Women & Health

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/wwah20

Do community-dwelling pregnant women know about pelvic floor disorder?

Seyda Toprak Celenay, Ozge Coban, Zehra Korkut & Afra Alkan

To cite this article: Seyda Toprak Celenay, Ozge Coban, Zehra Korkut & Afra Alkan (2021): Do community-dwelling pregnant women know about pelvic floor disorder?, Women & Health, DOI: 10.1080/03630242.2021.1942398

To link to this article: https://doi.org/10.1080/03630242.2021.1942398

Published online: 17 Jun 2021.

WOMEN & HEALTH
https://doi.org/10.1080/03630242.2021.1942398

Taylor & Francis
Taylor & Francis Group

Do community-dwelling pregnant women know about pelvic floor disorder?

Seyda Toprak Celenay[a], Ozge Coban[b], Zehra Korkut[c], and Afra Alkan[d]

[a]Department of Physiotherapy and Rehabilitation, Health Sciences Faculty, Ankara Yildirim Beyazit University, Ankara, Turkey; [b]Department of Physiotherapy and Rehabilitation, Health Science University, Ankara, Turkey; [c]Vocational School of Health Services, Department of Therapy and Rehabilitation, KTO Karatay University, Konya, Turkey; [d]Faculty of Medicine, Department of Biostatistics, Ankara Yildirim Beyazit University, Ankara, Turkey

ABSTRACT

Our study aimed to assess the knowledge and awareness regarding pelvic floor disorders (PFDs) among pregnant women. We additionally evaluated whether the knowledge of PFDs was different in relation to gestational age, parity, the attendance to an antenatal education (ANE), and history of urinary incontinence (UI) and/or pelvic organ prolapse (POP). A cross-sectional descriptive study was conducted in pregnant women from all trimesters of pregnancy. The Prolapse and Incontinence Knowledge Questionnaire (PIKQ) and three questions were used for knowledge and awareness. Two hundred and forty-one women participated in the study. Of them, 18.6% (n = 46) and 3.6% (n = 9) had UI and POP, respectively. The median of the PIKQ-UI and the PIKQ-POP scores were 6 (min-max: 0–11) and 5 (min-max: 0–12), respectively. The median PIKQ-UI and PIKQ-POP scores were higher in women who had attended ANE. There was no significant difference in terms of gestational age, parity, the attendance to ANE, and the history of pelvic floor disorder ($p > .05$). Knowledge and awareness were low among the women in all trimesters. Education programs involving pelvic floor training should be organized for pregnant women.

ARTICLE HISTORY
Received 15 August 2020
Revised 31 May 2021
Accepted 6 June 2021

KEYWORDS
Incontinence; knowledge; pregnancy < reproductive health; prolapse

Introduction

Pelvic floor disorders (PFDs), including urinary incontinence (UI), overactive bladder syndrome, pelvic organ prolapse (POP), and anal incontinence represent a common health problem that affects sexual function, quality of life, and psychological state (Jelovsek and Barber 2006; Jha and Gopinath 2016; Von Gontard et al. 2011). Previous studies have suggested that there are several risk factors for PFDs such as age, gender, higher body mass index, the number and type of childbirth especially vaginal delivery, the status of forceps delivery, and history of gynecologic surgery (Cattani et al. 2021; Moalli et al. 2003). Pregnancy, in which physiological adaptation to mechanical and hormonal alterations occurs, has been also reported as a risk factor for PFDs (Milsom et al. 2013; Slieker-ten Hove et al. 2009). The causes of PFDs in pregnancy were found to be associated with increased bladder-neck mobility, decreased urethral resistance, decreased strength of levator ani, and the loss of pelvic floor muscle contractibility due to increased pelvic organ descent (O'Boyle et al. 2002; Van Geelen, Ostergard, and Sand 2018).

