

**MENSTRUATION, MENTAL HEALTH, AND WELLNESS**

by

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**Menstruation, Mental Health, and Wellness**

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### **Dedication or Acknowledgement**

**Dedication** To my family, Wanda, Bruno, Tesia, Radu, Reya, Mila, and of course, Paul. Thank you for your interest, your belief in equity, your feminist values, and your love. You have each inspired me to follow in your footsteps in so many ways. To my younger self, I would have been saved so much angst if I had known this information earlier.

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### Abstract

This paper responds to the problem of menstruating students feeling unsupported in schools in their physical, social, and psychological wellbeing. This developmentally sensitive lens takes into account the intersection between all aspects of a menstruator's life that construct overall wellness. The question "How can menstruators be supported by providing safe environments, and educational information to help them be successful in school and beyond?" is addressed in a literature review spanning the biological, and psychological experiences of menstruators, and the supports menstruators are offered through education. Some of the experiences of menstruators include *dysmenorrhea*, *PMS*, *PMDD*, and *Menarche*. The implications of this research are that many menstruation related disorders both psychological and physical go unreported and undiagnosed as period pain is either normalized or silenced, therefore, leaving menstruators unaware of the differences between typical and atypical menstrual cycles. This shame and culture of marginalization has a negative impact on menstruators' body confidence and overall ability to take risks and succeed in schools. Recommendations include ways schools can foster a culture of openness, accommodate for, and support young menstruators through this period of transition.

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## **Menstruation, Mental Health, and Wellness**

### **Chapter 1: Introduction**

#### **Introduction**

Menstruation is a word not often uttered across school hallways or in PHE class. It is usually whispered in change rooms or bathrooms and spoken about in code for those in the know to pick up on. “Aunt Flo is visiting”, “It’s that time of the month”, or “I’m hormonal” are much more common ways of speaking about the unmentionable period. While it seems normal to hide a tampon up your sleeve walking down the hallway, to wear an extra pair of spandex underneath your gym shorts, to miss school because of cramps, or to apologize for crying so easily every month, these risk management behaviours are actually a sign that something has gone amiss in our support of menstruators in schools.

Menstrual shame and cultural stigma have been a barrier to the mental and physical health and wellness of menstruators for too long. Educators and schools can have significant influence over the environment in which young people learn, and it is this influence that can be directed towards making spaces and attitudes on menstruation clearer, more inclusive, and more aware of the mental health outcomes related to menstruation and puberty. In this way, schools can become more equitable, and menstruators can feel more supported and able to succeed regardless of the stage of their menstrual cycle. Menstrual wellness is “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (Spencer, 2022, p. 4). Although schools are not dispensers of medical advice, the education and

perspectives that are developed during this critical time can have a huge impact on the health and wellness of a person later on in life.

### **Background Information**

Historically, the typical onset of menses occurred at approximately 17 years of age (Parent et al., 2003, p. 672). This is significant as an overall increase in the standard of living, body mass, nutrition, and medical care has been theorized to cause a reduction in the age of menarche to 14 years of age and in some cases 12-13 years (Parent et al., 2003, p. 672-674). While this decrease in modern times may be due to successes in our survival as a species, menstruators are also giving birth later or not at all and as a result, are menstruating for longer than ever before (Parent et al., 2003, p. 674). We as a culture have yet to adjust to the educational, and physical needs of this demographic as menstruation is still not a major player in conversations about health in schools.

One of the main concerns for menstruators in schools is that menstruation and puberty are still hidden and not spoken about openly. The stigma associated with menstruation seems harmless; however, it causes menstruators to miss out on crucial information relating to pain management, mood and mental wellness, and signs of menstruation-related disorders. There is a significant statistical impact of the barriers in schools and their connection to the success of menstruators. This barrier is not just in the global south, but countries in the global north are also overdue addressing the menstruation needs of young people (Brown et al., 2022, p. 2). In one global study, 20% of young menstruators experience absenteeism due to menstrual symptoms and 40% of this demographic experience discomfort and shame that is distracting and impacts their ability to succeed and participate fully at school (Armour et al., 2019, p. 1166). Instead of

feeling confident and capable of handling menstruation at school, many students participate in risk management behaviours to avoid being exposed and as a result of this silencing, often miss the signs of menstruation related disorders (Ferfolja et al., 2023, p.500). This capstone intends to identify ways in which this shame and silence can be unlearned.

Currently, the Government of British Columbia as of 2019 has mandated that all schools “must provide menstrual products to all students who may require them. Relevant product information should be made available to all students. Boards of education must have policies and procedures regarding the provision of menstrual products in their school to ensure products are provided in an equitable and accessible manner that addresses student needs. These policies and procedures must be made publicly available” (Government of British Columbia, 2019). While this step is exciting, it is still only recently instated. The culture of period shame is still prevalent and while policies and curriculum have caught up to the general needs of menstruators, the stigma of menstruation lingers. This lingering shame is the main problem from which all others stem. Shame prevents accurate information from being presented and discussed openly, and has an impact on the biological well being of menstruators, their ability to seek psychological help, and for educators and counsellors to notice signs of atypical menstrual symptoms and facilitate the process of seeking help.

