# Chapter 2
# Scope of the Problems

## 2.1 Topic Overview

Pain, whether acute, chronic, or recurring, is a major source of morbidity and disability, costing uncounted billions of dollars annually in both direct and indirect costs. The diagnosis and treatment of pain have taken on increased importance in recent years and are now identified as a "vital sign" by the Joint Commission on Accreditation Healthcare Organizations (JCAHO). The treatment of both acute and chronic pain with opiate pain relievers has led to a national crisis over opiate abuse and dependence. For women, pelvic pain is by far the most common type of pain complaint for which treatment is sought [1, 2]. The cyclic pain of dysmenorrhea has been estimated to affect up to 80% of women at some point in their life, with 50% or more experiencing it on a regular basis. Without access to effective treatments, this scope of incapacity should be intolerable to any developed society (Fig. 2.1).

Menstrual periods that involve excessive flow represent a special kind of disability driven by both modern sensibilities and medical concerns: Variable effectiveness of menstrual hygiene products causing fears of catastrophic failure and embarrassment, the need to plan clothing and hygiene supplies around a calendar, concern that bathroom facilities might not be available if needed on short notice, and the effects of chronic hemoglobin loss, all haunt the patient with heavy menstrual flow. These drive decisions that range from accepting or declining social invitations, to the method of contraception chosen, and from traditional family treatments, to surgical interventions. It could be argued that without effective contraception, effective menstrual hygiene alternatives, and accessible therapies for heavy, painful periods, the ability of women to have open to them all options in today's society, be they career or family, would not be possible.


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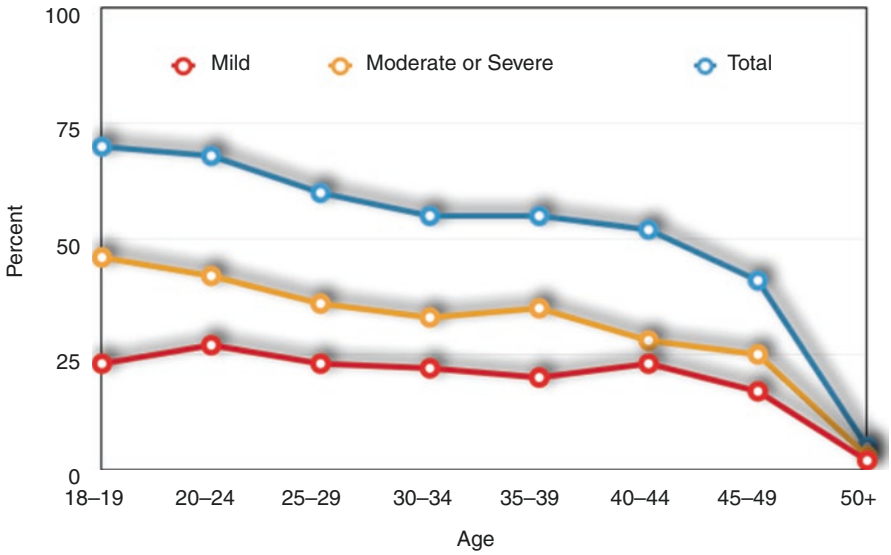


**Fig. 2.1** The incidence of menstrual pain remains above 50% for women well into their 40s in a study of 934 Canadian women. Data from Burnett et al. [3]

## 2.2 Painful Periods

Dysmenorrhea represents the single greatest cause of lost time from work or school of any condition affecting women [4]. While it has been estimated that 30% to over 90% of the more than 75.4 million women of childbearing age in the United States (in 2012) suffer from painful menstruation, 10–20% suffer month after month discomfort sufficient to interfere with normal activities [3, 5–8]. Studies show that 70–80% of young women report having had dysmenorrhea, with almost 40% of that group reporting loss of time from school or work [3, 9]. A more recent study found almost 85% or study subjects reported feeling pain in the abdomen and back during menses [10]. Another study found that 88% of Australian women reported menstrual pain [11]. This is not a cultural or regional issue: A literature review of 50 articles showed a worldwide prevalence of some level of menstrual pain that varied from 34% (Egypt) to 94% (Oman), and the number of participants reporting very severe pain varied from 0.9% (Korea) to 59.8% (Bangladesh) [12]. Severe menstrual pain affected over 37% of 344 Saudi adolescent school girls in another report [13]. Overall, women with primary dysmenorrhea have a significantly reduced quality of life, poorer mood, and poorer sleep quality during menstruation compared with their pain-free follicular phase and compared with menses experienced by a group of pain-free control women [14] (Fig. 2.2).

