

GYNECOLOGY

The impact of menstrual symptoms on everyday life: a survey among 42,879 women



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BACKGROUND: Menstrual symptoms such as dysmenorrhea, heavy menstrual bleeding, and perimenstrual mood disorders are known to be widespread among the general population. From studies in patients with endometriosis and premenstrual disorder, it has been shown that these symptoms can have a large impact on women's quality of life and account for substantial health care use. Furthermore, it is estimated that many women initially do not consult a doctor while facing menstrual symptoms. Consequently, the impact of menstrual symptoms on daily activities in the general population is unknown.

OBJECTIVE: To obtain a nationwide overview of menstrual symptoms and their impact on everyday activities.

STUDY DESIGN: Nationwide, cross-sectional, internet-based survey among 42,879 women aged 15–45 years, conducted from July to October 2017. Outcome measures: presence of menstrual symptoms, pain or intensity score, impact on daily activities.

RESULTS: Dysmenorrhea was the most common symptom, with a prevalence of 85%, followed by psychological complaints (77%), and

tiredness (71%). During their menstrual period, 38% of all women reported not to be able to perform all their regular daily activities. From the women that had to skip tasks because of their symptoms, only 48.6% told their family that menstrual symptoms were the reason for the transfer of tasks.

CONCLUSION: Menstrual symptoms are widespread among the general population. One in 3 women quit daily activities owing to menstrual symptoms. Half of all women did not mention menstrual complaints being the reason for transferring tasks in a family setting. These results must be interpreted with caution owing to the potential for selection bias. However, considering the impact of menstrual symptoms on daily activities in a large group of women, it is time to open the societal dialogue and improve education for both patients and doctors.

Key words: catamenial, dysmenorrhea, general population, menstruation, survey

Menstrual symptoms, including heavy menstrual bleeding, dysmenorrhea, and significant perimenstrual mood disorders, are common gynecologic conditions. Between 22.5% and 35% of women consider their menstrual bleeding heavy,^{1–4} and 34–94% experience pain during their menstrual period.^{5,6} Menstrual symptoms have a significant impact on quality of life.^{7–9} Furthermore, they account for substantial healthcare use.^{8,10,11} Annual costs for patients with heavy menstrual bleeding are estimated to exceed \$2000 per patient, mainly owing to work absence and lost productivity.^{10,12} Depending on the national regulations on sick leave, the costs of absenteeism may vary between countries.

In younger women, menstrual symptoms may result in absence from school or lower levels of performance. Adolescents who do not attend school because of dysmenorrhea range from 7.7% to 57.8%, whereas 21.5% report missing out on social activities.⁶ Despite the large influence on women's lives, several studies showed that most women with dysmenorrhea do not seek help.^{13–15}

The above-mentioned studies highlight the public health impact of menstrual problems, including reduced quality of life and high medical and societal costs. However, the target population in these studies consisted of women who had already sought medical care. Little is known about the prevalence of menstrual symptoms in the general nonselected population. The main objective of this study is therefore to obtain a nationwide overview of menstrual symptoms and their impact on quality of life and everyday activities.

Materials and Methods

This cross-sectional study consisted of an online survey that was filled out by

premenopausal Dutch women from July 12, 2017 to October 11, 2017. Approval for this study was obtained from the local medical ethics committee (file number 2017-3387). All data were anonymously collected and stored under the privacy rules of the Radboud University Medical Centre. Participants gave informed consent when they initiated the questionnaire.

Questionnaire Development

A questionnaire was developed in cooperation with the Dutch Special Interest Group Endometriosis from the Dutch Society of Obstetrics and Gynecology (NVOG, in which all Dutch gynecologists are represented) and the Dutch patient interest group, the Dutch Patient Endometriosis Foundation. The questionnaire was written in common language. Age, nationality, marital status, educational level, and occupational status were reported. Basic characteristics on the menstrual cycle were collected as well as medical and obstetrical history, smoking, and the use of contraception. Symptoms were categorized in terms of abdominal pain, heavy menstrual bleeding,

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AJOG at a Glance

Why was this study conducted?

This study evaluated the prevalence of menstrual symptoms and the impact of these symptoms on daily activities.

Key findings

Menstrual symptoms are widespread in the general population. Dysmenorrhea was the most common, with a prevalence of 85%, followed by psychological complaints (77%) and tiredness (71%). During their menstrual period, 38% of all women were not able to perform all their regular daily activities.