Although PFDs are common in pregnancy with an estimated prevalence between 5% and 26% among the nulliparous pregnant women with UI (Beksac et al. 2017), there are several barriers that prevent pregnant women from seeking help. They might consider their symptoms as normal or not treatable. In addition, they might avoid accepting their symptoms due to either embarrassment or

CONTACT Seyda Toprak Celenay sydtoprak@hotmail.com Department of Physiotherapy and Rehabilitation, Health Sciences Faculty, Ankara Yildirim Beyazit University, Ankara, Turkey

misconceptions of what a "medical problem" is (Shaw et al. 2001). In particular, the main cause of all barriers is the lack of knowledge regarding the condition and available highly effective treatments, such as pelvic floor exercise (Bo 2012). Even though information about the pelvic floor and pelvic floor exercises is generally provided in antenatal pregnancy education programs, the fact that the pelvic floor muscles are located in the pelvis and they are not visible like other striated muscles makes the concept of pelvic floor health generally complicated. Therefore, investigating the knowledge and awareness about the PFDs in pregnant women is very important to create preventive and protective programs related to the pelvic floor health services.

Recent studies conducted specifically in pregnant women have also showed considerable gaps in the knowledge of PFDs (Liu, Tan, and Han 2019; O'Neill et al. 2017). However, these studies include only pregnant women in their third trimester. To the best of our knowledge, there is no study assessing the knowledge of PFD in pregnant women from all three trimesters. Therefore, our study aimed to determine the knowledge and awareness regarding PFDs among pregnant women. We additionally evaluated whether the knowledge of PFDs was different in relation with gestational age, parity, and attendance to an antenatal education, and the history of UI and/or POP.

Materials and methods

Study design

This study was designed as cross-sectional and descriptive. Data were collected in a face-to-face setting at two gynecology and obstetrics clinics including a private clinic and a training and research hospital in which an average number of 1,500 babies are delivered annually. Also snowball sampling was used to widen the sample with participants suggesting other pregnant women to contact, who were sent an online survey, in a period of three months. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Ethics committee of Ankara Yildirim Beyazit University approved the study (Approval number: 2019–43).

Participants

Pregnant women followed up in routine antenatal clinic visits and aged ≥18 years were included. Exclusion criteria were inability to fill out the questionnaires and not volunteering to participate in the study. The women with an ability to use the internet effectively filled out the questionnaire online. The printed version of the questionnaire was given to the others. The participants were informed regarding the objectives and details of the study and their written approval was obtained.

Assessment

Physical and demographic characteristics (age, height, weight, working status, and education) and obstetric information (gestational age, parity, and type of birth) were recorded using a structured self-administered questionnaire. Additionally, the women were asked whether they ever had pregnancy and pre-pregnancy exercise habits or attended any antenatal education. The definition of PFD was based on the International Urogynecological Association/International Continence Society joint report on the terminology for female PFD (Haylen et al. 2010). UI was defined as "the complaint of involuntary loss of urine" and POP as "the complaint of a bulge" or "something coming down" toward or through the vaginal introitus." They were also asked if they had experienced UI or POP before or during pregnancy.

Three questions were used to assess the pregnant women's awareness of UI and POP. First, they were asked if they had known any pregnant women with UI or POP. Second, they were asked whether they had any knowledge about PFDs, and third, they were asked what the primary source of information they got was, if they stated that they had some knowledge.

In addition, the Prolapse and Incontinence Knowledge Questionnaire (PIKQ), whose validity and reliability were established by Celenay et al. (2019), was used to determine the level of knowledge of the pregnant women regarding PFDs. It is a 24-item self-administered rating scale, including two subscales, namely, PIKQ-UI and PIKQ-POP. Women indicate their level of knowledge with each statement using a 3-point Likert scale: "agree," "disagree," and "don't know." Each correct response is assigned "1" point, and "don't know" and incorrect answers receive "0" point. The total score for each part is summed up resulting a score of 0–12, and a higher score indicates a higher level of knowledge about UI and POP. Proficiency was defined as scores of 80% or greater on the PIKQ-UI scale and 50% or greater on the PIKQ-POP scale, which was calculated by Mandimika et al based on frequency data from the original authors (Shah et al. 2008).

Statistical analyses

Distributions of the continuous variables were examined by the Shapiro-Wilk's test and normality plots. The age and BMI are summarized by mean ± standard deviation (Mean±SD). Other numeric variables are reported by median (minimum-maximum: min-max), and frequency (%) is given for categorical variables. The PIKQ scale scores were compared by the Mann–Whitney U-test or Kruskal–Wallis test with respect to the gestational age, parity, attendance to antenatal education, and the history of UI and/or POP. The internal consistency of the PIKQ was evaluated by the KR-20 coefficient. A $p<0.05$ was considered as statistical significance. All statistical analyses were performed via IBM SPSS Statistics 22.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.)