Older estimates suggest that dysmenorrhea accounts for over 600 million lost working hours annually in the United States [15], but given both population growth and the ever-expanding role of women in the workforce, this number could easily

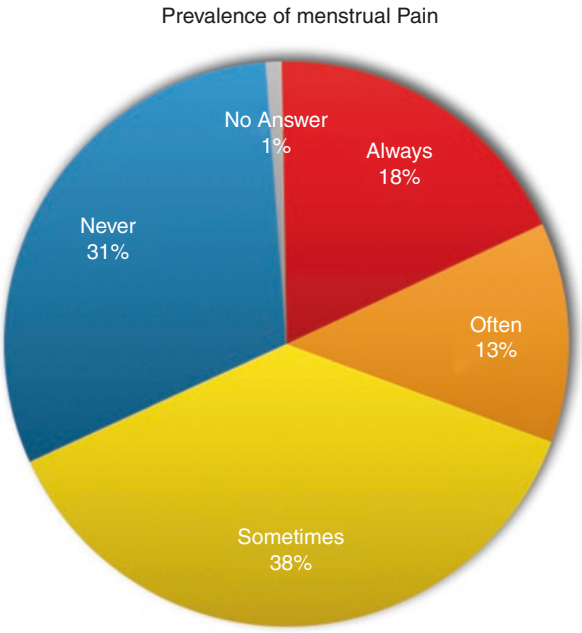


**Fig. 2.2** The severity of menstrual pain as reported by 1546 Canadian women. Data from Burnett et al. [3]

underestimate the impact by as much as a factor of two. Burnett's study of Canadian women found that of those with moderate or severe pain, 51% reported that their pain had caused a limitation in their ability to function, and 24% reported missing time from school or work [3]. Indeed, in the same study, women with severe symptoms were almost ten times more likely to miss work or school as other women (37% vs. 4%). A survey of Flemish 13-year-olds found that one in four (25.4%) postmenarchal girls reported a negative impact of menstruation on social activities, but this proportion was significantly higher in girls who experienced menstruation as painful (41.3%) compared to those who did not (14.2%) [16] (Fig. 2.3).

A recent review of the adolescent dysmenorrhea found that 1/3 to 1/2 of adolescents with menstrual pain were missing school or work at least once per cycle, and more frequently in 5–14% of cases [17]. As dramatic as these statistics are, they do not consider the impact of the time lost from school and early careers by young and adolescent women—the health-related quality of life [2, 18]. Given that the peak age for dysmenorrhea occurs during the late teens and early twenties—at a time when these young women can least afford absences from their daily pursuits or education or career growth [8, 19]—the magnitude of this disability is easily understood. Some hope comes from data that supports the observation that the incidence of menstrual pain tends to gradually decline with age [20, 21], though not with parity [3]. Clearly, for most who suffers, waiting until they "outgrow" their symptoms is not an option (Fig. 2.4).

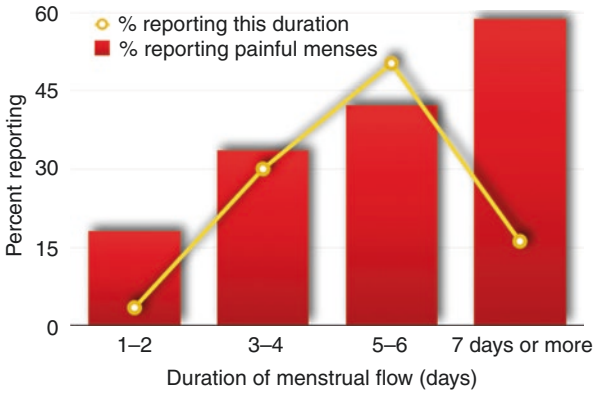


**Fig. 2.3** The longer the duration of bleeding, the greater the chance of painful menses for a group of 346 Flemish girls. Data from Hoppenbrouwers et al. [16]