### **Statement of the Problem**

A culture of shame surrounding menstruations resulting in a lack of education, and school based supports for menstruators is not a new problem; however, it is becoming more widely discussed and researched. This problem of lack of confidence managing menstruation, does not just exist in elementary and high school environments. Only 16.2% of menstruating university students globally feel completely confident to manage menstruation at school (Munro et al.,

2022, p. 5). The lasting physical, social, and psychological effects of lack of preparedness for menstruation extend far beyond high school years. Many menstruators who have been taught to normalize their symptoms like dysmenorrhea, anxiety, and depression can eventually experience health issues like endometriosis which is largely undiagnosed (Critchley et al., 2020, p. 626; Nagy et al., 2023).

Mental health outcomes can also be avoided with more education about this topic. For example, individuals who have experienced emotional and physical abuse in childhood often have exacerbated symptoms of PMS and higher instances of suicidal ideation (Kfoury et al., 2024, p. 2,6). Counsellors and educators alike should be aware of this connection. Any individual who has a history of psychiatric hospitalization and PMS along with any other psychiatric diagnosis are vulnerable to increased suicidal thoughts and behaviours (STBs) (Eisenlohr-Moul et al., 2022, p. 6). These STBs often peak around menstruation and can occur monthly across a menstruator's lifespan (Ross et al., 2023). As counsellors and educators, this information is vital as we could empower individuals with this profile to learn about their cycle and anticipate or plan interventions for this time. If students are armed with this information, they can identify typical discomfort, they can notice atypical symptoms, and can seek help.

### **Purpose of the Paper**

The purpose of this paper is to provide education for teachers, counsellors, and other educational professionals like coaches and administrators on the biological, psychological, and social impacts menstruation has on young people, and how schools impact their experience. This particular research topic was chosen because many educators veer away from discussing menstruation in a way that is relevant and necessary for young people. The research clearly states that education for new menstruators is a proactive measure and can alleviate anxiety and prevent

this anxiety from exacerbating their experience of menstruation as negative (Asgari et al., 2020, p. 2). The intent of this paper is to illuminate the very current research regarding the benefits of the menstrual cycle, of which there are many, and for menstruators to feel pride in and validation for their lived experiences.

I wish my readers to take away the idea that menstruators are not weak, emotional, or at the whim of their hormones, but have been starved of this information for too long and have not been considered when designing schools, curriculums, and perspectives on femininity. The ultimate purpose of this paper is to open a door internally for people who menstruate to view their bodies in light of the strength they possess, and for all readers to reflect on the way we treat menstruation as a society. As schools are microcosms of society, the held views of a culture, pervade the education system. However, educators are changemakers, and I hope school can be one place where menstruators begin to be thought of in a different light.

### **Research Question or Thesis Statement**

My research question focuses on the interconnectedness of mental health, schools, and menstruation. In this paper, I ask the question: How can menstruators be supported by providing safe environments, and educational information to help them be successful in school and beyond? I will address this question by looking through a biological, psychological, and social lens of human development. In this way, my question will allow me to overview the multiple ways in which menstruation impacts the mental health and wellness of young people.

### **Positionality Statement**

I live and work in Squamish on the unceded territory of the Squamish and Lil'wat nations. I was raised and went to school in Abbotsford British Columbia and I come from a

Mennonite heritage. I am white, cisgender, and I use the pronouns she, and her. These pieces of my privilege make it necessary for me to know and empathize with the experiences of marginalized people. I acknowledge that I must work to decolonize my bias, especially as a white, English speaking person. I also hold significant power in my role as a school counsellor, especially in my age and influence over young minds. Although I do not identify as an oppressed person, I recognize that as a woman, there are still many ways I am not advantaged and the menstrual cycle, and the reproductive mental and physical health of menstruators is one of those ways. Shame and stigma surrounding menstruation is very much still present in our society. Even now, many people respond oddly when they ask me, what are you studying for your capstone? When I respond with “menstruation and mental health and wellness” I am often greeted with three types of responses. The first response is a simple acknowledgement followed by a quick change of topic. I quickly understand the person I am speaking with to be uncomfortable with what I have said. The second response is a complete misunderstanding of me. When I say louder and more articulately “no, *menstruation*” the person usually defaults to the first response. The final response is often afforded to me by younger women or girls. There is a light that comes into their eyes, they sometimes step closer to me and say, “ooh tell me more!” We then have a half an hour long conversation and are best friends by the end of it. Male coworkers have left the staffroom when the conversation turns to menstrual health, yet female coworkers seek me out in the halls because they heard I was researching menstrual cycles. This response to this project has clearly given evidence to the need.

