

## **ASSESSMENT OF THE RELIABILITY AND SENSITIVITY TO CHANGE OF THE KING'S HEALTH QUESTIONNAIRE, INCONTINENCE IMPACT QUESTIONNAIRE-SHORT FORM (IIQ-7) AND INCONTINENCE QUALITY OF LIFE QUESTIONNAIRE (IQOL)**

### **Hypothesis / aims of study**

Several questionnaires have been used to assess the quality of life (QoL) in women with urinary incontinence. Three were suggested as having grade A evidence for use by the International Consultation on Incontinence-King's Health Questionnaire(1) (KHQ), Incontinence Impact Questionnaire- short form(2) (IIQ-7) and Incontinence Quality of Life questionnaire(3) (IQOL). The stability (test-retest reliability) and sensitivity to change of these three questionnaires in any individual and in relation to each other has not previously been compared, but is important when considering which to choose to assess symptoms and response to treatment.

The aim of this study was to determine which of the above three questionnaires has the greatest test-test reliability and is most sensitive in detecting changes in patients' QoL in response to treatment of lower urinary tract dysfunction.

### **Study design, materials and methods**

The three questionnaires were combined in different sequences to form three booklets; either as sequence A (KHQ-IIQ7-IQOL), or sequence B (IQOL-IIQ7-KHQ), or sequence C (IIQ7-KHQ-IQOL). 49 women were randomly allocated into six groups. Each group received a specific booklet to complete at a urodynamic clinic appointment, followed by postal-completion of a different booklet after a two week 'intervention-free' period. This interval is typically considered to be long enough for test-retest purposes. A second postal questionnaire of the same sequence as the first was sent to each patient after a period of 6-12 months, during which an intervention would have taken place if deemed appropriate. The clinic and first postal questionnaires for each patient were compared for test-retest reliability using the 'Coefficient of Repeatability' (CR), whereas the first and second postal questionnaires were compared for sensitivity to change by calculating the percentage change in the total questionnaire or domain score. The KHQ domains included: General Health, Incontinence Impact, Role limitations, Physical Limitations, Social Limitations, Personal Limitations, Emotional Problems, Sleep disturbance and Severity Measures. The IQOL domains included: Avoidance & Limiting Behaviour, Psychosocial Impacts, Social Embarrassment and Total IQOL Score. However, IIQ-7 only produces an overall score without individual domains.

The statistical analysis was carried out using the SPSS statistical package version 12.0 (SPSS Inc., Chicago, Illinois, USA). The CR value allows direct comparison of stability of each questionnaire (or domain), with a lower value indicating less variation in the clinic and postal response to each questionnaire. The significance of the percentage changes between the first and second postal scores were tested using a Wilcoxon signed rank test. The questionnaire with a significantly higher degree of percentage change over the given time interval, would seem more sensitive to change in QoL.

### **Results**

Of the 49 women who completed the clinic and first postal questionnaire, 39 responses to the second postal questionnaire have been collected so far and this data represents the interim analysis. The coefficient of repeatability for each domain of the KHQ, and IIQ-7 and IQOL. Is shown in Table One.

Table One- KHQ domains, IIQ-7 and IQOL domains: test-retest analysis, and percentage change in patient responses over the 6-12 month interval

| Questionnaire / Domain           | Mean  | Mean Difference (SD) | Percentage of missing items (%) | Coefficient of Repeatability | Percentage change (%) |
|----------------------------------|-------|----------------------|---------------------------------|------------------------------|-----------------------|
| <b><u>KHQ</u></b>                |       |                      |                                 |                              |                       |
| General Health                   | 41.07 | -0.51 (11.96)        | 0.50                            | 23.44                        | 0                     |
| Incontinence Impact              | 68.37 | -2.04 (22.98)        | 0.50                            | 45.04                        | 25.00*                |
| Role Limitation                  | 44.22 | 0.68 (29.65)         | 3.00                            | 58.12                        | 38.82 */**            |
| Physical Limitation              | 46.09 | -1.02 (24.84)        | 3.50                            | 48.73                        | 31.52*                |
| Social Limitation                | 34.81 | -1.59 (27.08)        | 2.67                            | 53.07                        | 9.46                  |
| Personal Limitation              | 33.06 | -0.76 (24.39)        | 2.50                            | 47.80                        | 6.20                  |
| Emotional Problems               | 46.26 | 0.45 (18.28)         | 1.33                            | 35.83                        | 25.35*                |
| Sleep/Energy disturbance         | 50.85 | -1.02 (19.37)        | 0.00                            | 37.96                        | 5.38                  |
| Severity Measures                | 51.02 | -0.006 (17.84)       | 2.50                            | 34.97                        | 11.76                 |
| <b><u>IIQ-7</u></b>              | 42.96 | 2.42 (21.91)         | 1.14                            | 42.94                        | 29.08*/**             |
| <b><u>IQOL</u></b>               |       |                      |                                 |                              |                       |
| Avoidance and Limiting Behaviour | 49.62 | -4.34 (18.45)        | 0.50                            | 36.17                        | 19.19*                |
| Psychosocial Impacts             | 54.37 | -0.002 (18.93)       | 3.31                            | 37.11                        | 18.12*                |
| Social Embarrassment             | 45.56 | -3.16 (17.31)        | 0.60                            | 33.93                        | 25.24 */**            |
| Total IQOL                       | 50.64 | -2.30 (16.95)        | 1.64                            | 33.22                        | 19.95*                |

SD = standard deviation

\* p < 0.05 (using Wilcoxon signed rank test)

\*\* maximum percentage change in any domain of each questionnaire

### **Interpretation of results**

When the individual domains of the KHQ are considered, the 'General Health' domain has the lowest CR (23.44%), and hence best test-retest reliability compared to IIQ-7 and IQOL. The 'Emotional Problems' and 'Severity Measures' domains of KHQ have similar reliability to that of IQOL, with CR's of 35.83, 34.97 and 33.22 respectively. However, KHQ also has the lowest reliability in its 'Limitations' domains, and is quite similar to that of IIQ-7 (CR= 42.94).

Out of all three questionnaires; the 'Role Limitation' domain of KHQ has the highest percentage change at 38.82%. In comparison, the highest percentage change with IQOL (in the Social embarrassment domain) is only 25.24%, and with IIQ-7 is 29.08%.

### **Concluding message**

Although evidence has shown these three questionnaires each have good psychometric properties(1,2,3), when compared against each other in this study it seems that their test-retest reliabilities and sensitivity to change differ. Although KHQ has the most reliable individual domain, IQOL seems to have the best overall test-retest reliability. Such differences in reliability are important considerations when interpreting the validity of a questionnaire's measure of change in QoL within or between individuals. A comparison of all domains also shows that the KHQ is most sensitive to change. The high sensitivity to change in the KHQ is important for determining how effective a particular treatment or intervention is in inducing change in an individual's QoL.

### **References**

1. BJOG 1997;104:1374-1379
2. Neurourol & Urodyn. 1995;14:131-139
3. Urology 1996; 47: 67-72