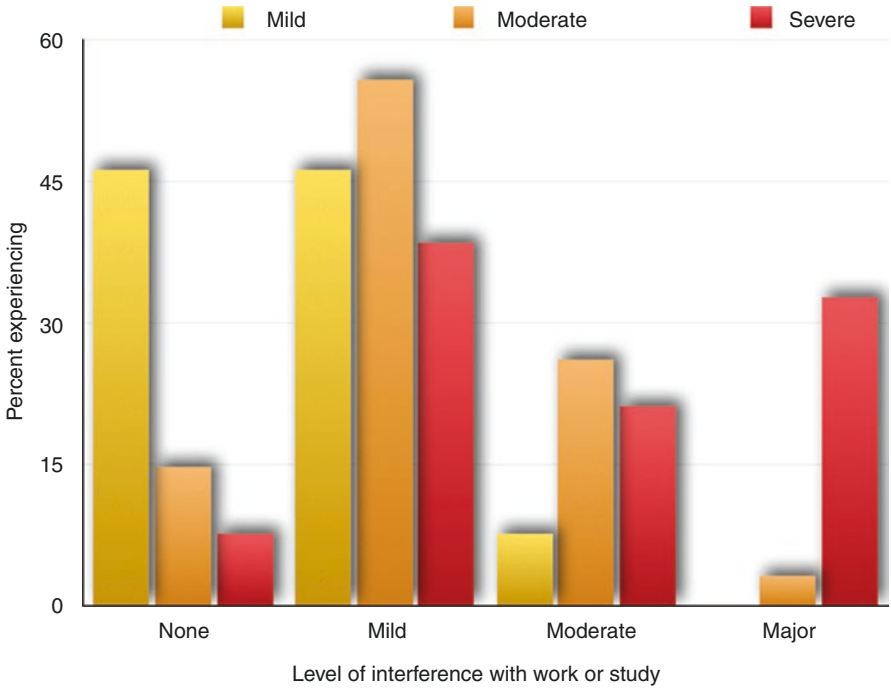


**Fig. 2.4** The severity of menstrual pain directly influences the level of intrusion into work or study effectiveness. Data from Subasinghe et al. [11]

The symptoms reported by women with dysmenorrhea are many and varied. The most commonly reported manifestation of dysmenorrhea, and the one that virtually defines the condition, is crampy, midline, lower abdominal pain (often demonstrated by the patient using a fist opening and closing), which may radiate to the back or

**Table 2.1** Menstrual symptoms reported in a study of students in six Mexican university programs: medicine, nursing, nutrition, dentistry, pharmacy, and psychology [6]

| Symptom | Number | Percent |
|---|---|---|
| Cramping pain in the lower abdomen | 894 | 93.0 |
| Swollen abdomen | 648 | 67.4 |
| Irritability | 480 | 49.9 |
| Depression | 465 | 48.4 |
| Painful or tender breasts | 436 | 45.4 |
| Backache | 414 | 43.1 |
| Gastrointestinal disturbances | 254 | 26.4 |
| Headache | 230 | 23.9 |
| Swelling in the legs | 178 | 18.5 |

upper thighs. In one study of 310 girls, 34% reported pain that was diffuse over the lower abdomen, suprapubic for 22.8%, in the lower back (16%), and over thighs (3.4%), with 24% of the girls reporting pain in every area [22]. Abdominal pain is closely followed in frequency by emotional symptoms, headache, syncope, and gastrointestinal disturbances such as nausea, vomiting, and diarrhea. For any given women, on any given cycle, she will often experience more than one of these. Though for each patient the pattern is generally consistent, there is still moderate variability in severity and character from month to month (Table 2.1).

Menstrual pain is a worldwide experience, but small studies indicate that the type and severity of symptoms reported can be influenced by cultural and social expectations. For example, Australian women rated menstrual pain as more intense than Chinese women, and the duration of pain was 36% longer [23]. Some studies have also suggested that women with dysmenorrhea are at greater risk for chronic pelvic pain [24]. It is not clear if this risk is related to past experience with the recurring pain of menses or if these women have a differing pain perception or threshold.

Despite continuous advances in the understanding of the pathophysiology and treatment of primary dysmenorrhea, many patients continue to suffer disability, most often because they are unaware of, or do not seek out, effective options. Some authors report that only 14–20% of young women with primary dysmenorrhea receive prescription pain treatments [4, 8, 25] even when the pain is routinely moderate or severe [3], and less than 50% seek any professional care [3]. These women often turn to over-the-counter therapies that offer variable amounts of relief [26]. In one study, almost all (98%) of adolescents used non-pharmacologic methods such as heat, rest, or distraction to treat dysmenorrhea but achieved effectiveness of 40% or less [27]. In other studies, 30–70% of girls reported at least occasionally self-medicating with over-the-counter pain medications [5, 28]. However, 57% of those who self-medicated with these preparations used sub-therapeutic doses [28], and only 54% of adolescents knew that certain medications could relieve menstrual cramps [29]. Twenty-seven percent of respondents could not recognize any of three nonsteroidal anti-inflammatory drugs (NSAID) offered as possible effective treatments for dysmenorrhea [8]. Even when adolescents seek care, they frequently are not offered any treatments [8] (Fig. 2.5).