As a result of many of these interactions, I bring to this research a desire to make change. I feel frustrated and angry that I am only learning deeply about my menstrual cycle as a 34 year old woman. As I undertake research, I must be aware of my anger, and not allow it to muddy my

insights. However, without anger towards the marginalization of women's reproductive health issues, I would not be engaged in this work. In this way, my emotions do not weaken me as a professional, but they inspire me to continue. I hope that my research is another piece of work, in the rapidly expanding milieu of menstruation related literature that adds to the rolling snowball that is care for the health and wellness of menstruators.

### **Theoretical Framework**

The theoretical framework that informs my work as a counsellor and educator and guided this research is largely person-centered theory. Pioneered by Carl Rogers, this style of therapy focuses on the rapport between counsellor and client, and emphasizes less the course of the therapeutic conversation and more the genuine feelings of warmth, curiosity, caring, and unconditional positive regard towards the client (Barret-Lennard, 2012, p. 15). Meaning is felt between client and therapist and there is a "prizing quality" the therapist must hold. The client must be aware of this attitude in order for it to be effective (Barret-Lennard, 2012, p. 5, 16). The therapist must also give up the desire to direct or guide the individual in a way that corresponds with the therapist's wishes and desire which allows the client to take a deep sense of acceptance of themselves (Rogers, 1951, p. 30, 41).

This theory connects to my research and goals with this paper because I use a constructivist and strength-based approach (Jones-Smith, 2019, p. 5). My goal in discussing menstruation in depth is not to highlight the way in which menstruators struggle. It is to highlight the way menstruators succeed even with little support from educational institutions and society at large. Each section of my work includes the benefits of menstruation, and an overall striving for menstrual joy, and menstrual wellness. This connects closely with the indigenous philosophy of wholeness which is symbolized as a flower with four petals each representing strength, sharing,

honesty, and kindness (Little Bear, 2000, p. 2). When opened these petals create unity, they center the totality of creation, and the group as opposed to the individual (Little Bear, 2000, p. 2). By studying the diverse experiences, bodies, and minds of menstruators, we are not focusing on their weaknesses, but adding to the strength of humanity as a whole. Caring for others does not take away anything from the dominant group. In fact, when all people are well and accommodated, we are stronger than before.

Finally, holding equity at the forefront of this research has been very important as person-centered approaches involve reflecting on my worldview, my understanding of self, and my impact on others around me (Cornelius-White, 2016, p. 14). This involves accepting and understanding my own culture, my family, and my heart and mind before being able to accept others (Cornelius-White, 2016, p. 14). Going through this process of deep understanding will allow congruence within myself (Cornelius-White, 2016, p. 7). Knowing myself more fully is one of the motivating factors behind this paper as discovering new ideas and information about menstruation allowed me to understand myself better, and to see menstruation for the strengths it afforded me instead of the struggles and challenges.

### **Significance of the Study**

This project is significant because in all my research, I did not come across any studies on the connection between menstruation, schools, and the mental health of young people. I want to begin to make those connections across the literature in order to identify gaps in education, and in the overall culture in relation to menstruation. This project is significant, valuable, and important because it is another piece in the gender gap puzzle and it will help to bring equity to school communities. Equity is crucial for menstruators who have not been armed with the necessary knowledge to manage their periods effectively and without shame. All young

menstruators could benefit from living without the need for risk management behaviours at schools and with the confidence to be themselves, experience their emotions, and learn without feeling they are inherently weakened by their cycle. Recommendations regarding how menstruation and puberty education should be taught, how educators can empower menstruators, and awareness for counsellors regarding mental health and menstruation could not only help menstruators succeed more at school, this information could save lives.

### **Definition of Terms**

**Dysmenorrhea:** Dysmenorrhea is defined as pain during the menstrual cycle centered in the lower abdomen (Nagy et al., 2023). It can be sorted into primary dysmenorrhea not associated with any other disease, and secondary dysmenorrhea which is connected to a secondary medical condition (Nagy et al., 2023). The symptoms of primary dysmenorrhea may include nausea, bloating, diarrhea, constipation, vomiting, and indigestion (Nagy et al., 2023).

**Menarche:** Menarche refers to the onset of menses or the initiation of the menstrual cycle with the first release of an egg from the ovaries. This also coincided with other elements of puberty like breast development and physical growth and occurs between 12-14 years of age (American Academy of Pediatrics, 2006, p. 2246).

**Menstruator:** This paper refers to all people who menstruate as “menstruators” and not necessarily women or girls. This terminology is intended to be inclusive for non binary and trans individuals who may menstruate but do not necessarily identify as female. It is important to remember that not all people who menstruate are women, and not all women menstruate (Critchley et al., 2020, p. 625).

**PMDD:** Pre menstrual dysphoric disorder is a diagnosable condition that is characterized by psychological distress and one emotional symptom and five total symptoms cyclically across the menstrual cycle (Eisenlohr-Moul, 2022). Those with PMDD must experience at least one of these psychological symptoms: anxiety, mood swings, rejection sensitivity, depression, anger, or irritability (Eisenlohr-Moul, 2022).