What does this add to what is known?

This is the largest study so far to look into the impact of menstrual complaints in the general population instead of a selected group. Considering the impact of menstrual symptoms on daily activities in a large group of women, it is time to open up the dialogue and improve education for both patients and doctors.

symptoms subjectively impaired daily life, and how the subjects coped with them. To quantify the amount of experienced pain, visual analog scales were used. A translated version of the questionnaire can be found in the [Appendix](#).

Target Population and Recruitment

The study population comprised women aged between 15 and 45 years. The lower age limit was chosen because of the well-known effect of metrorrhagia in young girls in their first periods after the menarche. The upper age limit was chosen to avoid interference from menopausal symptoms. A large number of women were approached with the aim of obtaining a cohort that was representative of the general female population in terms of level of education, medical history, and/or gynecological diagnosis. The total population of women meeting the age criteria in the Netherlands was 3,270,000 in 2017.¹⁶ Women were invited to complete a survey using an online questionnaire tool through a campaign on social media platforms Facebook and Twitter. Patient organizations, medical colleagues, and visitors of the Facebook page of one of the authors (T.N.) were asked to share the link to the questionnaire in order to reach the widest possible audience using a snowball effect.

On July 12, 2017, a link to the questionnaire was posted on Facebook and Twitter through the account of one of the authors (T.N.). On July 19, a repost on Twitter and Facebook was set out. Lastly, there was a new post on Facebook and Twitter on September 16, 2017, to reach women who may have been on vacation when the first posts were created.

Considerations in Analyses

Since we specifically aimed to look into the matter of menstruation-related complaints, women who reported having more than 10 days of abdominal pain per period were considered to have chronic abdominal pain and were excluded from the analysis regarding dysmenorrhea. Respondents were asked to report on their complaints during the last 3 months. Pain scores higher than 4 were considered to be clinically relevant and/or associated

headache, fatigue, back pain, nausea, vomiting, breast tenderness and pain, problems with defecation, and perimenstrual psychological symptoms. To explore the impact of these symptoms no

validated questionnaires were used. Instead, for each category of symptoms the following data were reported: the number of days women experienced these symptoms, the number of days that these

TABLE 1
Characteristics of respondents

	Number (percentage)
Age (y), mean, SD	28.7 (8.6)
Highest finished education (ISCED) ^a	
Level 2 or lower	1617 (4.9%)
Level 3	8381 (25.5%)
Level 4	6487 (19.8%)
Level 6	9536 (29.1%)
Level 7 or higher	6782 (20.7%)
Nationality	
Dutch	31,511 (96.8%)
Belgian	575 (1.8%)
Other European	179 (0.5%)
Asian	189 (0.6%)
African	109 (0.3%)
Marital status	
Living with parents	8189 (24.9%)
Single	5869 (17.8%)
Living together with partner, not married	7836 (23.8%)
Married	9407 (28.6%)
Divorced or widowed	530 (1.6%)
Other	1056 (3.2%)

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(continued)

TABLE 1
Characteristics of respondents (continued)

	Number (percentage)
Occupation or study^b	
Full-time occupation	8760 (30.7%)
Part-time occupation	18,068 (63.4%)
Full-time study	3389 (11.9%)
Part-time study	1906 (5.5%)
Not working	215 (0.8%)
Smoking; yes	4364 (13.1%)
Pain medication during menstruation	
Acetaminophen	20,040 (59.4%)
Acetaminophen combined with a weak opioid	1780 (5.3%)
NSAIDs	21,002 (62.2%)
Tramadol	437 (1.3%)
Strong opioids	227 (0.7%)
None	6413 (19.0%)
Contraception^b	
Oral contraception	12,561 (36.3%)
Injection	149 (0.4%)
LG-IUD	2895 (8.7%)
Other hormonal	790 (2.3%)
Cu-IUD	803 (2.4%)
Female sterilization	449 (1.3%)
Duration of menstrual cycle	
<25 days	4402 (10.3%)
26–30 days	22,227 (51.8%)
31–35 days	4893 (11.4%)
36–40 days	954 (2.2%)
>40 days	304 (0.7%)
Irregular	3468 (8.1%)
(Almost) amenorrhea due to IUD	1842 (4.3%)
(Almost) amenorrhea due to continuous OC	3367 (7.9%)
Don't know	1422 (3.3%)
Days of blood loss per cycle	
0–3	4723 (11.0%)
4–6	29368 (68.5%)
7–9	7768 (18.1%)
10 or more	1020 (2.4%)

All percentages are related to the total number of women who responded to the specific question.

