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Anal incontinence and Quality of Life in late pregnancy: a cross-sectional study

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Objective To evaluate the association between different types of anal incontinence (AI) and Quality of Life (QoL) in late pregnancy.

Design Cross-sectional study.

Setting Two maternity units in Norway 2009–2010.

Population Primiparae aged 18 or over.

Methods Participants answered questions about AI during the last 4 weeks of pregnancy on the St. Mark's score and impact of QoL in the Fecal Incontinence QoL score. Socioeconomic data were obtained from hospital records.

Main outcome measures Self-reported AI and impact on QoL.

Results 1571 primiparae responded; 573 (37%) had experienced AI during the last 4 weeks of pregnancy. One third of the incontinent women reported reduced QoL in the domain 'Coping'. 'Women experiencing urgency alone reported markedly better QoL compared to any other AI symptoms. AI appeared to have the strongest impact on the domains 'Coping' and 'Embarrassment'. Depression was only associated with experiencing the combination of all three symptoms [odds ratio (OR) 13; 95%confidence interval (CI) 3.2–51]. Experiencing flatus alone weekly or more was associated with the highest impact on 'Embarrassment' (OR 20; 95%CI 6.4–61) compared with all other symptoms or combination of AI symptoms, except the combination of all three AI symptoms.

Conclusions Between 3 and 10% of the primiparae in this material experienced AI to such a extent that it affected QoL. The greatest impact was seen in the QoL domain 'Coping'. These findings highlight the importance of an increased awareness of AI in late pregnancy among health professionals and the need to implement routine discussions about AI with expectant and new mothers.

Keywords Anal incontinence, pregnancy, Quality of Life.

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Introduction

Anal incontinence (AI) is the involuntary loss of flatus, solid or loose stool causing problems with hygiene or in social settings.[1] The main aetiology is related to pregnancy, childbirth, and obstetric anal sphincter injuries (OASIS) in particular.[2,3] Despite some reports on AI having a profound impact on Quality of Life (QoL)[4–6], women sufferers tend to consider AI a normal part and consequence of pregnancy and childbirth and few seek medical treatment.[7–9] Several authors suggest that pregnancy-related changes to the pelvic floor muscles' neuromuscular function is of greater importance than changes or injuries occurring during delivery; however, faecal urgency has been shown to be less prevalent among women with caesarean section than with vaginal deliveries.[10–15] Previous findings indicate that nearly 30–50% of pregnant women experience AI in late pregnancy; however, the prevalence of AI is markedly reduced 6–12 months after delivery.[10,13,16,17] Due to the complexity of maintaining continence, it is suggested that the individual perception and experience of AI may contribute more to the impact on QoL than the objective severity of AI. Hence obtaining measures of condition-specific Health Related QoL as well as the severity of a patient's incontinence problems is recommended.[18] Postpartum AI has been shown to have a mild effect on QoL[19]

but there is scarce documentation on how AI in pregnancy affects QoL. The aim of this study was to explore how different AI symptoms – and combinations of AI symptoms – affect Health Related Quality of Life in late pregnancy among primiparous women.

Methods

This study is part of a larger project exploring the prevalence and predictors of AI in late pregnancy and the first year postpartum.[17] The main reason for choosing primiparous women as our study population was that we wanted a homogeneous study population with no previous deliveries. A pilot study was conducted from May to August 2009, and a cross-sectional study was undertaken between September 2009 and December 2010. After the delivery of their first child, Norwegian-speaking primiparae over the age of 18 who gave birth to healthy infants were consecutively invited to participate prior to discharge home from the maternity wards. The study was conducted in two hospitals offering high- and low-risk perinatal services in the Southeastern and Central Norway Regional Health Authorities.