**PMS:** Premenstrual Syndrome is an undiagnosable condition that is experienced differently by each individual (Gudipally et al., 2023). Some symptoms of PMS include tender breasts, headache, bloating, body aches, cramps, joint pain, fluid retention, skin changes, lower back pain, insomnia, fatigue, diarrhea and constipation, irritability, mood swings, changes in appetite, nausea, anxiety, vertigo and dizziness, sweating in hands and feet, decreased libido, anger outbursts, and crying spells (Abay, 2019, p. 150; Gudipally et al., 2023).

### **Outline of the Remainder of the Paper**

The remainder of this paper will consist of three main topics. These topics are, menstruation and physical health, menstruation and mental health, and the experiences of menstruators in a school context. The topic of menstruation and physical health will cover the biological processes that occur during menstruation, menses, and menopause, the physical benefits of menstruation and will also discuss symptoms and treatment options for dysmenorrhea. Menstruation and mental health will overview how the menstrual cycle impacts mental health, PMS, PMDD, psychological and cognitive benefits of menstruation, and treatment and therapy options for suicidal ideation and PMDD. Finally, the experiences of menstruators in schools will discuss trends and options for menstrual cycle tracking and education, menstruation and puberty education from the perspective of students and educators, and recommendations for schools to better support their menstruating population. These topics together, combine to form a

clear overview of the way in which biological, social, and psychological factors impact the experiences of menstruators, and how educators can best support them.

## Chapter 2

### *Introduction*

Menstruation has historically not been associated with mental health, however, a more recent increase in attention has brought a research focus on the holistic connection between biological menstrual health, and psychological health. Much of the research has been driven by the sport and exercise science community. The exploration of how menstruation impacts participation and performance in sport has become increasingly popular and relevant for menstruating athletes. During this exploration of the interplay between menstruation and mental health, I focus on three main areas: menstruation and physical health, menstruation and mental health, and menstruation and puberty education. This research has illuminated some critical connections between pre menstrual syndrome, adverse childhood experiences, and suicidal ideation, along with statistical evidence revealing the impact lack of accommodations in educational systems has had on the attendance and success of menstruators in schools. While much of this information is disheartening, solutions and recommendations for schools are available and when implemented can help more young people experience menstrual joy.

### *Menstruation and Physical Health*

#### **Introduction**

Menstruation as it appears in humans is unique to our species. This section discusses the mechanisms of menstruation in the body including hormonal changes, the role of menstruation in fertility, and the physical symptoms that occur for many menstruators. Some variations in menstrual cycle length, and symptoms will also be examined along with the changes that occur at the onset of menses, dysmenorrhea or period pain, and treatment options for period symptoms.

## **What is Menstruation?**

Menstruation is a unique primate and human evolutionary feature; outside of the ape family, there are very few species of mammals that menstruate (Critchley et al., 2020, p. 629). Menstrual bleeding is a secondary evolutionary trait while decidualization is the primary trait (Critchley et al., 2020, p. 630). Decidualization means the complicated pathway between the brain, hormones, bloodstream, and reproductive organs has been completed (Critchley et al., 2020, p. 630). This communicates the signal to release an egg from an ovary. What marks decidualization from the reproductive cycles of other mammals is that the release of an egg, in humans, occurs monthly regardless of the presence of an embryo or not (Critchley et al., 2020, p. 639). Menstruation occurs as a process marking the fertile years of females from the onset of menses through menopause although it should be noted that not all people who menstruate are women, and not all women menstruate (Critchley et al., 2020, p. 625). Once the drop in progesterone signals an egg's release from the ovaries, the egg travels down the fallopian tubes into the uterus where the upper layer of the uterine lining has been thickening to prepare for an embryo (Hello Clue, 2024). If there is no fertilization, the lining of the uterus will shed through the vaginal canal as effluent (Critchley et al., 2020, p. 629).

It is also important to note the differences between the uterine cycle and the ovarian cycle, both of which contribute to the overall phenomenon of the menstrual cycle. The uterine cycle consists of menstruation, the proliferative phase, and the secretory phase (Hello Clue, 2024). The ovarian cycle includes the follicular phase (before ovulation), ovulation (the release of an egg), and the luteal phase (after ovulation) (Hello Clue, 2024). While these cycles are closely related to reproductive organs, many menstruators find their whole body is impacted. Some notice changes in their “hair, skin, poop, chronic disease symptoms, mood, headaches, or

even the way they experience sex” throughout different points in their cycle (Hello Clue, 2024). This paper is particularly concerned with the symptoms of menstruation and the impact on the overall mental and physical well-being of people who menstruate as it is closely connected to the intricacies of hormone changes, and brain chemistry.