Results

At two gynecology and obstetrics clinics, a total of 72 pregnant women were approached and 60 of them (83.3%) agreed to participate. An additional 181 pregnant women were found through snowball sampling and all agreed to participate. All women who agreed to participate (n = 241) in the study completed the PIKQ. The results were obtained via online (n = 181 women) and on paper (n = 60 women).

The mean age of the pregnant women was 29.03 ± 4.66 years and the mean BMI was as 25.25 ± 3.80 kg/m^2. Of the pregnant women, 48.2% (n = 118) were working, and 13.8% (n = 33) of whom were medical staff. The median gestational age was 21 weeks (min-max: 4–40). More than a third of the pregnant women (78.2%) were nulliparous. About half of the pregnant women (48.7%, n = 58) had a history of a previous vaginal delivery. Of the pregnant women, 18.9% (n = 46) had attended to antenatal education. Among these women, 60.9% (n = 28) and 34.5% (n = 16) had participated in a training about delivery and infant care & nursing, respectively. General exercise, respiration training, and relaxing training had been received by 18.2% (n = 8), 13.6% (n = 6), and 9.1% (n = 4). Only one woman (2.2%) had received pelvic floor training. The clinical and demographic characteristics of the pregnant women are given in Table 1.

Four percent (n = 10) of the pregnant women had reported that they had UI before the pregnancy, while 18.6% (n = 46) had UI during pregnancy. Only two pregnant women (4.3%) had received UI treatment. On the other hand, 1.6% (n = 4) of the pregnant women had reported that they had POP before pregnancy, while 3.6% (n = 9) had POP during pregnancy. Only one pregnant woman (11.1%) had received POP treatment. No diagnostis tests of UI or POP were made. According to self-evaluation results, 31.0% (n = 75) and 55.6% (n = 135) of the pregnant women knew nothing about UI and POP, respectively. The presence of UI or POP before or during pregnancy, and the awareness about PFD of the pregnant women are given in Table 2.

Internal consistency coefficient (KR-20) of the PIKQ was found to be 0.771 for UI and 0.842 for POP. In this study, the median PIKQ-UI and PIKQ-POP scores of the pregnant women were 6 (min-max: 0–11) and 5 (min-max: 0–12) on a scale of 0 to 12 points. Overall, 92.3% (n = 228) and 57.5% (n = 142) of the pregnant women lacked UI and POP proficiency, respectively.

Table 1. Clinical and demographic characteristics of the pregnant women.

Characteristics	Mean±SD n (%)	Characteristics	Median (Min-Max) n (%)
Age (year) [n = 241]	29.03 ± 4.66	Gravidity [n = 237]	1 (1–7)
Gestational age (weeks)	21 (4–40)	Parity [n = 236]	1 (0–4)
1st trimester	55 (24.2)	Nulliparous	193 (78.2)
2nd trimester	88 (38.8)	Multiparous	44 (17.8)
3rd trimester	84 (37.0)	Type of birth	
BMI (kg/m^2) [n = 230]	25.25 ± 3.80	Vaginal	58 (48.7)
Working Status (Working)	118 (48.2)	Cesarean	54 (45.4)
Medical staff	33 (13.8)	Both	7 (5.9)
Education		Exercise habit	
Elementary	7 (2.8)	Prior to pregnancy	67 (27.2)
Secondary	23 (9.3)	During pregnancy	59 (24.0)
High	54 (21.9)	Attendance to an antenatal education	46 (18.9)
College	163 (66.0)		

BMI: Body mass index

Moreover, the median UI and POP scores were higher in women who had participated in any antenatal education (Table 3). However, there were no significant differences between these scores ($p > .05$). It was found that the knowledge level increases in the subsequent trimesters compared to the first trimester, although there was no significant difference in terms of gestational age ($p > .05$). Parity and the history of UI or POP were not associated with the knowledge level, either ($p > .05$) (Table 3).