All primiparae were asked to complete two self-reporting questionnaires concerning AI symptoms experienced during the last 4 weeks of pregnancy (St. Mark's score)[20] and how AI symptoms affected their QoL (Fecal Incontinence Quality of Life Score (FIQL)).[21] Women aged under 18, with inadequate knowledge of the Norwegian language, or with poor physical or psychological health postpartum were excluded. Women delivering infants who were extremely premature or requiring prolonged admission to the paediatric intensive care unit, were only approached when advised by the medical staff on the maternity wards. The St. Mark's score measures the frequency of AI symptoms on a five-point scale, (never, rarely, sometimes, weekly and daily) and also includes three questions with dichotomous scales regarding the use of pads, constipating medication (no = 0, yes = 2 points) and the ability to defer defecation for 15 minutes (no = 4, yes = 0 points). The total St. Mark's score ranges from complete continence (0 points) to complete incontinence (24 points). Based on reports that concomitant urinary incontinence may bias the question regarding pad use, this question was not used for further analysis, as it is likely that pregnant women may wear pads for other reasons than AI.[22] In this study, we chose to focus on the individual items directly related to leakage of stool and/or flatus, as well as faecal urgency and combinations of these symptoms rather than the previously validated total St. Mark's score. AI was defined as having leakage of formed or loose stool monthly or more, leakage of flatus weekly or more, or the inability to defer defecation for more than 15 minutes. The participants who reported experiencing AI were allocated to one of seven groups according to the specific AI symptom or combination of AI symptoms reported (urgency only, stool incontinence only, flatus incontinence only, combination of stool incontinence and urgency, stool incontinence and flatus incontinence, urgency and flatus incontinence or the combination of all three AI symptoms).

The FIQL score is a previously validated condition-specific scale for patients experiencing anal incontinence.[23] The scale includes a total of 29 items: 27 items are rated on a four-point scale, one item on a five-point scale (Question 1, Q1) and one item on a six-point scale (Question 4, Q4), with a lower score indicating poorer Quality of Life. There is no total FIQL score; however, the scale is subdivided into the mean of all items included in the respective four domains; 'Lifestyle' (10 items), 'Coping/Behaviour' (nine items), 'Depression/Self-Perception' (seven items) and 'Embarrassment' (three items).[23] In this study, a score lower than 3.8 points in any FIQL domain was considered clinically relevant. As the FIQL is a condition-specific questionnaire, FIQL scores were analysed only for the 573 women reporting AI symptoms.

The questionnaires were completed at the maternity wards. Those who did not return the questionnaire before discharge home received postal reminders with questionnaires and pre-stamped return envelopes after 4 weeks. Demographic data such as mother's age, employment status, educational level, and body mass index (BMI) were collected from the electronic database PARTUS and hospital records.

Statistical methods

The prevalence of AI and QoL was estimated. The mean percentage of missing values in the outcome variables was 1.2% (range 0.3–2.4%) and thus a simple imputation procedure of the mean score of the outcome variables was used to replace missing data in single items of the completed St. Mark's score and FIQL questionnaires. The total mean of missing values of the background data was 3.9% (range 0.1–16.9); however, these variables were not imputed.

The independent sample's *t*-test was used to compare the means of continuous background data between two groups. The chi-square test or the Mann–Whitney *U*-test was used when comparing categorical background data. The variables describing the symptoms of AI were categorised into continent or incontinent according to the definitions of AI in this study. More than 60% of the women experiencing at least one symptom of AI reported no impact on QoL, that is, reported maximum scores in the FIQL domains. Thus, for the majority of the participants these variables do not vary. Hence, performing statistical analyses of the FIQL scores as continuous variables using linear regression was not possible. All mean FIQL domain scores were dichotomised into the categories 'reduced'

when the score was below 3.8 points and 'not reduced' when the mean domain score was 3.8 points or higher.

The associations between the various dichotomised AI symptoms and the four dichotomised QoL domains were assessed using the chi-square test. All dichotomised AI symptoms or specific combinations of symptoms were included in four separate univariate logistic regression analyses with QoL domains as the dependent variables. Background variables found to be significantly associated with the FIQL domains were included in the multivariate logistic regression analyses. The analyses were conducted to evaluate the independent strength of the association between each factor and each QoL domain. None of the variables in the multivariate regression analyses was found to be highly correlated (Spearman's correlation above 0.70 or below −0.70). A significance level of 5% was used throughout. All statistical analyses were performed using SPSS for Windows version 18 (SPSS Inc., Chicago, IL, USA).

Results

During the study period from May 2009 to December 2010 there were 3442 deliveries by primiparous women in the two hospitals; approximately 5–10% of the primiparae were not eligible for participation. A total of 1571 primiparae were included in this study, resulting in a response rate of approximately 50% (Figure 1). The mean age of the included women was 28.2 years (median 28.2, SD 4.7, range 18–46), 61% had education at a higher level than upper secondary school, and 82% were in full- or part-time employment at the start of pregnancy (Table 1). A total of 573 (37%) of the participating women reported having experienced at least one symptom of AI during the last 4 weeks of pregnancy. The women reporting AI were younger, less educated and more often unemployed compared with those reporting no AI symptoms. No significant differences were found with regards to smoking habits, marital status or BMI in late pregnancy (Table 1).