While typical menstrual cycles, also known as periods, last approximately 28 days, menstrual cycle length can be incredibly variable as can hormone levels, especially approaching menopause (O’Connor, 2001). Some physicians even consider the menstrual cycle to be another vital sign, paying particular attention to how regularly and how frequently menstruation occurs, how heavy the bleeding is, and how long the bleeding lasts (American College of Obstetricians and Gynecologists, 2006; Critchley et al., 2020, p. 625). While menstruation is integral to vitality for menstruators, many people have other symptoms related to menstruation including “pain, dysmenorrhea, anxiety, depression, and fatigue” and can even experience reproductive health issues like endometriosis, premenstrual syndrome, and premenstrual dysphoric disorder (Critchley et al., 2020, p. 626). While many people seek a diagnosis for their pain, too often women’s pain is ignored and normalized, creating significant barriers to treatment (Critchley et al., 2020, p. 627). Along with the barrier to treatment comes a lack of knowledge and information on women’s health in general. Menstrual effluent, for example, remains largely understudied, and the research gap between people who menstruate and those who don’t is large in many areas (Critchley et al., 2020, p. 646). These potentially harmful symptoms are mentioned here as evidence to the need for further study, education, and knowledge that has the potential to positively impact the population of menstruators that are so adversely affected.

## **Menarche**

The onset of menses refers to the instance of the initiation of the menstrual cycle with the release of the first egg from the ovaries. The onset of menses, or menarche, typically coincides with other features of puberty including breast development, and overall physical growth that usually occurs between 12 and 13 years old across well-nourished populations (American Academy of Pediatrics, 2006, p. 2246). While the onset of menses typically occurs at this age range in modern times, between the mid-19th and mid-20th centuries, the average menarcheal age decreased in Westernized societies from 17 to 14 years old (Parent et al., 2003, p. 672). An overall increase in living standard, nutrition, and in some cases, body mass index are some of the factors that have been found to influence the younger age of menarche (Parent et al., 2003, p. 674).

However, the timing of the onset of menses is not globally standardized. Many factors including geographic region, nutrition, body mass, socioeconomic status, genetics, migration, and even intrauterine conditions can significantly impact the timing of menarche (Parent et al., 2003, pp. 672, 680). In some cases, malnutrition, stress, and other challenges can result in menarche occurring as late as 16 years old or not at all in severe cases (Parent et. al., 2003, p. 673). In some populations, stressors such as trauma, chronic illness, and even extreme sports training can also delay the onset of menses (Parent et al., 2003, p. 683). It is necessary to note the variation in individuals and the wide variety of factors associated with the timing of menarche as each person may have a myriad of pushes and pulls in both their physiology and environments that result in their first menstruation. There is also variability in the overall declining age of menarche due to socioeconomic factors, both adverse and beneficial, likely “reflecting the association of adult education with childhood economic circumstances” (Krieger et al., 2015,

393). This suggests that more educated adults can provide better environments for maturation which then occurs at an earlier age.

Typical menstrual cycles range from 21-45 days in the first gynecologic year; however, a person's cycle length is usually normalized around the 6th gynecologic year which is approximately at the age of 19 or 20 (American Academy of Pediatrics, 2006, p. 2246). Irregular menses is also a factor that many people experience which may be associated with a variety of conditions including pregnancy, endocrine disorders, and other medical conditions. This can illuminate why information related to menstruation is important to include along with other vital signs as menstrual patterns can reflect overall health (American Academy of Pediatrics, 2006, p. 2246). Overall health is also significantly impacted by social circumstances, especially during the vulnerable time of puberty. The age of a person at menarche matters greatly for both menstruator's identity and how they are treated by others. Early puberty increases the likelihood of menstruators being sexualized and harassed by others (Krieger et al., 2015, p. 388). While this is not a physical symptom of the onset of menses, how young menstruators are treated within society, has a great impact on their overall well-being. The onset of menses can be a challenging time for many adolescents. Adult helpers can acknowledge this challenge, support and educate young people about the individual nature of menstruation, and what they can expect as they begin their journey towards adulthood.

### **Ongoing Physical Symptoms of Menstruation**

Throughout menstruating years, many people experience a variety of symptoms that impact their whole body, not just their reproductive organs. The two main symptoms focused on here are PMS (Pre-Menstrual Syndrome) and dysmenorrhea. Premenstrual Dysphoric Disorder (PMDD)

is also a symptom of menstruation but as it is primarily psychological, it will be discussed in subsequent sections. It should be noted that much of the research available focuses on negative symptoms of the menstrual cycle, with particular emphasis on the cycle's late luteal and early follicular phase. Very little attention is paid to any beneficial symptoms of the mid-follicular phase, ovulation, or early luteal phase.

