Zeynep Kamil Med J 2025;56(2):66–72
DOI: 10.14744/zkmj.2024.60024

ORIGINAL ARTICLE

Changes in bowel habits during pregnancy and related factors

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ABSTRACT

Objective: The aim of this study is to determine the changes in bowel habits and the associated factors that occur during pregnancy, thereby contributing to the existing literature.

Material and Methods: This descriptive study employed statistical methods and was conducted between June 1, 2022, and September 1, 2023, at a public hospital in Istanbul, involving 388 healthy pregnant women aged 18 to 45.

Results: Before pregnancy, 90.6% of the participants reported having regular bowel habits. During pregnancy, 52.6% maintained regular bowel habits, while 47.4% experienced irregular bowel habits.

Conclusion: The impact of pregnancy on the anal sphincter and pelvic floor organs as gestation progresses is not yet fully understood. The role of healthcare providers is crucial in preventing and treating these conditions, as well as in mitigating their adverse effects on women's quality of life post-pregnancy. It is evident that further research is needed in this area.

Keywords: Anal sphincter, fecal incontinence, pelvic floor muscles, pregnancy.

Cite this article as: Kubat Küçükyurt A, Artuğ Cansızlar G. Changes in bowel habits during pregnancy and related factors. Zeynep Kamil Med J 2025;56(2):66–72.

Received: October 08, 2024 **Revised:** December 06, 2024 **Accepted:** December 09, 2024 **Online:** May 22, 2025
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Zeynep Kamil Medical Journal published by Kare Publishing. Zeynep Kamil Tıp Dergisi, Kare Yayıncılık tarafından basılmıştır.

INTRODUCTION

Fecal incontinence is defined as the involuntary leakage of solid or liquid stool.[1] It adversely affects the quality of life for women, leading to social isolation, embarrassment, disrupted close relationships, and decreased self-esteem. Fecal incontinence is influenced by factors such as age, gender, lifestyle, occupation, culture, and individual characteristics.[2] Its prevalence varies among different populations, but population-based studies have reported a prevalence ranging from 2.2% to 25% in women.[2] While the relationship between gender and fecal incontinence is debated, studies have indicated a prevalence of 28.4% in women who have undergone gynecological examinations.[2,3] In a study conducted in Türkiye, the frequency of fecal incontinence was reported as 3.3%.[4]

Multiple factors play a role in the etiology of fecal incontinence. During pregnancy, the enlarging uterus increases intra-abdominal pressure and strains the pelvic floor muscles.[5] Particularly from the 20th week of pregnancy onwards, there is a decrease in pelvic floor muscle strength. Elevated hormone levels also lead to changes in organs and tissues.[6] Additionally, the hormone relaxin, secreted during pregnancy to prepare tissues for childbirth, adversely affects pelvic floor muscles.[6,7] The risk of fecal incontinence during pregnancy is reported to increase with maternal age>35, body mass index>30, and constipation.[8] Obstetric risks that can lead to fecal incontinence include fetal malposition and weight.[9] The risk of fecal incontinence increases with the number of pregnancies.[10] It has been reported that urinary incontinence and fecal incontinence can co-occur during pregnancy.[11,12]

The aim of this study is to identify the changes in bowel habits and the associated factors that occur during pregnancy, thereby contributing to the existing literature.

MATERIAL AND METHOD

Our study is a descriptive statistical methods research study. The study sample consists of 400 healthy pregnant women aged 18 to 45 who presented at a public hospital in Istanbul between June 1, 2022 and September 1, 2023.

Inclusion criteria for the study were as follows: being at the 20th week of pregnancy or beyond, the ability to read, write, and speak Turkish, and a willingness to participate in the study. Exclusion criteria included inability to read or write in Turkish and unwillingness to participate in the study. The women included in the study had not undergone sphincter surgery either prior to or during pregnancy.

Ethical approval for this study was obtained from the Istanbul Education and Research Hospital Non-Interventional Clinical Research Ethics Committee on July 22, 2022, with approval number 230. Patients were evaluated for fecal incontinence using the Wexner scoring system and the Bristol stool scale.[13]

The Bristol Stool Scale consists of visual images that participants use to assess their defecation habits, facilitating more objective diagnostic evaluations. Participants are asked to describe their general defecation habits and select the corresponding images. According to the Bristol Stool Scale:

Individuals who select Type 1 or Type 2 indicate constipation.

Types 3, 4 and 5 represent normal defecation.

