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### **DISTRIBUTION OF PELVIC ORGAN PROLAPSE (POP) IN THE GENERAL POPULATION; PREVALENCE, SEVERITY, ETIOLOGY AND RELATION WITH THE FUNCTION OF THE PELVIC FLOOR MUSCLES.**

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

The prevalence and distribution of pelvic organ prolapse in the general population is still largely unknown (1). This abstract reports on the prevalence and distribution of pelvic organ prolapse in the general female population aged 45-85 years. In addition the relationship of the POP was compared with the function of the pelvic floor muscles. This study was part of a large cross-sectional survey. Approval was given by the Medical Ethical committee. All data were analysed with SPSS version 10.1.

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

A community-based cross-sectional research based on a survey and an additional physical examination. The entire population of 2750 woman in a small town (age 45-85) was invited to fill in a questionnaire with different validated and invalidated questionnaires on urinary incontinence (UDI, IIQ, Euroquol)) and bowel disorders. A total of 1398 women consented (50%) In addition 653 out of the 1398 woman were randomly selected and invited to participate in a physical examination. There where no selection criteria for the population, besides age.

All women underwent the pelvic organ prolapse quantification system examination (POP-Q) in dorsal lithotomy position during maximal Valsalva. The examination of the pelvic floor was based on the PERFECT assessment scheme and included a visual inspection of a pelvic floor contraction (inward movement), a counter action of the pelvic floor during coughing and the size of extra pelvic muscle activity. During palpation we looked at the voluntary contraction, relaxation and the reflex contraction during coughing. Stages of support were evaluated by variable for trends with Pearson's  $\chi^2$  statistics as well as for significant trend (2)

#### **Results**

A total of 653 woman were examined. The average age was 58 years, with a range of 45 to 85 years. Table 1 presents the POP-Q distribution. Table 2 presents the POP-Q stages in relation to the contractility of the pelvic floor muscles and in table 3 the coordination of the pelvic floor is shown in relation to the presence of POP. Variables in the survey with a statistically significant trend toward increased POP stage were advancing age, parity, history of hysterectomy or pelvic organ prolapse operations and postmenopausal status. Variables that were found insignificant were weight (mean BMI = 25.7), pulmonary disease, smoking (including number of cigarettes and years), history of hernia and hard physical work. Within the physical examination we looked at the overall function (force, endurance and co-ordination) of the pelvic floor musculature (PFM). The variables in these three groups, with a statistically significant trend toward increased POP stage, were better able to voluntary relax PFM, use of significantly more extra-pelvic muscles and (caudal) perineal descent when the woman is asked to contract the PFM. Variables with a statistically significant trend toward increased POP stage within the cough reflex were perineal descent, urine loss and increased presents of celes.

1. Percentages of subjects in each age group with various stages of pelvic organ support according to Pelvic organ prolapse quantification system (ICS)

Age (y)	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
45-50 n = 146	15.8 %	45.2 %	31.5 %	7.5 %	-
>50-55 n = 145	21.4 %	42.8 %	26.2 %	8.3 %	1.4 %
>55-60 n = 137	29.9 %	32.1 %	29.2 %	8.8 %	-
>60-65 n = 77	20.8 %	37.7 %	26.0 %	15.6 %	-
>65-70 n = 63	30.2 %	27.0 %	34.9 %	3.2 %	4.8 %
>70 n = 71	18.3 %	25.4 %	26.8 %	14.1 %	15.5 %
Overall n = 639 (14 missing)	22.4 %	36.9 %	29.0 %	9.2 %	2.5 %

2. Percentages of subjects in pelvic floor muscle contractility with various stages of pelvic organ support according to Pelvic organ prolapse quantification system (ICS)

<b>PFM contractility</b>	<b>Stage 0</b>	<b>Stage 1</b>	<b>Stage 2</b>	<b>Stage 3</b>	<b>Stage 4</b>
<b>Voluntary contraction</b>					
Strong n = 294	20.1%	40.5%	26.2%	11.6%	1.7%
Weak n = 180	22.8%	31.7%	34.4%	7.8%	3.3%
Absent n = 139	23.0%	39.6%	28.8%	5.8%	2.9%
<b>Voluntary relaxation</b>					
Full n = 303	18.2%	39.9%	27.7%	11.6%	2.6%
Partial n = 172	28.5%	29.7%	33.7%	5.2%	2.9%
Absent n = 121	23.1%	43.0%	23.1%	9.1%	1.7%
<b>Extra pelvic muscle activity</b>					
YES n = 221	16.3%	37.1%	34.4%	8.1%	4.1%
NO n = 414	25.4%	37.0%	26.1%	9.9%	1.7%
<b>Perineal descent during contraction</b>					
YES n = 566	19.6%	37.6%	30.6%	10.1%	2.1%
NO n = 63	46.0%	31.7%	14.3%	3.2%	4.8%

3. Percentages of subjects in pelvic floor muscle coordination with various stages of pelvic organ support according to Pelvic organ prolapse quantification system (ICS)

<b>PFM coordination</b>	<b>Stage 0</b>	<b>Stage 1</b>	<b>Stage 2</b>	<b>Stage 3</b>	<b>Stage 4</b>
<b>Cough reflex movement</b>					
<b>Perineal descent</b>					
NO n = 310	35.2%	29.4%	24.5%	9.0%	1.9%
YES n = 329	10.3%	<b>44.1%</b>	<b>33.1%</b>	9.4%	3.0%
<b>Celes more present</b>					
NO n = 464	30.8%	37.7%	23.5%	6.0%	1.9%
YES n = 175	0.0%	34.9%	43.4%	17.7%	4.0%
<b>Urine loss</b>					
NO n = 584	24.1%	36.8%	27.9%	8.7%	2.4%
YES n = 55	3.6%	38.2%	40.0%	14.5%	3.6%

**Interpretation of results**

The distribution of the POP-Q stages in the population is slightly different from an earlier study with less stage 0. Significant POP (stages 2, 3 and 4) was found in roughly 40%. There was a statistically significant trend toward increased POP-Q stage among women with many of the historically quoted etiologic factors for the development of pelvic organ prolapse. However traditional factors like frequent coughing, hard physical work and weight (BMI mean 26.2), were not significant related. Women with significant prolapse have poorer coordination, of the pelvic floor than women without prolapse.

**Concluding message**

Fourty per cent of the general female population aged 45-85 years has significant pelvic organ prolapse. The presence of POP is related to poor pelvic floor coordination, which is likely to be causative.

**References**

- 1.The distribution of pelvic organ support in a population of female subjects seen for routine gynaecologic health care. Am J Obstet Gynecol. 2000 Aug;183(2):277-85
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