Symptoms of anal incontinence in late pregnancy

The mean St. Mark's score among the women reporting AI symptoms was 5.6 points (median 4.0, SD 3.1, range 1–18). Among the women experiencing AI, 212 (37%) reported urgency as their only symptom and one in six women (16%) reported incontinence of flatus alone (Figure 2). Two symptoms of AI were reported by 120 women (21%); only 30 women (5%) reported experiencing all three symptoms of AI.

Quality of Life domain scores among women reporting AI in late pregnancy

Only slight reductions in the mean FIQL domain scores among the women reporting AI symptoms were found (Table 2). One in four and one in five women reported that AI affected the domains 'Coping' and 'Embarrassment', respectively (Figure 3). The domain 'Coping' was affected in more than 50% of women reporting the combination of stool and urgency and in 67% of those experiencing the combination of all AI symptoms. Nearly one-third of the women with flatus symptoms alone reported that this affected the domains 'Coping' and 'Embarrassment' (Figure 4).

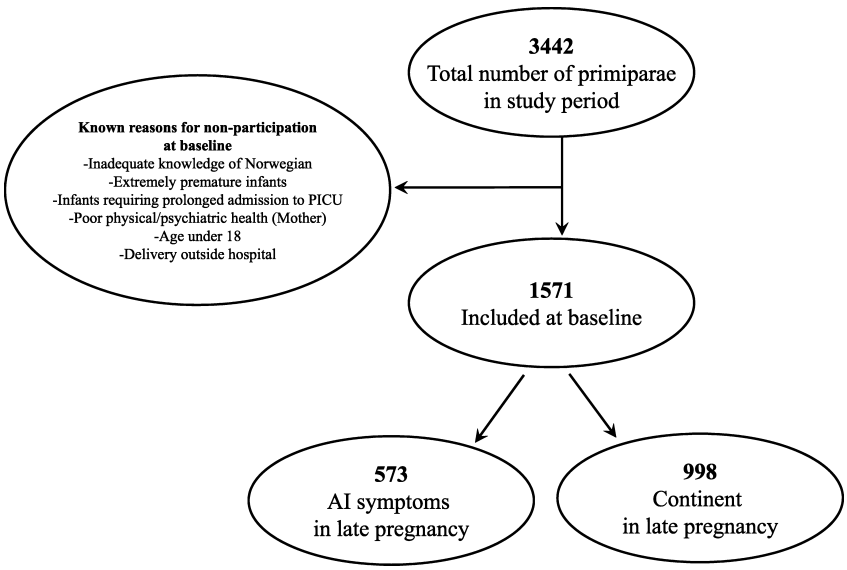

Figure 1. Flow chart of study population.

Table 1. Demographic characteristics of participants in late pregnancy

	All participants (n = 1571)	Participants reporting AI (n = 573)	Participants not reporting AI (n = 998)	Comparison participants reporting/not reporting AI (P-value)
Maternal age (years), mean (median, SD)	28.2 (28.2, 4.7)	27.8 (27.6, 4.9)	28.5 (28.5, 4.5)	**0.011***
18–22.2 (10th percentile)	159 (10.1)	77 (13.4)	82 (8.2)	0.152***
22.4–28.0	606 (38.6)	222 (38.7)	378 (37.9)	
28.1–34.3	637 (40.5)	208 (36.3)	429 (43.0)	
34.4–46 (90th percentile)	159 (10.1)	62 (10.8)	97 (9.7)	
BMI (kg/m²) late pregnancy, mean (median, SD)	29.4 (28.5, 4.7)	29.3 (28.6, 4.5)	29.5 (28.4, 5.0)	0.703*
Normal (BMI 18.4–24.9)	222 (14.1)	81 (14.1)	141 (14.1)	530***
Overweight (BMI 25.0–29.9)	592 (37.7)	210 (36.6)	382 (38.3)	
Obese class I (BMI 30.0–34.9)	330 (21.0)	119 (20.8)	211 (21.1)	
Obese class II & III (BMI > 35.0)	161 (10.2)	64 (11.2)	97 (9.7)	
Missing	266 (16.9)	99 (17.3)	167 (16.7)	
Gestation (days), mean (median, SD)	280 (282, 11.7)	280 (282, 12.0)	280 (282, 11.5)	0.744*
Birth weight (grams), mean (SD)	3449 (3460, 518)	3426 (3452, 515)	3461 (3460, 518)	0.597*
Head circumference, mean (SD)	34.9 (35.0, 1.7)	34.8 (35.0, 1.7)	35.0 (35.0, 1.7)	0.823*
Marital status				
Married/cohabiting	1479 (94.2)	522 (91.1)	957 (95.9)	0.326**
Single, divorced, widowed	88 (5.5)	49 (8.6)	39 (3.9)	
Unknown	4 (0.3)	2 (0.3)	2 (0.2)	
Educational level				
Primary	59 (3.8)	30 (5.2)	29 (2.9)	**<0.001****
Secondary	496 (31.6)	218 (38.0)	278 (27.9)	
Higher education	957 (60.9)	298 (52.0)	659 (66.0)	
Unknown	59 (3.8)	27 (4.7)	32 (3.2)	
Work status at start of pregnancy				
Employed (full or part time)	1286 (81.9)	438 (76.4)	848 (85.0)	**0.001****
Unemployed	86 (5.5)	45 (7.9)	41 (4.1)	
Missing	199 (12.7)	90 (15.7)	109 (10.9)	
St. Mark's score				
Total score, mean (median, SD)	2.5 (1.0, 3.1)	5.6 (4.0,3.1)	0.7 (0, 1.0)	**<0.001***
Use of constipating medication	26 (1.7)	18 (3.1)	8 (0.8)	**<0.001***