Post-hoc power analysis showed that the power of the study was 100% to estimate the proportion of UI proficiency. On the other hand, it was 74.6% to estimate the proportion of POP proficiency.

Discussion

Our study revealed some important findings about the knowledge and awareness regarding the PFDs in community-dwelling pregnant women. Nearly 60% and 80% of the pregnant women reported that they had no or little knowledge about UI or POP, respectively. This also coincided with the low median score of the PIKQ. The primary source of knowledge used by the women was the Internet, and only a small portion of the pregnant women was educated by physiotherapists. Furthermore, most of the pregnant women were not aware of the fact that nonfunctional pelvic floor muscles are considerably responsible for UI and/or POP. There were no significant differences in the knowledge of UI and POP in the pregnant women in terms of the gestational age, parity, the attendance to antenatal education, and the history of UI or POP.

In order to assess awareness in our study, the pregnant women were asked whether they had known any pregnant women with UI or POP. Nearly half of the pregnant women reported that they had known pregnant women mostly with UI, and also with POP. We think that this high proportion may be due to what they heard about this issue during pregnancy. At the same time, the pregnant women were asked how much information they had, and from which primary source they obtained this information, if they had any. More than half of the pregnant women said they had little or no knowledge of the UI, while the majority reported that that they had no knowledge of POP at all. This was an expected result given the rare prevalence of POP in pregnancy (Reimers et al. 2016). Moreover, it should be emphasized that the majority of the pregnant women used the Internet to access information and only few were informed by a competent physiotherapist. Recently, the Internet has become a key source for health-related information (Lee 2008). Therefore, the reliability of the information on the internet is quite important.

The pregnant women were asked what the causes of UI or POP might be. A significant number of pregnant women stated that they had no knowledge about it. Although an important portion of pregnant women reported that insufficiency of muscles supporting the bladder/pelvic organ might be the cause, most of them were not aware of the fact that these muscles were actually pelvic floor

Table 2. UI and POP characteristics of the pregnant women.

	UI	POP
Characteristics	n (%)	n (%)
Presence of UI/POP before pregnancy	10 (4.0)	4 (1.6)
Presence of UI/POP during pregnancy	46 (18.6)	9 (3.6)
Frequency of UI		
Don't know	18 (41.0)	–
Less than once a week	12 (27.2)	–
More than once a week	8 (18.2)	–
Every day	6 (13.6)	–
If you have, how much does it affect you?		
None	0 (0.0)	0 (0.0)
A little	23 (50.0)	1 (11.1)
Some	13 (28.3)	3 (33.3)
A lot	10 (21.7)	5 (55.6)
The number of women who were treated	2 (4.3)	1 (11.1)
How much know about …		
Not at all	75 (31.0)	135 (55.6)
A Little	74 (30.6)	62 (25.5)
Some	79 (32.6)	42 (17.3)
A lot	14 (5.8)	4 (1.6)
If you have knowledge, what is the source of information?		
Web	69 (45.4)	55 (45.5)
Family	12 (7.9)	7 (5.8)
Physiotherapist	4 (2.6)	5 (4.1)
Doctor	31 (20.4)	22 (18.2)
Midwife	13 (8.6)	10 (8.3)
Books	11 (7.2)	6 (5.0)
TV	6 (3.9)	5 (4.1)
Friends	7 (4.6)	7 (5.8)
School	9 (5.9)	11 (9.1)
Do you know any pregnant women with …	81 (33.3)	21 (8.9)
What do you think causes…		
Don't know	67 (27.6)	112 (46.3)
Hormones change during pregnancy	30 (12.3)	8 (3.3)
Nonfunctional pelvic floor muscles	58 (23.9)	39 (16.1)
Insufficiency of muscles supporting the bladder/pelvic organ	78 (32.1)	73 (30.2)
Weight gain during pregnancy	19 (7.8)	20 (8.3)
Baby's pressure on the bladder	4 (1.6)	-
If you had, what would you do		
Ask for help	163 (66.5)	209 (87.1)
I don't know if there is a treatment	27 (11.0)	25 (10.3)
I don't think UI /POP are a problem to deal with	45 (18.4)	3 (1.3)
Not ask for help due to embarrassment	10 (4.1)	3 (1.3)

muscles. In the study of Hill et al, which was about pregnant women's awareness, knowledge, and beliefs about pelvic floor muscles, similar results were also reported (Hill et al. 2017). Therefore, education programs involving the structure and health of the pelvic floor, which is frequently affected during pregnancy, must be provided.

