



Published in final edited form as:

*Am J Obstet Gynecol.* 2007 December ; 197(6): 636.e1–636.e6. doi:10.1016/j.ajog.2007.08.020.

## The impact of fecal and urinary incontinence on quality of life 6 months after childbirth

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### Abstract

**Objective**—The objective of the study was to investigate the impact of postpartum fecal incontinence (FI) and urinary incontinence (UI) on quality of life (QOL).

**Study Design**—Seven hundred fifty-nine primiparous women in the Childbirth and Pelvic Symptoms study were interviewed 6 months postpartum. FI and UI were assessed with validated questionnaires. We measured QOL with SF-12 summary scores, health utility index score (a measure of self-rated overall health), and the modified Manchester Health Questionnaire.

**Results**—Women with FI had worse self-rated health utility index scores ( $85.1 \pm 9.8$  vs  $88.0 \pm 11.6$ ,  $P = .02$ ) and Medical Outcomes Study Short Form Health Survey (SF-12) mental summary scores ( $46.8 \pm 9.2$  vs  $51.1 \pm 8.7$ ,  $P < .0001$ ) than women without FI or flatal incontinence. Women with UI had worse SF-12 mental summary scores ( $48.3 \pm 9.8$  vs  $51.6 \pm 7.8$ ,  $P < .01$ ) and self-rated health utility index scores ( $84.1 \pm 12.5$  vs  $88.7 \pm 10.1$ ,  $P < .01$ ) than women without UI. Women with both FI and UI had the lowest SF-12 mental summary scores ( $44.5 \pm 9.0$ ).

**Conclusion**—Six months after delivery, women experiencing FI or UI reported negative effects on health-related QOL. FI and UI together have a greater impact than either condition alone.

### Keywords

childbirth; fecal incontinence; quality of life; urinary incontinence

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In studies of fecal incontinence (FI) and urinary incontinence (UI) during the postpartum period, UI is reported by 10-50% of women,<sup>1-6</sup> whereas FI is present in up to 25%.<sup>2,3,7</sup> The Pelvic Floor Disorders Network (PFDN) has previously published findings of the Childbirth and Pelvic Symptoms (CAPS) study,<sup>8</sup> which examined the prevalence of FI and UI in 3 cohorts of primiparous women. FI was more prevalent (17.0%) in women who delivered vaginally with recognized anal sphincter tears, compared with women who delivered

vaginally without recognized anal sphincter tears (8.2%) and women who delivered by cesarean prior to labor (7.6%). UI was reported by 31.2% of participants and did not differ significantly by group.

In population-based studies, FI affects 2-12% of community-dwelling adults<sup>9,10</sup> and is associated with significant adverse impact on quality of life (QOL).<sup>9</sup> Although several case series report the impact of postpartum UI on QOL,<sup>3,4,6</sup> data are very limited on the impact of FI on QOL in the postpartum period. In a Canadian study,<sup>3</sup> FI was present in 20.6% of 1305 primiparous women 6 months postpartum, and QOL varied significantly with the severity of both FI and UI.

The objective of this study was to examine the impact of postpartum FI and UI, alone and in combination, on health-related QOL in a cohort of primiparous American women.

## Materials and Methods

### Participants and recruitment

This study was conducted by the PFDN and sponsored by the National Institute of Child Health and Human Development. Data were obtained from women enrolled in the CAPS study,<sup>8</sup> which sought to estimate the prevalence of postpartum FI and UI in 3 cohorts of primiparous women: those with third- or fourth-degree anal sphincter tears that were clinically recognized and repaired at the time of delivery; women who delivered vaginally without clinically recognized anal sphincter tears; and those who underwent cesarean delivery without labor. Details of the CAPS study methodology and description of the study population are described elsewhere.<sup>8</sup> Data from 759 women who participated in 6 month postpartum telephone interviews are included in this analysis.

Primiparous women were eligible for the CAPS study if they delivered a single child at gestation of 37 weeks or longer. Women with inflammatory bowel disease (ulcerative colitis or Crohn's disease), self-reported prepregnancy FI, a history of anorectal surgery, or neurological conditions predisposing to UI or FI were excluded from participation.

Institutional review board approval was obtained by each clinical site and the data coordinating center prior to subject recruitment. All participants provided written informed consent.

### Procedures

At 6 months postpartum, research coordinators telephoned and interviewed participants using validated questionnaires to collect data regarding urinary and bowel symptoms, QOL, and sexual function. Coordinators from each clinical site received training and certification in telephone interview procedures from the Quality of Life Telephone Interviewing Facility at the University of Michigan.