n (%) except where stated otherwise.
Statistically significant differences between participants reporting/not reporting AI are highlighted in bold.
*Independent sample's t-test.
**Mann-Whitney U-test.
***Chi-square test, linear by linear (graded, categorical variable).

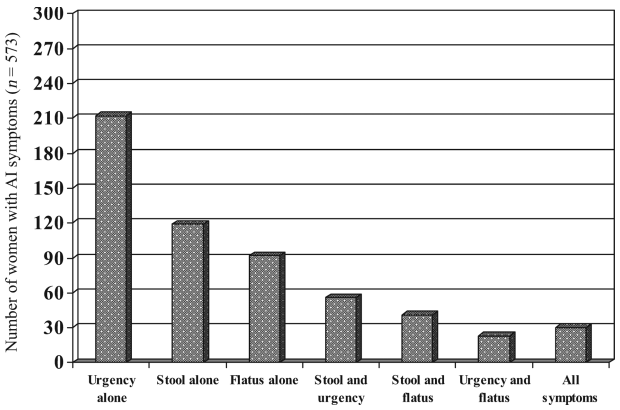

Figure 2. Number of women reporting AI symptoms and combinations of AI symptoms in late pregnancy.

Associations between Quality of Life domain scores

All the QoL domains were significantly related to each other, with 'Depression' showing particularly strong associations with 'Lifestyle' (OR 76; 95%CI 35–164) and 'Coping' (OR 31; 95%CI 13–74) (Table 3).

Associations between Quality of Life domains and symptoms of anal incontinence

Those experiencing urgency alone were found to have a significantly higher QoL than women experiencing any other AI symptom or combination of AI symptoms in the univariate analyses (Table 4). The following covariates were found to be significantly associated with an increased risk of AI affecting one or more of the FIQL domains in the

Table 2. Mean FIQL domain scores in participants reporting AI in late pregnancy

FIQL domains	Mean score (SD)	Median	Range
Lifestyle	3.9 (.3)	4.0	[1.3–4.0]
Coping behaviour	3.8 (.4)	4.0	[1.1–4.0]
Depression and self-perception	4.1 (.4)	4.3	[1.9–4.4]
Embarrassment	3.9 (.4)	4.0	[1.3–4.0]

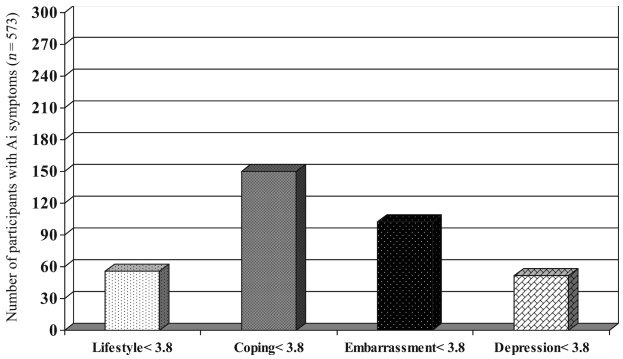

Figure 3. Number of women with any AI symptom reporting FIQL domain scores of <3.8 points.