Types 6 and 7 indicate diarrhea.[13]

Definition of Groups

Groups with Changing Bowel Habits

This group consisted of pregnant women who met one or more of the following criteria:

Bristol Stool Scale classifications: Types 1 and 2 (indicative of constipation) or Types 5, 6 and 7 (indicative of diarrhea),

Wexner Score: ≥1.

Groups without Changing Bowel Habits

This group consisted of pregnant women who met both of the following criteria:

Bristol Stool Scale classifications: Types 3 and 4 (indicative of normal stool consistency),

Wexner Score=0.

Statistical Method

Descriptive statistics including mean, standard deviation, median, minimum, maximum, frequency and percentage values were used to summarize the data. Statistical analysis was conducted using SPSS 28.0 software.

We followed the Helsinki Declaration guidelines and received clinical and ethical approval from the institutional review board.

RESULTS

The average age of the women participating in the study is 28, the average height is 1.60 cm, the average weight is 72 kg, and the average BMI is 27.3. The average gestational week of the participants is 33, and the average weight gained during pregnancy is 8 kg (Table 1).

The average weight of the baby is 2100 g. 51.4% of the women have an education level of more than 8 years, and 72.9% are not working. 16.8% of the participants have a chronic illness. Of those with a chronic illness, 4.7% have asthma, 4.1% have hypothyroidism, 1.2% have gestational diabetes, and 1.8% have hypertension. 90.6% of the participants do not smoke, and 99.1% do not consume alcohol. The rate of caffeine consumption is 74.7%, comprising those who do not consume caffeine. The rate of those taking medication is 63.5%. The medications used are iron preparations, vitamin D, and folic acid supplements. 93.8% of the participants are not following any diet. 6.2% of the dieting participants are on a nutritional diet. The diets followed include diabetic diet and salt-free diet (Table 1).

Among the participants of the study, 63.5% have a surgical history, with 22.1% having undergone cesarean sections. Gravidity is nulliparous in 30.6% of the participants, while 61.9% are nulliparous with respect to parity. The abortion rate is zero in 80% of the participants. A majority, 83.5% of the women, have no history of obstetric interventions in previous deliveries. Vaginal delivery was

experienced by 55.9% of the women. Perineal skin issues are absent in 87.4% of the participants. Regular bowel habits are reported by 90.6% of the participants, and no change in bowel habits during pregnancy is noted in 52.6% of them. However, irregular bowel habits during pregnancy are reported by 47.4% of the women (Table 2).

The stool quality is mostly Type 4 at 39.2%, followed by Type 3 at 22.7%. The average Wexner score is 8 (Table 3).

The age of the patients did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$). BMI value did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$). Weight gained during pregnancy did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$) (Table 4).

Gestational week did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$). The gravida rate and number of gravida did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$). Parity rate and number of parities did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$). Abortion rate and number of abortions did not differ significantly between the groups with and without bowel habits during pregnancy ($p>0.05$) (Table 4).

The proportion of pregnant women with a gestational week of 37 weeks or less was significantly higher in the group with bowel habits during pregnancy than in the group without bowel habits during pregnancy ($p<0.05$) (Table 4). The cesarean delivery rate was significantly lower in the group with bowel habits during pregnancy than in the group without bowel habits during pregnancy ($p<0.05$). Vaginal delivery rate was significantly higher in the group with bowel habits during pregnancy than in the group without bowel habits during pregnancy ($p<0.05$) (Table 4).

Table 1: Demographic characteristics of participants (n=388)

	Average	%
Age, Mean±SD	28	29.0±5.9
Height, Mean±SD	1.60	1.62±0.06
Weight, Mean±SD	72.0	73.4±12.3
BMI, Mean±SD	27.3	34.1±120.8
Week of pregnancy	33	100
Weight gained during pregnancy	8.0	100
Baby's weight	2100	100
Educational status		
8 years and under	165	48.6
Over 8 years	173	51.4
Occupation		
Working	90	27.1
Not working	248	72.9
Chronic illness		
Present	57	16.8
Absent	331	83.2
Asthma	16	4.7
GDM	4	1.2
HT	6	1.8
Hypothyroidism	14	4.1
Other	17	5
Smoking		
Yes	32	9.4
No	356	90.6
Alcohol consumption		
Yes	3	0.9
No	385	99.1
Caffeine consumption		
Yes	86	25.3
No	302	74.7
Medication use		
Yes	264	63.5
No	124	36.5
Dieting		
Yes	21	6.2
No	367	93.8
Diabetic diet	18	5.3
Salt-free diet	3	1.8

SD: Standard deviation; GDM: Gestasyonel diabetes mellitus; HT: Hipertansiyon.