### Measures

**Fecal incontinence**—FI was assessed with the Fecal Incontinence Severity Index (FISI),<sup>11</sup> which determines the frequency of 4 symptoms (incontinence of gas, mucus, liquid stool, and solid stool) using the following response options: 2 or more times a day, once a day, 2 or more times a week, once a week, 1-3 times per month, or never. FI was defined as any involuntary leakage of mucus, liquid stool, or solid stool on the FISI. Subjects who indicated a positive response only for incontinence of gas on the FISI were considered to have incontinence of “flatus only” and not FI. The FISI score (range 0-61) was used as a measure of FI severity, with higher scores indicating higher FI severity.

The symptom of fecal urgency was assessed by a single item (“How often do you have a strong desire to move your bowels, which makes you rush to the toilet?”). This item was considered affirmative if the woman gave a response of “sometimes,” “often,” or “always.”

**Urinary incontinence**—UI symptoms were measured using the Medical, Epidemiological, and Social Aspects of Aging (MESA) Questionnaire,<sup>12</sup> which includes 15 items, 9 for stress incontinence symptoms and 6 for urgency and urge incontinence. Response options are “never,” “rarely,” “sometimes,” or “often.” Presence of UI was defined by a response of “sometimes” or “often” to any of the MESA questions. Type of UI was defined as: “stress incontinence only,” which was a positive (“sometimes” or “often”) response to 1 or more of the 9 stress incontinence questions but none of the 6 urge or urge incontinence questions; “urge incontinence only,” which was a positive response to 1 or more of the 6 urge or urge incontinence questions but none of the 9 stress incontinence questions; and “mixed incontinence,” which was a positive response to at least 1 of the stress incontinence questions plus at least 1 of the urge or urge incontinence questions.

The Hunskar score<sup>13</sup> described UI severity as the product of the frequency and volume of incontinent episodes (range 0-12). Severity categories are: continent (0), slight (1-2), moderate (3-6), severe (7-9), and very severe (10-12).

**Quality of Life**—The SF-12 Health Survey assessed generic health-related QOL.<sup>14</sup> The SF-12 has 2 summary scores, the Physical Component Summary (hereafter referred to as SF-12 physical summary) and the Mental Component Summary (SF-12 mental summary), which assess physical and mental functioning, respectively. Both of these scores have a range from 0 to 100, with higher scores indicating better QOL. Subjects were asked the 1-item Health Utility Index<sup>15</sup> that measures overall health on a scale from 0 (death) to 100 (perfect health). The impact of FI symptoms on QOL was assessed with the Modified Manchester Health Questionnaire,<sup>16</sup> which is based on the Manchester Health Questionnaire,<sup>17</sup> a 31-item condition-specific QOL instrument with 8 sub-scales. We focused on 2 parts of the Modified Manchester: the “severity” subscale score (range 0-100, with higher scores indicating worse symptoms) and a single item that assesses the impact of bowel symptoms on life (“not at all,” “a little bit,” “moderately,” “quite a bit,” or “extremely”). We considered a negative response to include responses of “not at all” or “a little bit” and positive response to include responses of “moderately,” “quite a bit,” or “extremely.”

**Sexual Function**—We administered the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ-12) to sexually active women.<sup>18</sup> This QOL instrument was added after the CAPS study was underway and was administered to 595 of the participants. The PISQ-12 measures sexual function for women with pelvic floor disorders. The score ranges from 0 to 48, with higher scores indicating better sexual function.

## Analysis

To examine the impact of FI on QOL, we created 3 groups for comparison: those with FI, those with flatal incontinence only, and those with no FI or flatal incontinence. Similarly, to examine impact of UI, we compared women with and without UI on each QOL measure. Mean scores for each QOL measure were first compared between the groups using a general linear model (analysis of variance); each analysis was performed first without adjustment and repeated with adjustment for site, race, and marital status. All statistical tests were 2 tailed using an alpha of 0.05. Proportions were compared by a Mantel-Haenszel statistic ( $\chi^2$  test) both without adjustment and with adjustment for site, race, and marital status. When a statistically significant difference ( $P < .05$ ) was observed, we conducted unadjusted pair-

wise comparisons between groups. To examine the impact of FI severity (FISI score) and UI severity (Hunnskaar score) on QOL measures, Spearman nonparametric correlations were computed.

To estimate the independent effects of FI and UI on the QOL measures, a regression model was fitted to the QOL summary scores. The regression model included indicator variables for FI and UI and their interaction as well as terms for potential confounders (race, marital status, and predelivery body mass index [BMI]).