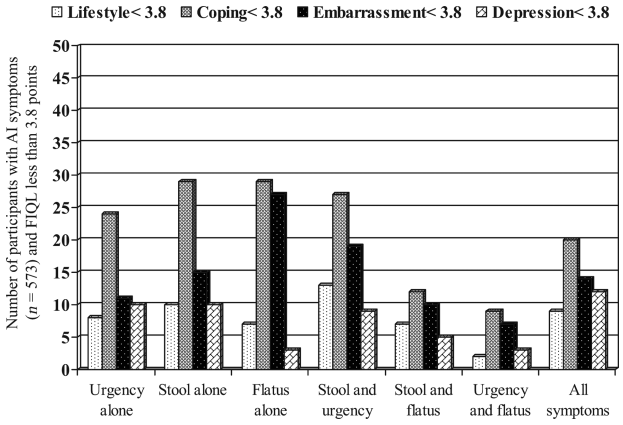

Figure 4. Number of women with various AI symptoms reporting FIQL domain scores of <3.8 points.

univariate analyses and was included in the multivariate analyses; age, BMI (35 +), employment status, educational level and use of constipating medication. Even after adjusting for these covariates in the multiple logistic regression analyses, women experiencing any symptom or combination of AI symptoms were found to have a reduced QoL in the domain 'Embarrassment', compared with women experiencing urgency alone (Table 4). When compared with experiencing urgency alone, AI was found to affect the domains 'Coping' and 'Embarrassment' more than the other FIQL domains. The domain 'Depression' was only significantly associated with experiencing the combination of all AI symptoms. When compared with women experiencing urgency only, those reporting flatus alone weekly or more were found to have a markedly higher risk of QoL being affected in the domain 'Embarrassment' (OR 20; 95%CI 6.4–61) (Table 4).

Discussion

Main findings

This cross-sectional study on anal incontinence and Quality of Life among primiparous women showed that 573 (37%) of the participants reported one or more symptoms of AI in late pregnancy. One in four of these women reported that AI affected their QoL in the domain 'Coping' and one in five reported that AI had an impact on the domain 'Embarrassment'. In the univariate analyses, women experiencing the most frequently reported AI symptom, urgency alone, had a markedly higher QoL score in all four FIQL domains compared with women experiencing any other symptom or combination of AI symptoms. The QoL domains 'Coping' and 'Embarrassment' were markedly more affected by experiencing any symptom and combination of AI symptoms, except stool incontinence alone, in the multivariate analyses compared with the other two FIQL scores. Compared with urgency only, women experiencing flatus alone weekly or more and the combination of all AI symptoms reported the highest impact in the QoL domain 'Embarrassment'.

Strengths and limitations

The strengths of the present study are that only a few studies have explored AI in late pregnancy and impact on QoL.[24] The study population is relatively large and has a similar response rate to previous studies.[3,13,25] The validity of the two assessment tools has been documented previously[20,23,26–29]; however we only used some of the items derived from the St. Mark's score, rather than the validated total score. This may have influenced the results, and our findings must therefore be interpreted with caution. Further, the variables age, work status, use of constipating medication and educational level may have had a confounding effect on the results in the present study. These variables were included in the multivariate logistic regression analyses in order to minimise this effect. It is unlikely, however, that in particular the mean difference in age of 1 year between the groups is large enough to have more than a minor impact on the results.

One limitation of this study is that we have no data on family history of AI, whether the participants experienced

Table 3. Association between FIQL domains scores <3.8 points in late pregnancy among participants reporting AI

	Coping behaviour OR (95% CI)	Depression and Self-perception OR (95%CI)	Embarrassment OR (95%CI)
Lifestyle	29 (13–65)	76 (35–164)	11 (6.0–20)
Coping behaviour	x	31 (13–74)	15 (9.1–25)
Depression and Self-perception		x	15 (8.0–29)
Embarrassment			x

AI prior to or early in this pregnancy, or previous impact on QoL.[16,24,30] Also, the participants were recruited after delivery but were asked to answer questions about AI symptoms in late pregnancy. This may have introduced recall bias, as possible changes in continence experienced postpartum may have influenced how they recall their pre-delivery continence status. Further, the cut-off point in the FIQL domains used in the present study may be discussed as the chosen cut-off score of a mean lower than 3.8 points was based on the assumption that even slight reductions from the maximum domain scores may cause significant discomfort to young healthy women and thus be clinically relevant.[16,31] The cross-sectional study design does not allow any conclusions on causality.[32,33] Hence the focus in this study has been on associations between AI and QoL and not on causal inferences.