Although PMS is often the butt of jokes aimed at moody menstruators, it is a genuine condition for many people that includes significant somatic and psychological symptoms (Gudipally et al., 2023). PMS can begin in the late luteal period and continue until the end of menstruation. Its duration and symptoms are different for each person ranging from mild to moderate to severe and symptoms can last from a few days to up to two weeks (Gudipally et al., 2023). Some of these symptoms include but are not limited to, tender breasts, headache, bloating, body aches, cramps, joint pain, fluid retention, skin changes, lower back pain, insomnia, fatigue, diarrhea and constipation, irritability, mood swings, changes in appetite, nausea, anxiety, vertigo and dizziness, sweating in hands and feet, decreased libido, anger outbursts, and crying spells (Abay, 2019, p. 150; Gudipally et al., 2023). This onslaught of potential symptoms is often normalized and expected for many people and can make the diagnosis of other medical conditions difficult as several conditions including depression, anxiety, IBS, and thyroid disease share symptoms of PMS (Abay, 2019, p. 151). PMS is often considered a socially and culturally justified experience and as a result, the vast majority of women do not seek treatment (Abay, 2019, p. 152). For example, only 15% of menstruators in India seek any sort of treatment for menstrual pain (George, 2014, p. 45). Treatment for PMS includes but is not limited to exercise, Cognitive Behavioural Therapy, SSRIs (Selective serotonin reuptake inhibitors), oral contraceptives, and NSAIDS (Non-steroidal anti-inflammatory drugs); however, symptoms of

PMS are always reoccurring until menopause (Gudipally et al., 2023). There is currently no permanent cure.

Dysmenorrhea is generally defined as pain during the menstrual cycle and can be separated into two types (Nagy et al., 2023). Primary dysmenorrhea is recurring lower abdominal pain from menstruation and is not associated with any other disease or condition (Nagy et al., 2023). The symptoms associated with primary dysmenorrhea may include nausea, bloating, diarrhea, constipation, vomiting, and indigestion (Nagy et al., 2023). People who experience these symptoms report significant negative impacts on their quality of life (Nagy et al., 2023). Secondary dysmenorrhea is associated with a secondary medical condition such as endometriosis, cesarean scar tissue, fibroids, adenomyosis, endometrial polyps, pelvic inflammatory disease, and others (Nagy et al., 2023). Many people who menstruate and experience dysmenorrhea, also experience undiagnosed endometriosis (Nagy et al., 2023).

There are also some distinct populations to be aware of when discussing symptoms of menstruation. People who are neurodiverse, and those with intellectual and physical disabilities experience menstruation yet there is less information on the diversity of their experience. It is important to recognize that PMS may be difficult to manage for people with intellectual disabilities and their carers (Mason, 2008). For example, people with autism who menstruate can experience an amplification of autism-related sensory challenges which includes dealing with hygiene, and emotional regulation which can have an overall negative effect on well-being (Steward, 2018, p. 4287). Significantly more research is needed to understand these perspectives. Young athletes also make up a population in which symptoms of menstruation can be significantly altered by their sport. Young people, women, and girls especially in disciplines of aesthetic sports such as rhythmic gymnastics, can suffer from several menstrual cycle disorders

such as irregular menstruation and amenorrhea (an absence of periods) (Czajkowska, 2019, p. 1). These aesthetic disciplines often demand flexibility, strength, and low body weight which can result in high emotional stress, high training load, and eating disorders (Czajkowska, 2019, p. 2). While many people experience period pain and other symptoms, it is again necessary to note the variety, diversity, and individuality of both the type and cause of pain, and the perception and attitudes towards that pain. Dysmenorrhea is not experienced in the same way by any two menstruators and any sort of treatment must reflect that.

### **Menopause**

Menopause is characterized by the permanent cessation of menstrual periods and encompasses three stages: perimenopause, late perimenopause, and early postmenopause (Monteleone, 2018, p. 199). Early perimenopause is characterized by a period of irregular menstrual cycles; late perimenopause includes intervals of amenorrhea (no periods) greater than or equal to 60 days in length; and early postmenopause begins the year following the last period (Monteleone, 2018, p. 199). Although menopause is not complete until the last period has finished, hot flashes, night sweats, insomnia, and mood instability might begin before the cessation of menses and are the early signs of ovarian failure (Monteleone, 2018, p. 199). Many people begin to experience these symptoms in their 40s and symptoms can persist and continue into their 50s and 60s; however, there is no universal experience of menopause. Timing, symptoms, and attitudes towards menopause vary significantly depending on ethnicity, cultural background, and genetics (Melby, 2005, p. 507). Menopause marks a significant change in the physiology and psychology of menstruators. As a result, the symptoms of menopause can be very distressing and can considerably affect the personal, social, and work lives of women (Monteleone, 2018, p. 199).

Symptoms of menopause can be placed into four main categories: vasomotor (hot flashes), vaginal (dryness), insomnia, and mood (Santoro et al., 2015, p. 2). Other symptoms women report include joint and muscle aches, changes in body contours, headaches, cognitive decline, and skin wrinkling (Santoro, 2015, p. 2). While these symptoms are valid, there is not enough study to make concrete claims about their connection to menopause. The reduction in estrogen that characterizes menopause is connected to cognitive functioning, especially verbal memory (Santoro, 2015, p. 8-9). However, claims of memory loss have not been substantiated as all genders experience decreased cognitive function, headaches, and psychological challenges with age (Melby, 2005, p. 499).