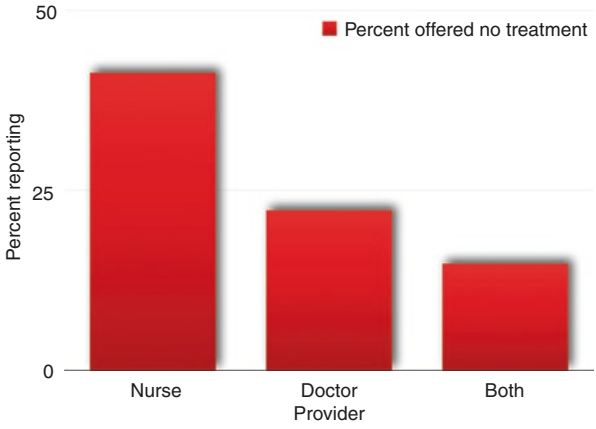


**Fig. 2.5** The percentage of adolescents who were not offered care for their dysmenorrhea symptoms. Data from Hillen et al. [8]

Studies indicate that 95% of adolescent girls have taken acetaminophen either singly or in combination with other over-the-counter medications for relief of dysmenorrhea [28]—a strategy that often results in undertreatment and persistent symptoms. Small projects have reported that simple educational interventions can significantly improve appropriate treatment, resulting in symptom reduction [30]. Therefore, education, either of individuals or of groups, is an investment well worth making for these women.

## 2.3 Heavy Periods

There has long been an association between painful and heavy menstrual periods [16]. In one study, bleeding duration was found to be significantly associated with dysmenorrhea, and girls with bleeding duration more than 5 days had an almost twofold increase in the risk of pain. Moreover, girls with the presence of clots had more than twice as much chance of having dysmenorrhea [22]. Like dysmenorrhea, heavy menstrual bleeding is common among adolescent and young women, with prevalence rates that exceed 30% [31–33] (Fig. 2.6).

Heavy menstrual bleeding (menorrhagia) is defined as menstrual blood loss >80 mL per cycle [34]. This value was derived from work that showed that anemia was common when blood loss exceeds this level. Because it is difficult to objectively evaluate menstrual blood loss [35], heavy menstrual bleeding is also functionally defined as excessive menstrual blood loss that interferes with the woman's physical, emotional, social, and material quality of life, and can occur alone or in combination with other symptoms [36]. Historical clinical indicators of heavy flow have been the number of pads or tampons used, the frequency of changes, the use of double protection (both pad and tampon), the degree of soiling, and the presence or absence of clots. Regrettably, the reliability to predict actual blood loss with these observations has been poor [37–39]. Despite these limitations, several aspects of

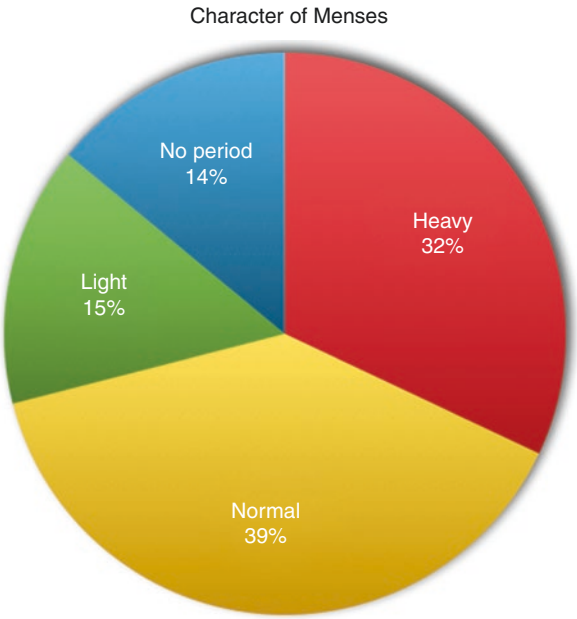


**Fig. 2.6** The character of menstrual flow for 1547 women, aged 40–45 years old in Sweden. Data from Karlsson et al. [31]

**Table 2.2** Perceptions surrounding menstruation reported by 1547 women, aged 40–45 years old with heavy and normal menstrual flow

| Perception | Those with heavy flow (%) | Those with normal flow (%) |
|---|---|---|
| Bleeding is awkward | 92 | 78 |
| I get less done | 62 | 37 |
| I feel out of sorts | 79 | 65 |
| I feel feminine | 34 | 40 |
| I feel unclean | 90 | 83 |

All differences were statistically significant at $p < 0.001$ except for "I feel feminine." Data from Karlsson et al. [31]

these menstrual characteristics have been adopted for such things as pictorial guides [40] and online assessment tools [41].