## Results

Of 921 women in the CAPS study, 759 (82%) completed interviews at 6 months postpartum and form the sample for the present analysis. The demographic and obstetrical characteristics of the population have been previously described.<sup>8</sup> Briefly, this analysis included data from 278 with a clinically apparent anal sphincter tear; 293 without recognized sphincter trauma, and 97 who delivered by cesarean section prior to labor. Women in this study had a mean age of 27.5 years; 71% were Caucasian; 33% were single or divorced; and 73% had some college or advanced education.

### Fecal incontinence and QOL

FI was reported by 91 women (12.0%) and flatus incontinence only was reported by 161 (21.2%). The FI severity (FISI) score ranged from 0 to 43, with FISI score less than 4 in 75% of participants. Only 9 of the 91 participants with FI (9.9%) reported more than 1-3 incontinent episodes per month (the lowest frequency category for any FI on the FISI).

The relationships between fecal and flatal incontinence and QOL measures are shown in Table 1. SF-12 mental summary and modified Manchester severity scores were worst in women with FI and best with no FI or flatal incontinence. Specifically, SF-12 mental summary scores were worst in women with FI, intermediate in those with flatal incontinence, and best in participants with neither FI nor flatal incontinence. SF-12 physical summary scores did not demonstrate significant differences between the groups.

Self-rated health utility index scores were lower (worse) for women with flatal incontinence or FI, compared with women with neither flatal incontinence nor FI. Participants with FI had the worst (highest) scores on the Manchester severity score. Considering the Manchester item that rates the impact of bowel symptoms on QOL, 18.7% of women with FI indicated a “moderate” to “extreme” impact, compared with only 2% of those without FI. No associations were found between fecal or flatal incontinence and resumption of sexual activity or the PISQ-12 score.

Several of the QOL measures were associated with the severity of FI (FISI score). Specifically, higher FISI scores were associated with lower (poorer) SF-12 mental summary scores and lower (poorer) self-rated health utility index scores (both  $r = -0.19$ ;  $P < .001$ ) as well as higher (poorer) Manchester severity scores ( $r = 0.37$ ;  $P < .001$ ). FI severity was not associated with significant changes in SF-12 physical summary scores ( $r = 0.01$ ;  $P = .85$ ). FI frequency was associated with the impact of bowel symptoms: 15% (12 of 82) of women with FI 1-3 times per month reported moderate or higher impact, compared with 56% (5 of 9) with more frequent fecal incontinence ( $P = .01$ ).

Women with FI were significantly more likely than women without FI to report fecal urgency (53 of 91 [58.2%] vs 157 of 668 [23.5%],  $P < .0001$ ). Subjects with both fecal urgency and FI reported the worst (lowest) SF-12 mental summary scores ( $45.7 \pm 8.8$ ), the worst (highest) Manchester severity scores ( $12.5 \pm 16.6$ ) and were more likely to report

moderate to extreme symptom impact from bowel symptoms (24.6%). Comparing FI alone and fecal urgency alone, there were no differences between these groups in any QOL measure except the Manchester severity score (fecal urgency only =  $3.6 \pm 8.3$ ; FI only =  $9.6 \pm 17.7$ ).

### Urinary incontinence and QOL

To investigate the independent effect of UI on QOL, we considered QOL in women with and without UI, excluding women who also had FI. Compared with women with no UI or FI ( $n = 479$ ), women with UI ( $n = 189$ ) had worse SF-12 physical summary scores ( $53.6 \pm 7.1$  vs  $56.1 \pm 4.5$ ,  $P < .01$ ), SF-12 mental summary ( $48.3 \pm 9.8$  vs  $51.6 \pm 7.8$ ,  $P < .01$ ), and health utility index scores ( $84.1 \pm 12.5$  vs  $88.7 \pm 10.1$ ,  $P < .01$ ).

Median Hunstkaar severity score was 2 (range 0-12), representing “slight” UI. Three quarters of participants reported a score of 3 or below. We did not identify any significant correlations between UI severity and any of the QOL measures considered. Also, among women with UI, we found no significant differences in QOL outcomes between women with stress incontinence symptoms ( $n = 121$ ) vs urge/mixed incontinence symptoms ( $n = 116$ ).

### Dual incontinence and QOL

Women with FI were significantly more likely than women without FI or flatus incontinence to report UI (52.7% vs 24.4%,  $P < .01$ ) (Table 2). To explore the impact of dual incontinence (UI plus FI) on QOL, we compared 4 groups: women with neither FI nor UI, women with UI but no FI, women with FI but no UI, and women with both conditions (Table 3). Women with dual incontinence had the poorest SF-12 mental summary scores. Sexually active women with dual incontinence had lower PISQ-12 scores than women with neither condition. Manchester severity scores were not different between women with dual incontinence and women with FI only (ie, UI did not have a significant impact on Manchester severity scores).