Furthermore, the pregnant women were asked what they would do if they had UI or POP. Most of them reported that they would ask for help. Because the frequency of UI or POP treatments is unfortunately extremely low in our study, we think that the pregnant women's answers may not reflect the reality. It may also be because they may not have felt the emotional burden of the diseases when answering this question.

The knowledge of PFDs has been a popular topic in recent years for improving preventive health care (Hill et al. 2017; Liu, Tan, and Han 2019; O'Neill et al. 2017). In these studies, which only included women in the third trimester of pregnancy, research questions were created by the authors. This study differs from the previous studies because the PIKQ, a valid and reliable instrument, was administered to determine the knowledge level of the pregnant women. The score ranged between 0 and 12 for each subscale (PIKQ-UI and PIKQ-POP), where 0 means no knowledge and 12 means a great deal of

Table 3. Comparisons of the PIKQ scores.

	UI	POP
	Median (min-max)	Median (min-max)
Overall	6 (0–11)	5 (0–12)
Gestational age		
1st trimester	4 (0–10)	3 (0–11)
2nd trimester	7 (0–9)	6 (0–10)
3rd trimester	7 (0–10)	5 (0–11)
P	.738	.452
Parity		
Nulliparous	6 (0–11)	5 (0–12)
Multiparous	7 (0–10)	5 (0–10)
P	.480	.666
Antenatal education		
Non-attended	6 (0–11)	4 (0–12)
Attended	7 (0–10)	6 (0–11)
P	.098	.200
History of UI and/or POP		
No	6 (0–11)	5 (0–12)
Yes	6 (0–11)	5 (0–12)
P	.822	.950

UI: Urinary incontinence, POP: Pelvic organ prolapse

knowledge. The median scores of the PIKQ were found to be 6 and 5, which were extremely low for the PIKQ-UI and PIKQ-POP, respectively. Proficiency was defined as scores of 80% or greater on the PIKQ-UI scale and 50% or greater on the PIKQ-POP scale. Overall, 92.3% (n = 228) and 57.5% (n = 142) of the pregnant women lacked UI and POP proficiency, respectively. Our findings coincide with the results of a study by Mandimika et al, which reported that the odds of lacking UI proficiency were significantly higher among the subjects who lacked POP proficiency (Mandimika et al. 2014). Similar to our results, the lack of PFD knowledge in pregnant women has been shown in different populations (Liu, Tan, and Han 2019; O'Neill et al. 2017).

Moreover, the other objective of the present study was to determine whether there are any differences in the knowledge of UI and POP in pregnant women in relation with gestational age, parity, the attendance to antenatal education, and the history of UI or POP. The prevalence and characteristics of UI coincide with hormonal and mechanical changes occurring specific to trimesters. In a study (Martinez Franco et al. 2014) examining the frequency and characteristic of UI in the first and third trimesters, UI was seen frequently in both first and third trimesters, although it was significantly higher in the third trimester. In the present study, it is seen that the knowledge level increases in the second and third trimesters compared to the first trimester, although there was no significant difference in terms of gestational age. The stage of POP during the third trimester was reported significantly higher compared to the first trimester in a previous study (O'Boyle et al. 2005). However, the knowledge level of POP was not different in terms of gestational age in our study. Considering that anatomic POP is a rare condition in pregnant populations (Reimers et al. 2016), it was not surprising.

