Lower urinary tract symptoms of junior female clinical nurses.

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Abstract

Objective: To investigate lower urinary tract symptoms (LUTS) in junior female clinical nurses.
Methods: Two hundred and twelve nurses with less than 5 years of clinical work experience at Nanjing General Hospital were selected by multi-department sampling methods, and given questionnaires. The relationships between LUTS in the junior female clinical nurses, and factors such as parturition, menstruation and water in-take were analyzed with single factor linear analysis.
Results: Lowery urinary symptoms (LUTS) were correlated with marital status (B=0.08, p=0.0214), menstruation (B=-0.08, p=0.0121), and parturition history (B=0.05, p=0.0895).
Conclusion: These results indicate that LUTS in junior female clinical nurses are related to volume of water-intake, marital status, menstruation, and parturition history.

Keywords: Lower urinary tract symptoms, Junior female clinical nurses, Marital status, Parturition.

Introduction

Lower urinary tract symptoms (LUTS) are common problems of bladder health. The symptoms are varied, and may appear at the urine storage period, voiding period or after urination [1-3]. These clinical symptoms negatively affect the mind and body, and also impose heavy burden on the family and society [4-6]. Studies on the epidemiology of LUTS in North America and Europe showed a higher prevalence in females (64.3%) than in males [7]. An investigation carried out on 1135 female nurses in three top hospitals in Beijing revealed an LUTS prevalence of 89.3% [8]. This is much higher than prevalence values usually associated with the female group [9,10]. Junior female clinical nurses are nurses who have less than 5 years of working experience as clinical nurses [11]. Nurses in this category are usually young, and they are often subjected to heavy workload and heavy work pressure [12]. They are more likely to have LUTS than nurses in other groups [13]. Reports published in China and elsewhere on LUTS are comprehensive. However, these reports have very little linkage with age of the subjects. The present study was carried out to analyze LUTS in junior nurses and factors that influence them.

Subjects and Methods

Study subjects
A total of 212 female nurses who had worked in Nanjing general hospital for about one year or more than one year (but less than 5 years) were selected from January, 2017 to March, 2017. These included nurses from the out-patients clinic, and nurses from internal medicine, surgery, pediatrics, gynecology and ICU departments. Nurses who met the requirements for experience were administered the study questionnaire. The inclusive and exclusive criteria were set according to Wan et al. [14]. Inclusive criteria were (1) nurses who had RN license of People’s Republic of China, (2) nurses aged over 18 years, and (3) nurses who supported and understood this study, and who were willing to participate in it. The exclusion criteria were (1) nurses with advanced training from other hospitals, (2) nurses who had urinary system infection in the previous one month, and (3) nurses who were in gestation period.

ICIQ-FLUTS: ICIQ-FLUTS (Chinese edition) was used to evaluate the LUTS of the female nurses, and factors that influence the degree of LUTS in urine storage period, incontinence symptoms and various symptoms of quality of life of the nurses (4 dimensions totaling 12 items). Likert 5-grade scoring method was used, in which 0 means never; little means less than 1/3 of the time, sometimes means 1/2 to 1/3 of the time; often means more than 2/3 of the time, and always means all the time. The higher the score, the more sever the LUTS.
**Investigation methods**

Investigators were given unified training and unified instruction before the study. The subjects consented to confidentiality prior to administration of the questionnaire. After filling them out, the questionnaires were put in sealed envelopes to protect confidential information from the participants. If any questions arose in the process of filling out the questionnaire, the investigators gave routine responses to guarantee completeness and validity. Total number of granting was 212. Withdraw number was 212. The withdrawal rate was 100%.

**Statistical analysis**

SPSS 17.0 software was used to do statistical analysis. Statistical methods included descriptive statistical analysis, t-test, and analysis of variance (ANOVA). Statistical significance was assumed at p<0.05.

**Results**

**Lower urinary tract symptoms in storage period and factors that influence them**

Results from logistic analysis revealed correlations between urinating at night and drinking water (B=0.45, p=0.0195); urinating at night and menstruation (B=-0.53, p=0.0063); bladder pain and volume of drinking water (B=-0.42, p=0.0268), bladder pain and menstruation (B=-0.42, p=0.0268); daily urination frequency and volume of drinking water (B=-0.93, p<0.0001), and between daily urination frequency and menstruation (B=-0.93, p<0.0001). These results are shown on Tables 1 and 2.

**Table 1. Correlations between various items and features of LUTS in urine storage period.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter</th>
<th>SE</th>
<th>χ²</th>
<th>p</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Drinking water</td>
<td>0.45</td>
<td>0.19</td>
<td>5.45</td>
<td>0.0196*</td>
<td>1.568</td>
</tr>
<tr>
<td>F2</td>
<td>Menstruation</td>
<td>-0.53</td>
<td>0.19</td>
<td>7.36</td>
<td>0.0063*</td>
<td>0.591</td>
</tr>
<tr>
<td>F3</td>
<td>Drinking water</td>
<td>-0.42</td>
<td>0.19</td>
<td>4.9</td>
<td>0.0268</td>
<td>0.66</td>
</tr>
<tr>
<td>F4</td>
<td>Menstruation</td>
<td>-0.42</td>
<td>0.2</td>
<td>4.64</td>
<td>0.0312</td>
<td>0.655</td>
</tr>
</tbody>
</table>

**Table 2. Correlations between LUTS in urine storage period and various factors.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter</th>
<th>SE</th>
<th>χ²</th>
<th>p</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Drinking water</td>
<td>0.93</td>
<td>0.21</td>
<td>19.71</td>
<td>&lt;0.0001</td>
<td>2.543</td>
</tr>
<tr>
<td>F2</td>
<td>Menstruation</td>
<td>0.76</td>
<td>0.27</td>
<td>8.12</td>
<td>0.0444</td>
<td>2.142</td>
</tr>
</tbody>
</table>

Note: F1: I urinate at the night usually; F2: I rush to the toilet to urinate; F3: I have pains in my bladder; F4: daily urination frequency.