Interpretation

The majority of the participating women in this study did not experience AI symptoms in late pregnancy. The AI prevalence of 37% was somewhat lower than reported previously[5], possibly due to the stricter definition of AI, and of flatus incontinence in particular, used in this study. Between 3 and 10% of the participating women experienced that AI affected their QoL. Similar to previous findings, the mean FIQL domain scores in late pregnancy reported in this study were only slightly reduced from the maximum score.[16] In the literature, however, there is conflicting evidence as to whether the frequency and severity of AI symptoms are appropriate indicators of impact on Quality of Life.[8,27,31] It is suggested that the St. Mark's score reflects the impact of experiencing AI on the sufferers' well-being and that the association is dependent on the severity of symptoms.[34] Some authors indicate that increasing levels of frequency and quantity of incontinence have a negative impact on usual everyday activities as well as on general and sexual QoL in patients with long-standing AI.[34–36] The occurrence of incontinence episodes less than once a month is reported to have a lower impact on QoL than more frequent incontinence episodes; however, one study found monthly and weekly episodes of stool incontinence to be equally distressing for patients with long-standing AI.[35] In contrast to previous reports of flatus incontinence at any frequency being the least bothersome symptom of AI[31], the findings in this study suggest that experiencing flatus incontinence alone on a weekly or daily basis has a profound negative impact on QoL, especially in the domain 'Embarrassment'. In a previous study, persistent AI symptoms in the first 2 years postpartum were found to negatively affect QoL, and severe symptoms affected QoL more than less severe symptoms did.[8] The results of the present study indicate that the type and combination of AI symptoms may influence the impact on QoL. Compared with experiencing urgency alone, experiencing any symptoms or combinations of AI symptoms, except stool alone, was found to have a significant effect on the FIQL domains 'Coping' and Embarrassment'. These domains have previously been reported to be the most important aspects of patients' daily lives.[27] Experiencing all AI symptoms, however, was the only symptom or combination of AI symptoms found to have a profound impact on all four FIQL domains, also shown previously.[26–28] The participants in previous studies tended to be older women with long-standing AI symptoms and are thus not directly comparable to our group of young healthy primiparae. The poor association between AI symptoms and 'Depression' in this study may reflect that the young expectant mothers were possibly more focused on their imminent or recent delivery and their new role as mothers, rather than on the inconveniences possibly thought to be pregnancy-related and of short duration.

Embarrassment has been reported to be the main reason for non-disclosure of AI and not seeking medical treatment.[37] The independent association between all FIQL domains was found to be strong in the present study. Previous studies have suggested that the complexity of AI and maintenance of continence result in large individual variations in the patients' perception of how much experiencing AI symptoms may affect the various aspects of QoL.[27,29] Thus the findings in this study may suggest that the complexity of maintaining continence and the embarrassment/stigma of being unable to control one's bowels may result in AI affecting several QoL domains, and 'Depression' in particular. Based on previous reports that AI during preg-

Table 4. Logistic regression analyses of the association between symptoms of anal incontinence in late pregnancy and reported reductions in FIQL domains scores lower than 3.8 points

