-greatly. The points are added in the end and an average is calculated by dividing the obtained sum by the number of questions. The average is then multiplied by 33.3, giving a value between 0 and 100. Therefore, a high score indicates a decreased quality of life.

Also, there has been applied the TSS (Treatment Satisfaction Scale) treatment satisfaction assessment questionnaire for the 37 operated patients included in the study, which evaluates their subjective opinion on the satisfaction with the results of the treatment. This questionnaire has only one question: "My health was: highly improved, improved, unchanged, worsened during treatment". The answers "highly improved" and "improved" illustrated an improvement of the pre-existent

condition, whereas “unchanged” and “worsened” pointed out the failure of the treatment. The questionnaire was filled in by the patients during the postoperative follow-up visits. During the examinations, we aimed to assess the influence of the stress urinary incontinence’s symptoms on the quality of life and to do a comparative study between the operated or unoperated patients and the control group (without IUE symptoms).

Statistical analysis

The comparison of the questionnaire scores was done using the nonparametric Kruskal-Wallis tests which is based on the variance analysis specific to the numeric variable which have inhomogeneous variances. This was applied in order to verify the differences between the general scores of IIQ-7 and UDI-6 of the patients included in the three study groups. There have been done post-hoc comparisons (Mann-Whitney U-test), comparing in this way both the operated and unoperated patients with the control group. A value of the level of significance $p < 0.05$ was considered statistical significance and the statistical conclusions were valid for a trust interval of 95% CI.

Results

The demographic and clinic characteristics of the patients from all the study groups are presented in table I. The mean age of the operated patients was 52.1 ± 8.6 SD (with ages ranging between 36 and 70 years, for the unoperated women it was 51.1 ± 8.5 SD (with a minimum of 36 years old and a maximum of 65), and for the control group the mean age was 51.8 ± 7.8 SD (minimum- 37 years old, maximum- 72 years old). The mean ages in all the study groups did not appear to be significantly different ($F_{ANOVA} = 0.111$, $p = 0.894$). The Post-hoc analysis indicated increased values of the Newman-Keuls test’s level of significance ($p >> 0.05$, 95% CI).

The origin place did not have a noteworthy association with the study groups in any of which more than 50% of the patients were from rural areas ($\chi^2 = 3.17$, $p = 0.204$).

The raised number of vaginal births, which represents a risk factor confirmed by the specialised literature (Tooze-Hobson *et al.*, 2008), was significantly associated ($\chi^2 = 23.58$, $p = 0.023$) with the occurrence of urinary incontinence. Therefore, out of the patients with UI who had surgery 32.4% had had more than 3 vaginal births, out of the unoperated women 20% had had more than 3, and only 9.4% of the patients in the control group exceeded 3 vaginal births.

There were no important differences ($H_{\text{Kruskal-Wallis}} = 2.003, p = 0.367$) among the weights of the heaviest new-borns from each study group.

Table 1. Demographic characteristics data of women

Characteristics of the participants	with surgery (n/%) - (n=37)	without surgery (n/%) (n=30)	without symptoms (n/%) - (n=32)	Statistical test
Age groups (years)				
≤ 39	1 / 2.7%	4 / 13.3%	2 / 6.3%	$\chi^2=49.45,$ $p=0.875$
40 – 49	14 / 37.8%	7 / 23.3%	10 / 31.3%	
50-59	15 / 40.5%	14 / 46.7%	15 / 46.9%	
60-69	6 / 16.2%	5 / 16.7%	4 / 12.5%	
≤ 70	1 / 2.7%	0 / 0%	1 / 3.1%	
Urban	18 / 48.65%	9 / 30%	16 / 50%	$\chi^2=3.17,$ $p=0.204$
Rural	19 / 51.35%	21 / 70%	16 / 50%	
Vaginal Birth (n)				
0	0 / 0%	3 / 10%	5 / 15.6%	$\chi^2=23.58,$ $p=0.023^*$
1-2	25 / 67.6%	21 / 70%	24 / 75%	
3-4	7 / 18.9%	6 / 20%	3 / 9.4%	
≥ 5	5 / 13.5%*	0 / 0%	0 / 0%	
BMI (kg/m ²)				
underweight	0 / 0%	0 / 0%	5 / 15.63%	$\chi^2=19.91,$ $p=0.0028^*$
normal weight	21 / 56.76%	14 / 46.67%	22 / 68.75%	
overweight	12 / 32.43%	14 / 46.67%	5 / 15.63%	
obesity	4 / 10.81%	2 / 6.67%	0 / 0%	
Weight of biggest infant (kg)	3.42±0.6	3.42±0.6	3.42±0.6	