Given that the knowledge gap is only filled with education, antenatal education should theoretically improve the level of knowledge. However, it was found that the knowledge level of the women did not differ significantly in relation with antenatal education. We think that this is because the content of the education provided focuses on the delivery, infant care, and nursing issues, and does not cover pelvic floor health, especially pelvic floor muscles and PFDs. This emphasizes that the content of antenatal education programs should be very comprehensive, and educators should be competent. History of UI or POP was not associated with increased knowledge level. Mason et al reported that women were reluctant to seek help for UI during pregnancy and following childbirth, although they were often inconvenienced and troubled by the condition (23). Therefore, this lack of difference might be expected. We recommend that antenatal education

programs should be revised in the light of the findings reported in the present study. Determining the source of access to information, the level of knowledge, and the other details about the knowledge of PFDs will help to establish ideal education programs, which will result in increased quality of life and higher rates of effective treatments of PFDs. Eventually, it will contribute to both the patient's health and the entire healthcare system. For this purpose, we recommend that the content of antenatal education should be enriched with pelvic floor training as well as delivery, infant care, and nursing.

Conclusion

In conclusion, the results of the present study revealed that knowledge and awareness of PFD were low among women from all trimesters of pregnancy. Education programs involving pelvic floor training should be organized for all pregnant women from all trimesters of pregnancy whether they experience UI and/or POP, or not, or whether they are nulliparous or multiparous.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Seyda Toprak Celenay http://orcid.org/0000-0001-6720-4452
Zehra Korkut http://orcid.org/0000-0001-9243-0937
Afra Alkan http://orcid.org/0000-0002-9734-4138

References

Beksac, A. T., E. Aydin, C. Orhan, E. Karaagaoglu, and T. Akbayrak. 2017. Gestational urinary incontinence in nulliparous pregnancy- A pilot study. *Journal of Clinical and Diagnostic Research: JCDR* 11 (8):QC01–QC03. doi:10.7860/JCDR/2017/25572.10333.

Bo, K. 2012. Pelvic floor muscle training in treatment of female stress urinary incontinence, pelvic organ prolapse and sexual dysfunction. *World Journal of Urology* 30 (4):437–43. doi:10.1007/s00345-011-0779-8.

Cattani, L., J. Decoene, A.-S. Page, N. Weeg, J. Deprest, and H. P. Dietz. 2021. Pregnancy, labour and delivery as risk factors for pelvic organ prolapse: A systematic review. *International Urogynecology Journal* 32 (1):1–9. doi:10.1007/s00192-020-04249-w.

Celenay, S. T., O. Coban, C. S. Pirincci, Z. Korkut, T. Birben, A. Alkan, and A. F. Avsar. 2019. Turkish translation of the prolapse and incontinence knowledge questionnaire: Validity and reliability. *International Urogynecology Journal*. 30 (12):2183–2190. doi:10.1007/s00192-019-03962-5.

Haylen, B. T., D. de Ridder, R. M. Freeman, S. E. Swift, B. Berghmans, J. Lee, A. Monga, E. Petri, D. E. Rizk, P. K. Sand, et al.. 2010. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *International Urogynecology Journal*. 21(1):5–26. doi:10.1007/s00192-009-0976-9.

Hill, A. M., S. M. McPhail, J. M. Wilson, and R. G. Berlach. 2017. Pregnant women's awareness, knowledge and beliefs about pelvic floor muscles: A cross-sectional survey. *International Urogynecology Journal* 28 (10):1557–65. doi:10.1007/s00192-017-3309-4.

Jelovsek, J. E., and M. D. Barber. 2006. Women seeking treatment for advanced pelvic organ prolapse have decreased body image and quality of life. *American Journal of Obstetrics and Gynecology* 194 (5):1455–61. doi:10.1016/j.ajog.2006.01.060.

Jha, S., and D. Gopinath. 2016. Prolapse or incontinence: What affects sexual function the most? *International Urogynecology Journal* 27 (4):607–11. doi:10.1007/s00192-015-2887-2.

Lee, C. J. 2008. Does the internet displace health professionals? *Journal of Health Communication* 13 (5):450–64. doi:10.1080/10810730802198839.

Liu, J., S. Q. Tan, and H. C. Han. 2019. Knowledge of pelvic floor disorder in pregnancy. *International Urogynecology Journal* 30 (6):991–1001. doi:10.1007/s00192-019-03891-3.

Mandimika, C. L., W. Murk, A. Muhlhauser McPencow, A. Lake, T. Wedderburn, C. H. Collier, K. A. Connell, and M. K. Guess. 2014. Knowledge of pelvic floor disorders in a population of community-dwelling women. *American Journal of Obstetrics and Gynecology* 210 (2):165.e1–9. doi:10.1016/j.ajog.2013.10.011.