DISCUSSION

Pregnancy is known to affect all organs and tissues. Especially, hormonal and mechanical changes during pregnancy, along with increased pressure due to the changing center of gravity, have a negative impact on pelvic floor muscles.[14] In this study, it was observed that the average BMI of pregnant women was 27.3, which is consistent with the finding in Ferrari et al.'s[11] study that women with fecal incontinence tend to be overweight. Brochard et al.[15] also reported in their study that fecal incontinence is associated with maternal age, excessive weight gain, and parity. In the study by Derrar et al.,[16] it was reported that pregnant women in the sample had changes in bowel habits but did not experience fecal incontinence. The average Wexner score was 8. The reasons for this could be attributed to women's embarrassment, reluctance to report, the existence of fecal incontinence before pregnancy, or the perception of pregnancy as a normal physiological change. However, Derrar et al.[16] mentioned that more than half of the sample group reported fecal incontinence. According to Shin et al.'s[17] study, 90.6% of women had regular bowel habits before pregnancy, and 52.6% had regular bowel habits during pregnancy. However, 47.4% of the participants experienced a change in bowel habits during pregnancy.

Table 2: Obstetric characteristics and bowel habit status of the participants (n=388)

	n	%
Surgical history		
Yes	124	63.5
No	264	36.5
Cesarean	75	22.1
Hemorrhoid	2	0.6
Other	47	13.8
Gravida		
0	152	30.6
I	79	23.2
II	59	17.4
III	51	15
IV and above	47	13.8
Parity		
0	258	61.9
I	63	18.5
II	45	13.2
III	10	2.9
IV and above	12	3.5
Number of Abortions		
0	320	80
I	40	11.7
II	18	5.3
III	6	1.8
IV and above	4	1.2
Assisted delivery history		
Yes	56	16.5
No	284	83.5
Episiotomy	55	16.2
Forceps	1	0.3
Mode of delivery		
Vaginal birth	238	55.9
Cesarean	150	44.1
Perineal skin problems		
Yes	43	12.6
No	345	87.4
Itching	23	6.9
Vaginal discharge	20	5.7
Perineal skin problems		
Yes	43	12.6
No	345	87.4
Itching	23	6.9
Vaginal discharge	20	5.7

Table 3: Wexner and Bristol assessment (n=388)

	n	%
Bristol		
Type 1	11	3.2
Type 2	43	12.8
Type 3	77	22.7
Type 4	182	39.2
Type 5	38	11.2
Type 6	30	8.8
Type 7	7	2.1
Wexner scoring (average, %)	8.0±4.8	100

Stool consistency was Type 4 in 36.5% of cases and Type 3 in 22.7% of cases. The exact reasons for changes in bowel habits during pregnancy are not fully understood, but it is known that constipation is associated with fecal incontinence. In a study by Subki et al.,[18] 6.1% of 393 pregnant women experienced fecal incontinence, and 30.5% reported changes in bowel habits. Ferdinande et al.[19] also suggest that constipation resulting from changing bowel habits during pregnancy can lead to fecal incontinence. Another study by Cauley et al.[20] reported that women experiencing fecal incontinence had constipation during pregnancy and had undergone instrumental vaginal deliveries in previous childbirths.

In our study, none of the participating pregnant women had a history of depression. However, some studies have indicated a relationship between pregnancy and depression. Fritel et al.[21] found an association between pregnancy and postpartum fecal incontinence and depression. Al-Shammari et al.[22] reported that fecal incontinence was associated with depression and that the frequency of fecal incontinence during pregnancy was higher compared to the postpartum period. Regarding parity in our sample group, 23.32% were nulliparous, and 27.4% were multiparous. The average gestational age of the participants was 33 weeks. Johannessen et al.[23] associated fecal incontinence with advanced gestational age during pregnancy. Hage-Fransen et al.[8] linked fecal incontinence to maternal age over 35, a BMI over 30 kg/m², previous instrumental deliveries, macrosomia, and advanced gestational age. Parés et al.[24] reported a high prevalence of fecal incontinence during pregnancy.