In multivariable linear regression, controlling for education, marital status, race, and BMI, mean SF-12 mental summary scores were lower in women with FI by an average of 2.8 points and lower in women with UI by an average of 3.2 points. The mean health utility index score was lower in women with FI by an average of 0.7 points (not statistically significant) and lower in women with UI by an average of 3.9 points. Having both UI and FI did not change the impact of either condition on the SF-12 mental summary score or health utility index score.

### Comment

Six months after delivery, FI and UI have important negative effects on health-related QOL. Among the young, primiparous women in this study, about 1 in 5 (18.7%) with FI reported a “moderate” to “extreme” life impact (Manchester impact item), and women with FI had decreased quality of life, as evidenced by lower SF-12 mental summary scores and self-rated health utility index scores. Prior studies have shown decreased QOL among older women with FI,<sup>9,19,20</sup> but these results suggest that FI symptoms are a burden, even for young, relatively healthy women who are with in 6 months of delivering a first child. Fecal urgency, which was reported by more than half of the women with FI, contributed to poorer QOL among women with FI. Flatal incontinence appears to have a less measurable influence on QOL than FI.

We observed a greater QOL impact with increasing FI severity. Specifically, increasing FISI score was associated with poorer (lower) SF-12 mental summary scores and self-rated health utility index scores. Also, women with more frequent FI episodes were more likely to report

“moderate” to “extreme” life impact. It seems likely that the impact of FI on quality of life would be more dramatic in women with more severe and/or frequent FI, such as those seeking treatment. In this study, the magnitude of the QOL impact was greater for UI than FI. However, this finding was likely related to the low severity of FI in our sample and may not be generalizable to women presenting for treatment of UI and FI.

Although the presence of UI symptoms had a negative impact on health-related QOL, we were somewhat surprised to find that the severity and type of UI were not associated with QOL measures. Prior studies suggested a more significant negative impact for urge and mixed incontinence symptoms than for stress incontinence symptoms.<sup>21-23</sup> QOL impact of UI may vary with age; in 1 study focusing on stress incontinence, younger women were more impaired than older women.<sup>22</sup> The fact that our study focused on younger women might explain why stress and urge incontinence had similar impact. In addition, some of the QOL instruments used in this research (most notably the SF-12 summary scores) may not be sufficiently sensitive to detect true differences in QOL impact of UI by type or severity.<sup>24</sup> Finally, the number of women with stress and urge incontinence in this study limits the power of our conclusions with respect to this subanalysis.

Whereas UI and FI both had a negative impact on SF-12 mental summary score and self-rated health utility index scores, our results suggest that dual incontinence had a greater negative impact than either FI or UI alone. These 2 conditions were often coincident in this population: 52.7% of the women with FI also had UI. This limited our ability to assess the independent influence of FI and UI on QOL. However, these conditions are commonly coincident in clinical practice.<sup>25</sup> We found that women who reported both FI and UI had the worst QOL scores, including a negative impact on sexual function.

The magnitude of the impact of FI and UI on QOL can be compared with the impact of other chronic medical conditions. Specifically, we observed a 2.8-point difference in the SF-12 mental summary score for women with FI, compared with those without incontinence of stool or flatus. A similar decrease in the SF-12 mental summary score has been reported for hip impairment, rheumatoid arthritis, and kidney disease.<sup>26</sup> This comparison provides a context for the magnitude of the observed impact on mental health.

In summary, both FI and UI symptoms were associated with decreased rating of overall health as well as a substantial negative impact on other dimensions of QOL. Because effective therapies are available for both FI and UI, clinicians who care for postpartum women should routinely screen for FI and UI and offer evaluation and treatment to women with these symptoms.

## Acknowledgments

The authors would like to gratefully acknowledge the assistance of Robert Park, MD, Chairman of the PFDN Steering Committee (2001-2006).

This work was supported in part by Grants U01 HD41249, U10 HD41268, U10 HD41248, U10 HD41250, U10 HD41261, U10 HD41263, U10 HD41269, and U10 HD41267 from the National Institute of Child Health and Human Development.