	Lifestyle <3.8 points				Coping behaviour <3.8 points				Embarrassment <3.8 points				Depression and Selfperception <3.8 points			
Univariate analyses	χ^2	**OR**	**(95%CI)**	***P*-value**	χ^2	**OR**	**(95%CI)**	***P*-value**	χ^2	**OR**	**(95%CI)**	***P*-value**	χ^2	**OR**	**(95%CI)**	***P*-value**
Urgency only	0.000	**0.26**	(0.12–0.55)	**0.000**	0.000	**0.24**	(0.15–0.38)	**0.000**	0.000	**0.16**	(0.08–0.31)	**0.000**	0.005	**0.38**	(0.18–0.76)	**0.007**
Stool only	0.567	0.81	(0.40–1.7)	0.568	0.597	0.88	(0.55–1.4)	0.597	0.085	0.60	(0.33–1.1)	0.087	0.769	0.90	(0.44–1.9)	0.769
Flatus only	0.442	0.72	(0.32–1.7)	0.444	0.211	1.4	(0.84–2.2)	0.213	0.002	**2.2**	(1.3–3.7)	**0.002**	0.034	**0.30**	(0.09–0.97)	**0.045**
Stool and urgency	0.000	**3.3**	(1.7–6.7)	**0.001**	0.000	**3.0**	(1.7–5.2)	**0.000**	0.001	**2.6**	(1.5–4.8)	**0.002**	0.056	2.1	(0.97–4.6)	0.061
Stool and flatus	0.089	2.1	(0.88–5.0)	0.095	0.578	1.2	(0.60–2.5)	0.579	0.233	1.6	(0.74–3.3)	0.236	0.437	1.5	(0.55–3.9)	0.439
Urgency and flatus	0.857	0.87	(0.20–3.8)	0.857	0.153	1.9	(0.79–4.4)	0.158	0.113	2.1	(0.83–5.2)	0.121	0.501	1.5	(0.44–5.3)	0.504
Stool, flatus and urgency	0.000	**4.5**	(2.0–10)	**0.000**	0.000	**6.3**	(2.9–14)	**0.000**	0.000	**4.5**	(2.1–9.5)	**0.000**	0.000	**8.4**	(3.8–19)	**0.000**
Age (4 groups)	0.457	0.78	(0.57–1.1)	0.138	0.772	0.92	(0.74–1.1)	0.451	0.321	1.2	(0.96–1.6)	0.102	0.591	0.85	(0.61–1.2)	0.332
BMI 35+, in late pregnancy	0.672	1.2	(0.51–2.8)	0.672	0.946	1.0	(0.56–1.9)	0.946	0.026	**2.0**	(1.1–3.7)	**0.028**	0.209	1.7	(0.74–3.9)	0.213
Education	0.000	1.0	(0.99–1.0)	0.126	0.361	1.0	(0.99–1.0)	0.161	0.510	1.0	(0.99–1.0)	0.502	0.075	1.0	(0.99–1.0)	0.083
Work status	0.000	**6.4**	(3.0–14)	**0.000**	0.036	**2.0**	(1.0–3.7)	**0.039**	0.007	**2.5**	(1.3–4.8)	**0.008**	0.000	**5.4**	(2.4–12)	**0.000**
Constipating medicine	0.000	**8.4**	(3.2–22)	**0.000**	0.020	**2.9**	(1.1–7.5)	**0.026**	0.000	**4.9**	(1.9–12.7)	**0.001**	0.000	**9.3**	(3.5–25)	**0.000**

Multivariate analyses	**OR**	**(95%CI)**	***P*-value**	**OR**	**(95%CI)**	***P*-value**	**OR**	**(95% CI)**	***P*-value**	**OR**	**(95%CI)**	***P*-value**
Urgency only		Ref			Ref			Ref			Ref	
Stool only	1.5	(0.34–6.7)	0.581	1.7	(0.79–3.7)	0.171	**5.5**	(1.6–19)	**0.006**	1.9	(0.53–7.2)	0.317
Flatus only	2.9	(0.75–12)	0.123	**4.3**	(2.1–8.7)	**0.000**	**20**	(6.4–61)	**0.000**	0.92	(0.17–5.0)	0.912
Stool and urgency	3.5	(0.81–15)	0.095	**5.9**	(2.6–13)	**0.000**	**13**	(3.7–45)	**0.000**	1.3	(0.26–6.8)	0.733
Stool and flatus	**12**	(3.0–50)	**0.000**	**4.3**	(1.6–12)	**0.005**	**14**	(3.5–55)	**0.000**	3.8	(0.79–19)	0.094
Urgency and flatus	3.3	(0.51–22)	0.210	**5.8**	(1.9–18)	**0.002**	**8.0**	(1.7–38)	**0.008**	2.4	(0.38–15)	0.348
Stool, flatus and urgency	**8.7**	(1.9–40)	**0.006**	**18**	(5.8–54)	**0.000**	**28**	(7.0–111)	**0.000**	**13**	(3.2–51)	**0.000**
Age	1.0	(0.64–1.6)	0.968	0.84	(0.62–1.1)	0.242	**1.4**	(1.0–2.0)	**0.045**	1.1	(0.66–1.8)	0.765
BMI 35+, in late pregnancy	1.6	(0.54–4.7)	0.394	0.91	(0.44–1.9)	0.805	2.1	(0.94–4.5)	0.074	2.0	(0.65–6.1)	0.230
Education	1.0	(0.97–1.0)	0.969	1.0	(0.99–1.0)	0.573	1.0	(0.98–1.0)	0.976	1.0	(0.98–1.0)	0.716
Work status	**5.1**	(2.0–13)	**0.001**	1.2	(0.54–2.6)	0.673	1.8	(0.74–4.3)	0.200	**5.7**	(2.1–16)	**0.001**
Constipating medicine	**6.3**	(1.3–31)	**0.022**	1.6	(0.42–6.3)	0.483	**7.3**	(1.9–29)	0.005	**8.7**	(2.0–36)	**0.004**

Numbers highlighted in bold indicate significant predictors of AI affecting QoL.
Variables adjusted for in the multivariate logistic regression models: Age, BMI 35+ in late pregnancy, education, work status and use of constipating medication.

nancy is one of the main predictors of postpartum AI[5,17], early intervention and information may possibly aid in reducing and preventing postpartum AI.

