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Belal M[1], Al-Hayek S[1], Cobby J[2], Swithinbank L [1], Abrams P[1]
1. Bristol Urological Institute, 2. Statistics Dept, University of West of England

FREQUENCY VOLUME CHARTS IN MEN- HOW LONG AND WHEN?

Hypothesis / aims of study

Male patients attending with lower urinary tract symptoms (LUTS) form a large part of a urologist's work. Symptoms have been shown to be unreliable in establishing the underlying diagnosis. A simple, objective and non invasive method of evaluating LUTS, is the frequency volume chart (FVC). Currently a 7 day FV chart is considered the gold standard in evaluating LUTS in men [1]. However concerns have been raised about patient compliance in completing a seven day chart. There are no clear guidelines for the minimum number of days required for men to complete the FVC. This study will show by statistical analysis the minimal number of days required to obtain clinically reliable results in men. In addition, the aim is to show which days of the week (weekends and weekdays) provide the most reliable information.

Study design, materials and methods

The data given by 67 male patients (mean age 65, range 40 -85) who completed a 7 day FVC when attending a LUTS clinic, in a teaching hospital, between June 2002 to December 2003 was analysed. The exclusion criterion was the failure to complete, or illegibility of, the FVC. Patients had been asked to complete the FV chart for 7 consecutive days, indicating the day, time and volume voided. If the patient was unable to record the voided volume for any reason, he was asked to record the time of the micturition.

The following parameters were examined for each FVC: during the day, frequency, total daytime voided volume (TVVd), average daytime voided volume (AVVd), mean interval between daytime voids (MIVd); and during the night, nocturia, total nocturnal voided volume (TTVn) and average nght-time voided volume (AVVn). Missing volumes were replaced by the mean volume for either day or night.

Two statistical approaches were used to obtain the minimum number of days giving reliable data compared to the gold standard of 7 days. Firstly correlation and regression analysis was applied to 1 day FVC on the parameters described above when compared to the 7 day FVC. This was repeated for 2, 3, 4, 5 and 6 days of the frequency volume charts. Secondly the reliability of individual days of the week was assessed by the number of voids with missing records of volumes (as an indicator of reliability), for each day, to see if there were differences, between weekdays and, in particular, Saturdays and Sundays.

Results

Are shown in table 1 and 2.

DIURNAL	1 DAY	2 DAY	3 DAY	4 DAY	5 DAY	6 DAY
Frequency	0.918	0.968	0.982	0.989	0.993	0.997
TVVd	0.913	0.953	0.972	0.980	0.991	0.996
AVVd	0.887	0.941	0.964	0.978	0.991	0.996
MIVd	0.928	0.937	0.975	0.986	0.994	0.998
Nocturnal						
Frequency	0.880	0.959	0.979	0.985	0.992	0.997
TVVn	0.918	0.952	0.972	0.988	0.995	0.998
AVVn	0.807	0.962	0.965	0.983	0.991	0.994

Table 1: Correlation analysis of the different number of days of the FVC to the 7 day FVC.

Day of week	Voided volumes (%) Completed	Missing
Monday	76	24
Tuesday	75	25
Wednesday	79	21
Thursday	81	19
Friday	79	21
Saturday	88	12
Sunday	87	13
All	81	19

Table 2: The percentage of voids with and without voided volume for each day of the week (FVC from 67 patients)

It is noticeable that during the week (Monday to Friday) the percentage of voids with missing volumes ranges from 19 (Thursday) to 25 (Tuesday) but dropped to 12 and 13 on Saturday and Sunday. However, there was no statistically significant difference between the individual days of the week (Chi-squared test, □.□□ 6.490, 6 d.f. p=0.371). However when the weekdays (22% missing volumes) were compared with weekends (13% missing) the difference was statistically significant (Chi-squared test, □.□□ 5.412, 1 d.f. p=0.02).

Interpretation of results

From the results shown above, the 3 day FV chart provides the best compromise in clinical reliability with correlation coefficient of greater than 0.95 across all the parameters measured, with little added advantage from a chart of 4 days or longer duration. A single day FV chart is insufficient to provide reliable information as compared to the 7 day FVC. A 2 day FV chart would provide reasonable reliability except in the average daytime voided volumes and mean interval of voids. A 3 day FV chart will have a much reduced burden on the patient with the resultant improvement in compliance.

The use of FV charts in women has been studied previously with the conclusion that a 4 day FVC has adequate reliabilty [2]. The data obtained above also demonstrates that a shorter FV chart is sufficient in men.

With regard to which days should be included, the weekend days are the most reliable, as assessed by the least amount of missing volumes data. Therefore it is suggested that the 3 day chart should consist of both days of the weekend plus either Friday or Monday.

Concluding message

A 3 day FV chart provides clinically reliable information and should include both weekend days. A shorter FV chart will probably have improved compliance and convenience in males with LUTS.

References

1. Scand J Urol Nephrol suppl. 1996;179:47-53
2. Neuro Urodyn 2003;22(2):92-6.