## Appendix

The following Pelvic Floor Disorders Network Members participated in the CAPS trial:

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**TABLE 1**  
**Quality of life by fecal and flatal incontinence status**

Quality of life measure	No fecal or flatal incontinence (n = 507)	Flatal incontinence (n = 161)	Fecal incontinence (n = 91)	P value, adjusted
SF-12 physical component summary score (range 0-100)	55.4 ± 5.4	55.3 ± 5.9	54.4 ± 7.5	.05
SF-12 mental component summary score (range 0-100)	51.1 ± 8.7	49.4 ± 7.9*	46.8 ± 9.2 <sup>†</sup>	<.0001
Health utility index (range 0-100)	88.0 ± 11.6	85.5 ± 8.8*	85.1 ± 9.8*	.02
Manchester impact item <sup>‡</sup>	10 (2.0%)	12 (7.5%)	17 (18.7%)*	<.0001
Manchester severity score (range 0-100)	1.0 ± 5.2	2.2 ± 6.1*	11.3 ± 17.0 <sup>‡</sup>	<.0001
Sexually active <sup>§</sup>	305 (83.1%)	100 (87.0%)	54 (80.6%)	.19
PISQ-12 score (range 0-48) <sup>§</sup>	39.1 ± 4.3	38.1 ± 4.2	37.5 ± 5.2	.09

Groups are presented regardless of urinary incontinence status. Data presented as mean ± SD or n (%). *P* values based on analysis of variance or Mantel-Haenszel statistic (adjusted for site, race, and marital status).

\* Significantly different from “no FI,” adjusted *P* < .05.

<sup>†</sup> Significantly different from both of the other groups, adjusted *P* < .05.

<sup>‡</sup> “How much do you think your bowel problem affects your life?” Positive response = “moderately,” “quite a bit,” or “extremely.”

<sup>§</sup> Sexual function and PISQ-12 scores are presented for women enrolled after the PISQ-12 questionnaire was added to this protocol.

Handa. The impact of fecal and urinary incontinence on quality of life. *Am J Obstet Gynecol* 2007.

**TABLE 2**  
**Relationship between fecal and urinary incontinence 6 months after first delivery**

Urinary continence status	No FI (n = 507)	Flatal incontinence only (n = 161)	FI (n = 91)	Total (n = 759)
SUI (only)	65 (12.8%)	37 (23.0%)	19 (20.9%)	121
Urge or mixed incontinence	64 (12.6%)	23 (14.3%)	29 (31.9%)	116
No UI (continent)	378 (74.6%)	101 (62.7%)	43 (47.3%)	522
Total	507	161	91	759

Data presented as n (column %). There is a significant association between FI and UI status ( $P < .001$ ).

SUI, stress urinary incontinence.

Handa. The impact of fecal and urinary incontinence on quality of life. *Am J Obstet Gynecol* 2007.

TABLE 3

## Quality of life by FI and UI status

Quality of life measure	Neither UI nor FI (n = 479)	UI but not FI (n = 189)	FI but not UI (n = 43)	Both UI and FI (n = 48)	Adjusted P value*
SF-12 physical component summary score (range 0-100)	56.1 ± 4.5	53.6 ± 7.1	54.1 ± 7.9	55.3 ± 5.8	<.0001
SF-12 mental component summary score (range 0-100)	51.6 ± 7.8	48.3 ± 9.8	49.5 ± 8.7	44.5 ± 9.0	<.0001
Health utility index (range 0-100)	88.7 ± 10.1	84.1 ± 12.5	86.0 ± 8.7	84.2 ± 10.8	<.0001
Manchester impact item <sup>†</sup>	6 (1.3%)	16 (8.5%)	6 (14.0%)	11 (22.9%)	<.0001
Manchester severity score (range 0-100)	0.7 ± 3.6	2.7 ± 8.4	10.0 ± 17.1	12.4 ± 17.0	<.0001
Sexually active <sup>‡</sup>	298 (85.6%)	107 (79.9%)	29 (87.9%)	25 (73.5%)	.07
PISQ-12 score (range 0-48) <sup>‡</sup>	39.0 ± 4.3	38.3 ± 4.4	38.6 ± 4.2	36.2 ± 6.0	.04

Subjects are not classified by flatal incontinence.

\* P values based on analysis of variance or Mantel-Haenszel statistic (adjusted for site, race, and marital status).

<sup>†</sup> "How much do you think your bowel problem affects your life?": Positive response = "moderately," "quite a bit," or "extremely."

<sup>‡</sup> Sexual function and PISQ-12 scores are presented for women enrolled after the PISQ-12 questionnaire was added to this protocol. Handa. The impact of fecal and urinary incontinence on quality of life. *Am J Obstet Gynecol* 2007.