Martinez Franco, E., D. Pares, N. Lorente Colome, J. R. Mendez Paredes, and L. Amat Tardiu. 2014. Urinary incontinence during pregnancy. Is there a difference between first and third trimester? *European Journal of Obstetrics & Gynecology and Reproductive Biology* 182:86–90. doi:10.1016/j.ejogrb.2014.08.035.

Milsom, I., D. Altman, R. Cartwright, M. C. Lapitan, R. Nelson, U. Sillén, and K. Tikkinen. 2013. Epidemiology of Urinary Incontinence (UI) and other Lower Urinary Tract Symptoms (LUTS), Pelvic Organ Prolapse (POP) and Anal Incontinence (AI). In *Incontinence: 5th International Consultation on Incontinence*, ed. P. Abrams, L. Cardozo, S. Khoury, and A. J. Wein, 5th ed., 15–107. Paris: ICUD-EAU. February 2012.

Moalli, P. A., S. Jones Ivy, L. A. Meyn, and H. M. Zyczynski. 2003. Risk factors associated with pelvic floor disorders in women undergoing surgical repair. *Obstetrics and Gynecology* 101 (5 Pt 1):869–74. doi:10.1016/s0029-7844(03)00078-4.

O'Boyle, A. L., J. D. O'Boyle, B. Calhoun, and G. D. Davis. 2005. Pelvic organ support in pregnancy and postpartum. *International Urogynecology Journal* 16(1):69–72. discussion 72. doi:10.1007/s00192-004-1210-4.

O'Boyle, A. L., P. J. Woodman, J. D. O'Boyle, G. D. Davis, and S. E. Swift. 2002. Pelvic organ support in nulliparous pregnant and nonpregnant women: A case control study. *American Journal of Obstetrics and Gynecology* 187 (1):99–102. doi:10.1067/mob.2002.125734.

O'Neill, A. T., J. Hockey, P. O'Brien, A. Williams, T. P. Morris, T. Khan, E. Hardwick, and W. Yoong. 2017. Knowledge of pelvic floor problems: A study of third trimester, primiparous women. *International Urogynecology Journal* 28 (1):125–29. doi:10.1007/s00192016-3087-4.

Reimers, C., J. Staer-Jensen, F. Siafarikas, J. Saltyte-Benth, K. Bo, and M. Ellstrom Engh. 2016. Change in pelvic organ support during pregnancy and the first year postpartum: A longitudinal study. *BJOG: An International Journal of Obstetrics & Gynaecology* 123 (5):821–29. doi:10.1111/1471-0528.13432.

Shah, A. D., M. P. Massagli, N. Kohli, S. S. Rajan, K. P. Braaten, and L. Hoyte. 2008. A reliable, valid instrument to assess patient knowledge about urinary incontinence and pelvic organ prolapse. *International Urogynecology Journal* 19 (9):1283–89. doi:10.1007/s00192-008-0631-x.

Shaw, C., R. Tansey, C. Jackson, C. Hyde, and R. Allan. 2001. Barriers to help seeking in people with urinary symptoms. *Family Practice* 18 (1):48–52. doi:10.1093/fampra/18.1.48.

Slieker-ten Hove, M. C., A. L. Pool-Goudzwaard, M. J. Eijkemans, R. P. Steegers-Theunissen, C. W. Burger, and M. E. Vierhout. 2009. Symptomatic pelvic organ prolapse and possible risk factors in a general population. *American Journal of Obstetrics and Gynecology* 200 (2):184.e1–7. doi:10.1016/j.ajog.2008.08.070.

Van Geelen, H., D. Ostergard, and P. Sand. 2018. A review of the impact of pregnancy and childbirth on pelvic floor function as assessed by objective measurement techniques. *International Urogynecology Journal* 29 (3):327–38. doi:10.1007/s00192-017-3540-z.

Von Gontard, A., D. Baeyens, E. Van Hoecke, W. J. Warzak, and C. Bachmann. 2011. Psychological and psychiatric issues in urinary and fecal incontinence. *Journal of Urology* 185 (4):1432–36. doi:10.1016/j.juro.2010.11.051.