Cu-IUD, copper intrauterine device; *ISCED*, International Standard Classification of Education; *IUD*, intrauterine device; *LG-IUD*, levonorgestrel-releasing intrauterine device; *NSAIDs*, nonsteroidal anti-inflammatory drugs; *OC*, oral contraceptive.

^a For details on the ISCED classification, see reference 18. Level 2 represents lower secondary education while level 4 represents postsecondary education and level 7 represents a master's degree. Level 5 could not be classified within our survey; see the translated questionnaire; ^b More than 1 answer possible.

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with serious impairments in daily functioning.¹⁷ Unrealistic answers were excluded from the final analysis; among these were respondents that reported, for example, 100 days of dysmenorrhea per month. Because we aimed on giving an overview of the entire population, we did not exclude women who were amenorrheic owing to the use of oral contraceptives or a levonorgestrel-releasing intrauterine device. Educational levels have been converted to the International Standard Classification of Education.¹⁸

Statistics

Analysis was performed using IBM SPSS Statistics version 22.0 (IBM Corp, Armonk, NY). Data are presented as mean with standard deviations or as percentages of the total study population.

Results

Within 24 hours of the first posting on social media, more than 6000 respondents had filled in the questionnaire, and by July 18 there were 15,000 respondents. At the closing date, a total of 44,173 women had responded to the questionnaire. After exclusion of women whose age was below or above the targeted age period, data of 42,879 remained available for analysis. Details regarding age, education, marital status, and menstrual cycle are shown in Table 1. It should be noted that all percentages and scores mentioned in both text and tables are related to the total number of women who responded to the specific question. This is mainly important for the interpretation of the data on specific symptoms. For example, only women who answered that they experienced back pain were asked how many days they experienced this symptom or to give an intensity score.

Overall, 43.7% of the respondents (n = 14,688) had ever consulted their general practitioner regarding any menstruation-related symptoms and 4888 women (11.4%) had been referred to a gynecologist. A total of 3281 women (9.8%) reported being diagnosed with a condition that could potentially be an explanation for their complaints (endometriosis: 1081 women (3.2%);

TABLE 2
Prevalence and parameters of specific menstruation-related symptoms

	Prevalence: number (percentage)	Number of days	Pain or intensity score ^a	Maximum pain or intensity score > 4, ^b number (percentage)	Impact on daily activities ^c
Abdominal pain during period	36,079 (85.4%)	2.9 ± 1.7	6.0 ± 2.1	26,754 (77.6%)	4.4 ± 2.4
Heavy bleeding	21,375 (53.7%)	2.9 ± 1.4	6.9 ± 3.9 ^d	N/A	4.1 ± 2.4
Headache	21,903 (56.2%)	2.7 ± 1.9	5.2 ± 2.3	13,313 (62.7%)	4.2 ± 2.6
Back pain	22,244 (59.2%)	3.0 ± 1.8	5.1 ± 2.2	13,347 (61.4%)	3.8 ± 2.6
Tiredness	27,154 (70.7%)	3.9 ± 1.9	5.7 ± 2.2	18,834 (71.9%)	4.1 ± 2.2
Perimenstrual psychological complaints	28,392 (77.3%)	4.3 ± 2.3	5.7 ± 2.3	19,804 (71.3%)	3.5 ± 2.4

Data are presented as mean ± standard deviation unless stated otherwise. All percentages and scores are related to the total number of women who responded to the specific question.

N/A, not applicable.

^a Pain or intensity scored were rated on a 0–10 visual analogue scale, with 0 being no pain and 10 the worst imaginable pain or intensity; ^b Number or percentage of women within the group of women who reported this symptom; ^c Respondents were asked to rate the effect of the specific symptom on their daily activities, where 0 meant no limitation and 10 meant complete inability to undertake any activity; ^d Data are presented as mean times (± standard deviation) that respondents reported changing sanitary material during 24 hours.