**LUTS in urination period and factors that influence them**

Results from logistic analysis showed correlations between delayed urination and marital status (B=0.37, p=0.0459). Menstruation was correlated with hesitant urination (B=-0.78, p<0.0001), and unsteady flow of urine (B=-0.40, p=0.0254). In addition, hesitancy in urination, straining during urination and discontinuous urine flow were correlated with menstruation.
Logistic analysis established correlations between urine leakage before reaching the toilet, and marital status (B=0.46, p=0.0369). Urine leakage was also correlated with parturition history (B=0.79, p=0.0022), while urine leakage due to sneezing, coughing or straining was correlated with marital status (B=0.55, p=0.0077), and parturition history (B=0.72, p=0.0016). Urine leakage without the urge to urinate correlated with parturition history (B=0.72, p=0.0440). Marital status was correlated with all the types urine leakages seen (B=0.72, p=0.0440), and with parturition history (B=0.25, p=0.0016). These results are presented in Tables 5 and 6.

**Factors that influence LUTS in urinary incontinence period**

There were correlations between LUTS and marital status (B=0.08, p=0.0214), menstruation (B=-0.08, p=0.0121), and parturition (B=0.05, p=0.0895) (Table 7).

**Discussion**

In this study, results of correlation analysis in the urine storage period showed obvious correlation between volume of drinking water and LUTS. It is recommended that normal adults take 1500 ml/kg daily [15]. The normal frequency of urination is once in about three hours, and once at night [16]. In a study of nurses in Taipei, it was found that many nurses hardly have time to drink water, and drink only when extremely thirsty [17]. Indeed, only 6% of the nurses in that study drink over 2000 mL of water daily. Adequate water intake dilutes the urine, balances urine pH, and prevents urinary tract infection and lowers incidence of bladder cancer [18]. Thus, low frequency of urination and insufficient liquid intake are important factors that influence LUTS [19].

In the urine storage period, there were correlations between menstruation and rushing to the toilet to urinate, bladder pain, frequency of urination and disruption in urine flow. Estrogen levels are decreased in patients with menstruation disorders, and estrogen receptors are reduced in bladder tissue, causing obstruction in bladder outlet [20-22]. Denervation supersensitivity due to changes in detrusor compromises the function of the detrusor, thus inducing LUTS [23,24]. A study by Lugo Salcedo [25] found that menstruation is positively correlated with LUTS. This is also in agreement with the findings of Zheng [26].

There were correlations between parturition history and various types of urine leakage. These results are consistent with the finding that absence of parturition history, and delivery through cesarean section are protective factors against urinary incontinence [27-29]. Changes in hormone levels cause prolonged pregnancy, and affect body collagen, thereby damaging the mechanism involved in controlling urine [30]. In addition, vaginal delivery may bring about injury to the ligament suspension in the pelvic floor or injury to the connective tissue of fascia, leading to urinary incontinence, and difficulties in micturition [31,32]. On the other hand, cesarean section causes less injury to the pelvic floor, and indeed protects the muscles in the pelvic floor [33]. Studies have
shown that the incidence of urinary incontinence after delivery ranges from 9% to 30% [34]. In an investigation on 272 females from pregnancy to two years after delivery, it was found that about 10% of the females had constant urinary stress incontinence within two years after delivery [35]. Urinary incontinence has become a societal public problem that cannot be neglected. It exerts severe negative effects on the body and health of the affected females [36].

In this study, marital status was also correlated with various forms of urinary incontinence. In a study of 3000 people in America, England and Sweden, it was found that 5.2% of married females aged over 40 years had LUTS, 14.9% had symptoms in urination and storage periods at the same time, while 26.3% had symptoms in storage, urination and urinary incontinence periods [37]. In China, LUTS are heterogeneous in nature. In Beijing area, incidence of LUTS was 83.1% in 5,664 married women over 20 years age who were selected and investigated from 18 districts and counties [38]. In addition, Fuzhou has reported 24.5% LUTS in urine storage period [39]. Thus, the incidence of LUTS is higher in married women. The LUTS involve storage period, urination period and urinary incontinence period. They constitute common health problems in females. These symptoms do not only lower life quality, they also increase medical costs [40]. Junior female clinical nurses are relatively young in age, and their understanding of LUTS is inadequate [41].

Limitations

This study has some limitations. In the first place, the subjects were junior clinical nurses from only three top hospitals in Nanjing of China. This restriction may cause skewedness in the results. Secondly, this is only a cross-sectional study. In addition, the study relied solely on typical clinical symptom questionnaire to diagnose LUTS. There is need for the use ultrasound diagnosis and urodynamic monitor in diagnosis of LUTS.

Conclusion

This study was aimed at investigating LUTS in junior female clinical nurses. It was found that LUTS widely exist in these nurses, and that the main factors that influence them are drinking water volume, menstruation and marital status. The importance of this study is that the findings are helpful for improving LUTS in junior clinical nurses, and for maintenance of good bladder health.

References

16. Lukacz ES, Whitcomb EL, Lawrence JM, Nager CW, Luber KM. Urinary frequency in community-dwelling


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