Conclusion

Between 3 and 10% of the primiparous women in this material experienced AI symptoms or a combination of AI symptoms affecting their QoL. The greatest impact of experiencing AI symptoms in late pregnancy was seen in the QoL domains 'Coping Behaviour' and 'Embarrassment'. These findings show that experiencing AI may affect several QoL domains and emphasise the need for health professionals to routinely discuss AI with expectant and new mothers, and identify those who may require further investigation and treatment in order to prevent AI postpartum.

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Disclosure of interest

There are no conflicts of interests.

Contribution to authorship

All authors contributed to drafting of the original study protocol. H.H.J., A.S., A.W., S.M. and L.S. contributed to the analysis and interpretation of the data. H.H.J., A.W. and L.S. drafted the paper. All authors commented and approved the final version.

Details of ethics approval

Participants received written and/or verbal information and written consent was obtained prior to inclusion in the study. The study is registered at Clinicaltrials.gov (NCT00970320), and was approved by the Norwegian Regional Committees for Medical and Health Research Ethics [REC Central, No (6)2008.1318. Approved 04.07.2008] and the Norwegian Social Science Data Services (NSD).

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Anal incontinence in late pregnancy: An opportunity to improve quality of life with a single question

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Mini commentary on 'Anal incontinence and Quality of Life in late pregnancy: a cross-sectional study'

In this elegant paper, Johannessen et al. present cross-sectional data collected from approximately 1500 newly postpartum primiparous women about symptoms of anal incontinence (AI) and their impact on Quality of Life (QOL) in the month prior to delivery. The AI prevalence in this sample is 37%, and almost 40% of women with AI report a negative impact on QOL in at least one domain. The authors conclude that health professionals should thus routinely discuss AI with expectant and new mothers, a recommendation that may seem superfluous at first glance but which on careful examination is absolutely essential, especially in light of extremely low care-seeking rates for this condition, not just during pregnancy but throughout the life-course.

The definition of AI used in this study is unique because it includes faecal urgency in the absence of incontinence of flatus or stool. Interestingly, women with isolated faecal urgency had significantly better condition-related QOL than women with other AI symptoms. The argument could thus be made to exclude faecal urgency from the definition of AI. If faecal urgency is removed from the definition, the prevalence of AI in this sample becomes 23%, which is still notable, especially considering that isolated flatal incontinence meets the definition criteria only if it occurs at least weekly. Stated another way, *one in four nulliparas* experiences AI in the last month of pregnancy, and AI is associated with negative QOL impact, especially in domains of embarrassment and coping behaviour.

As obstetrician-gynaecologists, we are uniquely positioned to screen our patients for these symptoms and to offer early intervention and treatment. Fiber supplementation, pelvic floor muscle exercises, and loperamide are safe interventions during pregnancy that can significantly improve symptoms. Perhaps even more importantly, screening for these symptoms during pregnancy opens the door for our patients to discuss pelvic floor disorders with us in the future. It could be argued that AI in the last month of pregnancy, despite its negative impact on QOL, is not significant, as it resolves postpartum in the majority of women. However, we know that vaginal birth is associated with an increased risk of persistent AI postpartum (Solans-Domenech M et al. Obstet Gynecol 2010, 115:618–28) as well as an increased risk of additional pelvic floor disorders 5–10 years after delivery (Handa VL et al. Obstet Gynecol 2011; 118:777–84). Further, more than 70% of women with AI have never discussed it with a physician, and having a primary care provider is significantly associated with care-seeking (Brown HW et al. Female Pelvic Med Reconstr Surg 2013, 19:66–71). During pregnancy, we as obstetrician-gynaecologists serve as primary care providers.

A simple inquiry about 'accidental bowel leakage', the patient-preferred term for AI (Brown et al. Int J Clin Pract 2012; 66:1101–8) adds only seconds to an antenatal visit, and identifies those women who may be at risk for pelvic floor disorders postpartum and in the future. If we as obstetrician-gynaecologists start the discussion about accidental bowel leakage with our patients during pregnancy, we have the opportunity to impact their Quality of Life not just during the month prior to delivery, but also over the next 30–50 years.

Disclosure of interests

No financial interests to disclose.

Contribution to authorship

This author served as one of the peer reviewers for the associated manuscript. She was responsible for writing this invited contribution in its entirety. ■