The assessment of urinary incontinence’s impact on the quality of life is important in the postoperative evaluation of the patients (Coyne *et al.*, 2004). The two questionnaires, UDI-6 and IIQ-7, can quantify urinary incontinence’s level of severity. The rate of severity for urinary incontinence, which was evaluated by UDI-6 and IIQ-7, showed a significant increase in the postoperative quality of life. Even if it is a subjective assessment, patient’s satisfaction is an important parameter that plays a key role in determining how successful the surgery was and aims to improve their quality of life. Symptoms of a hyperactive bladder, such as urinary imperiousness or incontinence, can have a negative impact on the patient’s quality of life, as well as on the treatment’s satisfaction (Uebersax *et al.*, 1995).

Table 2 shows the general scores and the modified subscales of IIQ-7 and UDI-6. The mean values of the two questionnaires have significant statistic differences for the total score and subscore Stress symptoms of UDI-6 ($p = 0.0364$), as well as for the total score and subscore of IIQ-7 ($p = 0.0237$).

Table 2. The Urogenital Distress Inventory Short Form (UDI-6) and Incontinence Impact Questionnaire Short Form (IIQ-7) scores of women

	UDI-6 / IIQ-7	with surgery (n/%) - (n=37)	without surgery (n/%) (n=30)	without symptoms (n/%) - (n=32)	Statistical test
	UDI-6 total score	68.6 (46.3-74.2) †‡	42.7 (32.4-66.7)	46.2 (18.4-66.7)	0.03641
subscale scores	Irritation symptoms	56.7 (66.7-99.1)	53.8 (19.8-94.3)	52.3 (19.5-73.2)	0.05827
	Stress symptoms	86.7 (66.7-94.2) †‡	56.4 (18.5-78.1) †	48.2 (18.6-76.4)	0.00673
	Obstruction/discomfort	35.6 (10.5-63.7) †‡	18.5 (0-33.3) †	29.5 (19.6-57.2)	0.01545
	IIQ-7 total score	58.2 (27.4-95.2) †‡	45.8 (38.4-64.5) †	22.5 (5.2-45.3)	0.0237
subscale scores	Physical activity	59.7 (39.6-84.7) †	52.3 (21.6-60.2) †	18.6 (0-50.8)	0.0016
	Travel	51.5 (24.3-94.5) †	50.6 (24.8-66.7) †	18.9 (0-50.8)	0.0038
	Social/relationships	69.4 (38.5-95.4) †	68.7 (33.3-66.7) †	31.4 (0-66.7)	0.0019
	Emotional health	76.3 (52.3-99.4) †‡	50.4 (33.3-66.7) †	32.5 (0-58.4)	0.0034
	† p<0.05 – with surgery / without surgery vs. without symptoms (post hoc analysis) ‡ p<0.05 – with surgery vs. without surgery (post hoc analysis) (post hoc analysis)				

The mean score of the patients who had had surgery was significantly higher for the UDI-6 Stress symptoms score (86.7±12.6SD) than the mean value of the subscore for the unoperated women (56.4±28.4SD) or than the control group (patients without any symptoms of urinary incontinence - (48.2±23.1DS). This situation also occurred in the case of the Obstruction/discomfort score which was much higher (p = 0.0017) for the operated patients (35.6±16.1DS). UDI-6 Irritation symptoms subscore did not have noteworthy variations (p = 0.058) among the three study groups (Table 2).

These results prove the frequent occurrence of stress symptoms for the patients who had surgery, compared to the women who were not or who did not have any symptoms. The irritation feeling had a comparable occurrence for all three groups. The obstruction and discomfort symptoms highly affected both the operated patients and the women without any symptoms, but had not only a slight impact on the unoperated ones.