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adenomyosis: 102 women (0.3%); myomas: 269 women (0.8%); polycystic ovary syndrome: 583 women (1.7%); thyroid problems: 112 (0.3%); other: 1134 (3.4%).

Overall, 66.0% of women (n = 28,300) were nulliparous; 29.8% (n = 9875) reported 1 or more vaginal deliveries and 7.3% (n=2423) reported at least 1 cesarean delivery. Furthermore, 6.3% (n = 1891) had undergone 1 or more instrumental evacuations owing to miscarriages. A total of 30.6% of women (n = 4585) reported an increase of menstrual symptoms after their last vaginal delivery or cesarean delivery.

The prevalence of specific menstruation-related symptoms and their burden are shown in Table 2.

Table 3 shows to what extent a specific symptom influenced daily activities. Taking together all different complaints, 38.4% of women (n = 16,481) reported performing fewer activities or being unable to do anything during their period.

We also asked the respondents whether they experienced catamenial painful defecation, nausea, or breast tenderness; these prevalences were 34.5% (n = 12,738), 14.6% (n = 5432), and 41.5% (n = 15,396), respectively.

The influence of these symptoms on daily activities was not rated separately.

Thirty-seven percent of women (n = 13,432) reported to have tasks in family care for their children or parents. Of those women, 11.0% (n = 1479) had to transfer tasks because of menstrual symptoms, 22.4% (n = 3005) reported having to diminish tasks, and 39.6% (n = 5310) used painkillers to fulfill their tasks. Only 48.6% of women (n = 2097) told their family that menstrual symptoms were the reason for the transfer of tasks; the majority only mentioned the main accompanying symptom, such as abdominal pain or headache; mentioned no reason at all; or made up another reason.

Comment

In this nationwide, online survey of more than 42,000 women, we observed a high prevalence of menstrual symptoms with significant impact on daily activities. Overall, dysmenorrhea has the highest prevalence, with almost 85%, followed by perimenstrual psychological complaints (77%) and tiredness (71%). Back pain, headache, and heavy menstrual bleeding appear to be present in 1 out of 2 women. Almost 40% of the respondents perform less activity during menses. Less than half of

the women tell their family that menstrual complaints are the reason for transferring tasks.

The main strength of our study is the number of respondents; with more than 42,000 women that filled in the questionnaire, it is the largest study so far on the matter of menstrual complaints. In our cohort less than 10% of the respondents have been diagnosed with a medical condition that could be an explanation for their complaints; this is in line with data of Statistics Netherlands regarding the general Dutch female population.¹⁹ Our study also has some limitations. First of all, owing to the online recruitment, no clear identification of participants could be performed, although respondents had to have a unique IP address. Above all, women that experience physical or psychological complaints during their menstruation could be more willing to participate in a study that pays attention to this. We have tried to overcome this selection bias by stating explicitly in our calls that the study was also open for women that experience little or no complaints. Another possible source of selection bias is the online recruitment of the respondents; however, in the Netherlands 97.1% of all inhabitants above 12 years

TABLE 3
Influence of menstrual symptoms on daily activities

	Abdominal pain (n = 34,564 ^a), number (percentage)	Heavy bleeding (n = 20,663 ^a), number (percentage)	Headache (n = 21,383 ^a), number (percentage)	Back pain (n = 21,865 ^a), number (percentage)	Tiredness (n = 26,380 ^a), number (percentage)	Perimenstrual psychological complaints (n = 28,016 ^a), number (percentage)
“It (almost) doesn’t bother me”	3143 (9.1%)	2157 (10.4%)	2203 (10.3%)	2541 (11.6%)	1543 (5.8%)	3407 (12.2%)
“I force myself to go on”	14,409 (41.7%)	7599 (36.8%)	7022 (32.8%)	7965 (36.4%)	10,302 (39.1%)	13,475 (48.1%)
“I continue but ease on”	11,815 (34.2%)	6594 (31.9%)	7449 (34.8%)	7478 (34.2%)	9127 (34.6%)	7304 (26.1%)
“I perform fewer activities”	2874 (8.3%)	3482 (16.9%)	2572 (12.0%)	2874 (13.1%)	4537 (17.2%)	3132 (11.2%)
“I (almost) can’t do anything”	2323 (6.7%)	831 (4.0%)	2137 (10.0%)	1007 (4.6%)	871 (3.3%)	698 (2.5%)

^a Numbers per item indicate the amount of respondents that filled in that specific question and reported the specific symptom. Results are reported as percentages per category, with the total adding up to 100% per item.