Vasomotor symptoms are the signature symptom of menopause and are defined as hot flashes and sweating, potentially followed by chills and a feeling of being cold. Some of these hot flashes can continue for hours and can be experienced several times in 24 hours (Monteleone, 2018, p. 200). Sleep difficulties parallel to the hot flashes are major complaints often reported by those experiencing menopause (Monteleone, 2018, p. 200). Interestingly, smoking is a consistent risk factor for hot flashes among menopausal people (Melby, 2005, p. 501).

Mood-related symptoms, particularly depression and anxiety, are related to the menopausal transition as it is a vulnerable period for the onset of these mental health-related symptoms (Monteleone, 2018, p. 201). This period of life often coincides with stress, as external factors such as children fledging the nest, changes in career, marital challenges, and aging parents can all result in a higher level of stress which could exacerbate the mental health symptoms of menopause as well (Santoro et al., 2015, p. 5). Sociocultural diversity profoundly affects the experiences and attitudes towards menopause of people who experience it (Melby, 2005, p. 496). Culture and ethnicity impact these experiences as held attitudes towards

childbearing, marital status, and overall health impact the way different ethnic groups tend to report the prevalence of different symptoms (Melby, 2005, p. 499).

One final symptom of menopause that has been studied by sport scientists in particular is the association of menopause with an increase in body fat mass and an increase in overall body weight despite a slight but significant decrease in muscle mass (Sims, 2012, p. 89). This study observed people aged 50-59 years old tended towards an overall weight gain whereas women 70-79 years old lost muscle mass (Sims, 2012, p. 92). The implications of this study are significant for health reasons as neither the weight gain, nor loss in this context has a beneficial effect on the individuals. Just like in the case of menstrual symptoms and pain, the experiences of menopausal people are not universal. Individualization is key to understanding and managing these experiences.

### **Treatment Options for PMS & PMDD**

While there are some treatment options for PMS and PMDD, the volume of research and knowledge widely available to the public is limited. Regardless, below are some of the more well-established and researched methods for the treatment of PMS and PMDD.

Exercise can reduce cortisol levels and exercising 3-4 times a week can reduce the intensity of dysmenorrhea pain and can potentially reduce stress and therefore mental pain including fatigue and headaches. However, there is not enough research to claim the benefits to mental health (Armour et. al., 2019, p. 2, 8). Non-steroidal anti-inflammatory drugs (NSAIDs) are often recommended for physical pain but most menstruators do not seek help for psychological pain due to mental health stigmas (Armour et al., 2019, p. 2, 8). Oral contraceptives are also used for physical treatment and psychological treatment of period

symptoms (Dilbaz et al., 2021, p. 139). Selective serotonin reuptake inhibitors (SSRIs) can be prescribed for psychological relief of period symptoms and in the case of disorders like PMDD. Sometimes SSRIs are only taken in the luteal phase of treatment (Dilbaz et al., 2021, p. 144). In more extreme cases, estrogen-boosting hormone therapy is used and in the most extreme circumstances bilateral oophorectomy or hysterectomy is performed (Dilbaz et al., 2021, p. 145). These measures seem strong; however, those diagnosed with PMDD can experience monthly suicidal thoughts and behaviours for their entire lives. These procedures may be life-saving.

Cognitive behavioural therapy (CBT) has also been found to provide coping mechanisms and reframed thoughts for those with PMS and PMDD. The CBT intervention usually consists of relaxation, challenging beliefs, managing stress, modifying problematic thoughts, restructuring maladaptive behavioural patterns, education on symptom management, and problem-solving (Izad-Mazidi, 2016, p. 2). One study found the improvements made during CBT lasted for approximately 2 months afterwards (Izad-Mazidi, 2016, p. 3).

Education for new menstruators should be considered as a proactive measure. This can alleviate anxiety and prevent anxious thoughts from exacerbating the experience of symptoms as negative (Asgari et al., 2020, p. 2). Finally, trauma-informed care is extremely important for all caregivers and educators. There must be clear awareness of the relationship between suicide, childhood abuse, PMS, and PMDD (Kfoury et al., 2024, p. 9). Without this knowledge, it would be very easy to miss signs and symptoms of disorder and suicidal thoughts and behaviours in young people. It is also important to educate young people on the recognition of typical menstrual experiences versus atypical experiences. While they may be small in number, there are options for treatment for those experiencing period pain. Educators can encourage young people

to seek medical help for their menstrual pain and receive treatment, advice, and potentially diagnosis for their symptoms.

### **Physical Benefits of Menstruation**

The benefits of menstruation are often overlooked in much of the literature; however, some exciting studies and theories discuss the benefits of menstruation. These benefits can be sorted into the categories of strength and endurance, and immunity. As previous segments have stated, remembering the individual nature of menstruation is key when discussing its physiological benefits. It should also be noted that many studies on physical strength and endurance are conducted on elite athletes. This population is valid but their results may not be relevant to broader cohorts.