The total IIQ-7 score of the operated patients is much different than for the control group. For all the four IIQ-7 subscales, the values for the operated patients were significantly higher than the ones for the both the operated patients and the women without symptoms. This result proves that the impact of urinary incontinence on the quality of life is highly increased for the operated patients and keeps being increased for the unoperated patients.

The treatment result satisfaction was assessed 6 months after the surgery using the TSS questionnaire. Thus, 28 patients (75.7%) said that their postoperative state is highly ameliorated, 7 patients (18.9%) said that their postoperative state is ameliorated, and 2 patients (5.4%) said that it is unchanged. The “highly ameliorated” and “ameliorated” answers are considered to be an indicator of improvement in the pre-existent state, resulting in 35 patients (94.6%) saying that they are satisfied with the outcome of the treatment.

Discussion

The study aimed to assess urinary incontinence patient’s perception on the quality of life. The treatment for stress urinary incontinence is multidisciplinary and involves a general practitioner, gynaecologist, urologist, psychologist etc. The surgical treatment is usually the last therapeutic choice, but, in most cases, the only one that has long-term positive results. The increased number of surgical procedures for treating urinary incontinence in women reflects the great amount of problems raised by this pathology which, at the moment, has many unknown facts. The most efficient treatment is the individual one for which the optimal procedure is selected depending on the anatomical and functional features of each patient, especially the level of incontinence, failure level of the bladder detrusor and the system that performs for the continence or sustains the pelvic organs. Nowadays, in the medical field, there is an accelerated development of new technologies which aim to prevent, diagnose and treat, stimulating and “forcing” the medical world to take the best decisions and choose the optimal strategies depending on different ethical, efficiency and utility issues (Abrams *et al.*, 2002).

The study is a retrospective analysis of the obtained results. For the analysis of the results, we used both the objective and subjective methods. The immediate and distant favourable evolutions confirm the individualised technic attitude for each case and completely justify the idea of treating stress urinary incontinence by the transobturator vaginal insertion of a synthetic polypropylene tape, through a minimally invasive technique. The very good evolution was detected for 94.6% of the patients. In terms of functionality, for 75.7% of the patients the results were very good, whereas for 18.9% the results can only be considered good. Unfortunately, for 5.4% of the patients, the results were only satisfactory, fact that can be explained by the women’s different associated aspects.

Urinary incontinence has a major impact on women’s quality of life. A great number of studies reported that the impact was higher on women with imperious incontinence (Frick *et al.*, 2009; Schimpf *et al.*, 2009).

However, most of the assessments on the patient’s quality of life were based on the urinary symptoms. The results of the studies can represent a guide for

clinicians regarding the treatment and patient's monitoring. Different studies show that, for women with urinary incontinence, the frequency of physical activities (78.1% vs 50%) and social ones (91.4% vs 50.8%) significantly decreased. For these women, there are a number of aspects that are degraded: the general health, physical and emotional conditions and social adaptation. Urinary incontinence had a great impact on the daily activities, as well as on the physical and mental states; this has been reported by many specialised studies which compared the quality of life of patients with urinary incontinence, cardiac failure and interstitial lung disease (Saccomann *et al.*, 2010; Coelho *et al.*, 2010).

Surprisingly, the general health and social function were more affected in the case of a woman with urinary incontinence than with gynaecological cancers (Ozaras & Ozyurda 2010).

Conclusions

The results showed that the degrading effect on the quality of life is comparable between urinary incontinence and chronic diseases. The UDI-6 and IIQ-7 questionnaires offer more details of the way in which the quality of life is affected in cases of urinary incontinence and particularly assess the level of damage to the social, physical activities and emotional state.

A noteworthy fact that results from our study is that choosing whether or not surgery should be performed was determined by the major impact on the quality of life, and not by the symptoms' severity. This conclusion states the significant influence the patients' opinions regarding the quality of life has on the management of the urinary incontinence's treatment.

The IIQ-7 and UDI-6 versions are easy to be given and filled in by patients and the subscales' score is significantly correlated with the physiopathological aspects on which the diagnosis is based. Therefore, these are the reliable tools in assessing the severity of the symptoms and their impact on the quality of life and they play a key role in choosing the treatment method for urinary incontinence.

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