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old have Internet access.²⁰ Moreover, an unknown number of women might have skipped questions because of incomprehension of the question. Furthermore, all data were gathered retrospectively and could therefore be subject to a recall bias. Moreover, highly educated women are slightly overrepresented in our cohort. This might have altered our results, since, for example, more highly educated women are in general more often able to adapt their working schedule. Furthermore, the Dutch health care system, with the general practitioner as a formal “gatekeeper” for the in-hospital care, might have had an effect on the amount of women that had visited a gynecologist for their symptoms. For example, a recent study showed that the majority of general practitioners think diagnostic delay in endometriosis may occur owing to a lack of education on this subject.²¹

Looking at comparable research, the reported prevalence of dysmenorrhea differs largely between studies. This mainly depends on the age categories, definition, the studied cohort, cultural differences, or the way participants were recruited. A review of studies on dysmenorrhea, including 15 studies between 2002 and 2011, revealed a prevalence of 16–91% in women of reproductive age.²² The amount of

severe pain ranged from 2% to 29%. However, these studies were all performed in cohorts not larger than 2700 women. Tanaka et al²³ reported the burden of menstrual symptoms among 19,254 Japanese women. In their cohort, 50% of women reported pain. It is not unlikely that women experiencing dysmenorrhea or other menstruation-related complaints are more prone to respond to an (online) questionnaire regarding the matter compared to women without significant complaints. Consequently, the prevalence of dysmenorrhea in our cohort might be higher compared to a nonselected population.

Perimenstrual psychological complaints were ranked second in prevalence in our cohort, with 77.3% of women reporting psychological disturbances prior to or during their period. The matter of catamenial psychological problems has been subject to debate for several decades. After Greene and Dalton²⁴ introduced the term “premenstrual syndrome” (PMS) in 1953, numerous studies have evaluated its existence and impact on quality of life.^{25–27} Numbers on at least 1 premenstrual symptom exceed 90% in a European cohort.²⁸ Other studies worldwide found numbers on PMS are around 30%.

Only up to 8% of subjects meet the definition of premenstrual dysphoric disorder (PMDD).^{29,30} For PMDD, women have to have at least 5 mainly affective symptoms, in association with functional impairment.³¹ Based on our data we are not able to estimate the number of women having PMS or PMDD. Despite the high prevalence of psychological complaints in our cohort, these complaints appear to have little effect on daily activities. A little more than 10% reported performing fewer or not any activities owing to perimenstrual psychological complaints.

Data on menstruation-related tiredness are hard to distill from the available literature; to our knowledge, there is no research conducted specifically on this matter. Most research on this subject focuses on PMS and reports premenstrual tiredness. Lete et al²⁸ did report data on fatigue before as well as during the menstrual period. They found a lack of energy in 44% of women who were using hormonal contraception vs 55% in women who were not. Our reported prevalence of women experiencing catamenial tiredness was higher (70.7%), although the prevalence of women scoring this complaint >4 on a visual analog scale was 58.0%.

Our data show that there is still a large taboo on the matter of openly discussing

the transfer of tasks during the menstrual period, even in the family setting. Literature regarding the taboos around menstrual complaints and hygiene from the last decades mostly originated from countries in Asia and Africa.^{32–35} Yagnik³⁶ has proposed a model information pathway to mitigate the menstrual taboo in India. Since only 12% of the 350 million women in India were using sanitary napkins, one may understand the need for better information.³⁷ The Netherlands are overall considered to be a very open society where information is freely available and there is freedom to discuss, for example, sexuality. Consequently, the lack of openness on the matter of menstrual complaints is surprisingly high. It appears that even in the postmodern Western world, the menstrual taboo has not been broken to its full extent.

In conclusion, we observed a high prevalence of menstrual symptoms in the general population, with dysmenorrhea, psychological complaints, and tiredness being the most distinct. More than 1 in 3 women reported performing fewer activities owing to their menstrual symptoms. Our research shows it is about time taboos around catamenial complaints are broken. Since this is the largest cross-sectional survey on the subject of menstrual symptoms in the general population, we aim for a change in social perception toward women suffering from menstrual symptoms. Further research is needed to develop appropriate interventions to address these problems. ■

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