In an analysis of the relationship between bowel habits during pregnancy and obstetric outcomes, it was found that vaginal delivery rate was significantly higher and cesarean delivery rate was lower in pregnant women with regular bowel habits ($p<0.05$). This suggests that bowel regularity may facilitate delivery by supporting pelvic floor muscles and regulating intra-abdominal pressure. Lawson et al.[25] reported that progesterone and relaxin hormones may increase gastrointestinal motility in late gestational weeks and this was associated with late pregnancy cases with regular bowel habits. In addition, a study by Everson[26] reported that healthy dietary habits and regular physical activity during pregnancy regulate bowel movements, which may have effects on the mode of delivery. In the literature, it is stated that gut health can affect birth outcomes and

Table 4: Comparison of obstetric characteristics of pregnant women with and without changed bowel habit

	Bowel habit unchanged during pregnancy (n=227)				Changing bowel habits during pregnancy (n=161)				p
	Mean±SD	n	%	Median	Mean±SD	n	%	Median	
Age	28.6±5.9			28.0	29.6±5.9			29.0	0.080[m]
BMI	28.4±4.2			27.7	28.1±4.7			27.2	0.229[m]
Weight gained during pregnancy	9.2±5.6			8.0	9.5±6.0			8.0	0.583[m]
Pregnancy week	30.9±6.7			33.0	31.7±7.2			33.0	0.131[m]
Number of gravide	2.5±1.4			2.0	2.4±1.6			2.0	0.408[m]
Number of parities	1.2±1.1			1.0	1.3±1.2			1.0	0.501[m]
Number of abortions	1.7±0.9			2.0	1.5±0.9			1.0	0.160[m]
Pregnancy week									**0.022**χ^2
37 weeks and under		130	57.2			122	75.7		
38 weeks and over		97	42.7			39	24.3		
Caesarean section									**0.030**χ^2
(-)		30	41.2			43	57.0		
(+)		47	58.8			30	43.0		
Vaginal birth									**0.028**χ^2
(-)		64	55.7			47	39.8		
(+)		53	44.3			66	60.2		

SD: Standard deviation; BMI: Body mass index; m: Mann-Whitney u Test; χ^2: Chi-Square Test.

gastrointestinal health facilitates the birth process, increases vaginal delivery rates, and reduces the risk of cesarean section.[27–29] All these findings indicate that bowel habits are an important factor not only in terms of obstetric outcomes but also in terms of general pregnancy health and prevention of complications.

Fecal Incontinence and Nursing/Midwifery Care During Pregnancy

In women presenting with fecal incontinence, a basic medical evaluation should be performed with a general examination, detailed anamnesis, mental status assessment, anorectal examination, and diagnostic tests. The UK National Institute for Health and Care Excellence (NICE 2007) stated that this evaluation can be made by specialized clinical nurses.[30] The Royal College of Nursing (RCN 2012) stated that it is appropriate for specialized nurses to perform a digital rectal examination to assess fecal incontinence in women with consent.[31]

The International Continence Society (ICS) also states that it is important to train and support nurses who will work on fecal incontinence and support care to improve the quality of life of women with incontinence.[32]

It is important for midwives/nurses to teach Kegel exercises to strengthen women's pelvic floor muscles during pregnancy, to help them develop healthy lifestyle behaviors, and to provide nutrition education.[33]

Birth preparation training should be disseminated, and women should be helped to prepare for birth by pushing effectively at the time of birth. Constipation should be prevented by regulating bowel habits. In the postpartum period, women should be evaluated for fecal incontinence.[31,32]

CONCLUSION

The exact impact of pregnancy on the anal sphincter and pelvic floor organs as pregnancy progresses is not fully understood. Fecal incontinence is frequently associated with pregnancy and childbirth in women, but due to the inadequacy of studies and social taboos, the true prevalence cannot be determined. The role of healthcare providers is crucial in preventing and treating these conditions and mitigating their adverse effects on post-pregnancy quality of life for women. It is evident that more research is needed in the literature.

Statement

Ethics Committee Approval: The İstanbul Training and Research Hospital Non-Interventional Clinical Research Hospital Ethics Committee granted approval for this study (date: 22.07.2022, number: 230).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Use of AI for Writing Assistance: Artificial intelligence was not used in this study.

Author Contributions: Concept – AKK, GAC; Design – AKK, GAC; Supervision – AKK, GAC; Resources – AKK, GAC; Materials – AKK, GAC; Data collection and/or processing – AKK, GAC; Analysis and/or interpretation – AKK, GAC; Literature search – AKK, GAC; Writing – AKK, GAC; Critical review – AKK, GAC.

Peer-review: Externally peer-reviewed.

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