Like menstrual pain, heavy menstrual bleeding can represent an intrusive disruption for young women, affecting their functionality and self-image [31]. These women consistently report associated fatigue, lethargy, and problems concentrating. In a study involving high school students, there was a strong correlation between the amount of bleeding and the negative impact on quality of life [42]. An investigation of 48 adolescent girls with heavy menstrual bleeding compared to 102 controls found that 79.2% with heavy menstrual bleeding reported that their bleeding affected their ability to participate in physical education class or sports, versus only 36.3% of the controls [43] (Table 2.2).

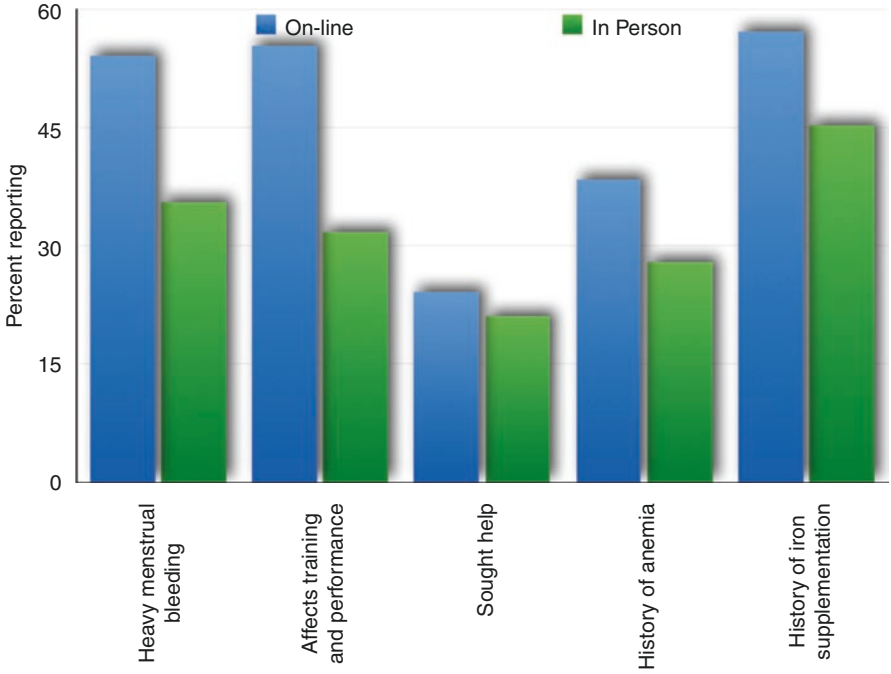


**Fig. 2.7** Characteristics of menses as experienced by a group of amateur athletes. Data from Bruinvels et al. [45]

Menstruation is the most common single cause of iron deficiency anemia in women of childbearing age [44]. In an online and in-person survey of women marathon participants (789 participants online and 1073 in-person interviews at the race), heavy menstrual bleeding was reported by 54% of the online group and by 36% of the in-person marathon runners. Overall, 32% of these active women reported a history of anemia, and 50% had previously supplemented with iron [45]. This level of anemia requiring supplementation is less than was found (63%) in a recent Europe-wide study a diagnosis of heavy menstrual bleeding [46]. Despite the athlete's self-acknowledged heavy flow, only a minority (22%) had sought medical advice [45]. It is likely that the increased body awareness of these runners may explain a greater wiliness to seek help compared to the general population that seek help at rates as low as 6% [47] (Fig. 2.7).

Because of the inability to accurately quantify menstrual blood loss in the clinical setting and the absence of simple diagnostic or therapeutic options, surgical therapy is often the easy choice. In one review, a referral to an attending gynecologist for heavy menstrual bleeding meant a 43% chance of a hysterectomy [48] and a 75% 5-year risk of surgery [49]. Heavy menstrual bleeding is the major justification for the approximately 300,000 hysterectomies performed yearly in the United States [50].

**Key Points**

- Both menstrual pain and heavy menstrual bleeding are common sources of disability for adolescent and young women.
- Menstrual pain and heavy menstrual flow are found together.
- Dysmenorrhea in young patients often goes undiagnosed and undertreated.
- When self-medication is used for menstrual symptoms, relief is generally poor.
- Accurate assessment of the quantity of menstrual loss is very difficult in the clinical setting.

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## Additional Resources

A general review:

Davies J, Kadir RA. Heavy menstrual bleeding: an update on management. Thromb Res. 2017;151(Suppl 1):S70–7.

Practice Bulletins from the American College of Obstetricians and Gynecologists:

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An excellent compilation of studies:

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http://www.springer.com/978-3-319-71963-4

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