### ***Immunity***

While much menstrual cycle research examines reproductive health, there is evidence that the menstrual cycle also influences nonreproductive health and the overall immunity of people who menstruate (Alvergne et al., 2018, p. 402). The female immune response is an evolutionary adaptation that changes throughout the month as a result of the hormones responsible for the menstrual cycle. These changes are cyclical and enable the growth of a healthy embryo, even without fertilization (Alvergne et al., 2018, p. 410). Normal menstruation is an inflammatory process which means that immune cells are recruited for the preparation of pregnancy (Berbic et al., 2013, p. 387). This suggests that the female immune response is also cyclical. Both estrogen and progesterone play a role in the inflammatory and anti-inflammatory response during the cycle with estrogen having both inflammatory and anti-inflammatory

properties depending on the balance of hormones present while progesterone is mainly anti-inflammatory (Alvergne et al., 2018, p. 402). The susceptibility to infection for menstruators is heightened during the non-inflammatory phase of the cycle, which is characterized by rising levels of progesterone (Alvergne et al., 2018, p. 402). In contrast, immunity is heightened during the inflammatory phase of the cycle characterized by lower progesterone levels.

This fluctuation of hormones throughout the cycle might affect immune cell numbers like regulatory T-cells which is particularly relevant for those experiencing chronic diseases.

Symptoms of asthma, diabetes, schizophrenia, depression, epilepsy, migraines seem to worsen premenstrually as progesterone rises (Oertelt-Prigione, 2011). While this information suggests a negative relationship between menstruation and overall health, there is evidence that users of hormonal contraceptives have a lesser immune response compared to those cycling naturally. Users of hormonal contraceptives could be at a greater risk of infection due to the dampening of inflammatory and non-inflammatory hormones, and menstruating adults develop higher antibody responses to vaccines than non menstruators (Alvergne et al., 2018, p. 402). These pieces all point to the hormone fluctuations of the cycle providing beneficial immunity that is timed to protect a potential embryo. Finally, an interesting hypothesis on behavioural immunity identifies how the cyclical immunity of the menstrual cycle activates different behaviours in menstruators. For example, some menstruators are more cooperative in the follicular phase, whereas sexual desire and activity often decreases in the midluteal (rising progesterone) phase. There is also a correlation between higher progesterone levels and “disgust sensitivity” (Alvergne et al., 2018, p. 408). This hypothesis suggests that menstruators have adapted behaviours to avoid pathogen exposure when their immunity is lower (Alvergne et al., 2018, p. 408). Incredibly, the menstrual

cycle and cyclical nature of immunity and health may be a product of evolutionary design that does not weaken menstruators but strengthens them.

### ***Strength and Endurance***

Studies exploring the relationship between the menstrual cycle and strength adaptations for athletes have become much more common in recent years, thereby, beginning to close the gender research gap in sport and exercise science. Many studies explore the contrast between people cycling naturally and those using oral contraceptives which alter the hormone fluctuations of the menstrual cycle. For example, those taking oral contraceptives made fewer aerobic adaptations than menstruators due to the lower estrogen in contraceptive users (Schaumberg, 2017). Similarly, oral contraceptive use impaired lean muscle mass gains, and users experienced higher cortisol levels overall (Riechmann, 2022). While the volume of studies proving these theories must be increased before generalized claims can be made, there is evidence that the fluctuation of hormones in the menstrual cycle could be used strategically to increase aerobic, and muscular adaptations in menstruators.

Endurance sport is another area where the difference between male and female athletes is the smallest and could point to the biological benefits of female physiology. The time gap in racing events between male and female athletes is smallest in the events of the longest duration; in long-distance swimming, female athletes outperform males (Tiller et al., 2021, p. 896). While there are many factors contributing to the rate of development in sport, including sociocultural reform of recent decades, females generally demonstrate more capacity for fatigue resistance than males (Tiller et al., 2021, p. 896, 898). This can be linked to the hormones estrogen and progesterone which both help to mediate metabolic rates with estrogen contributing to muscle

size and strength (Tiller et al., 2021, p. 904). While more research is needed, the menstrual cycle and the associated hormones, have been proven in some instances to generate benefits of cyclical immunity, and strength and endurance for many people who menstruate.

## **Conclusion**

It is clear that menstrual health is integral to overall health and wellbeing for many people. The menstrual cycle and its associated hormones do not simply impact the reproductive organs but the entire body, and the symptoms and changes menstruators experience at the onset of menses and at menopause are varied and highly individualized. It is also clear that menstrual symptoms are not only negative although they are mostly represented as negative in the research and in popular culture. Menstrual pain and symptoms are also discussed in this section and evidently, many menstruators do not seek medical assistance for their pain as it is normalized in the culture at large. The following pages delve into how the experiences of menstruation expand beyond the biological and impact the social and mental well being of menstruators, with both benefits and challenges explored.

## ***Menstruation and Mental Health***

### **Introduction**

Menstruation and its associated hormones can impact the overall mental health of menstruators in many ways. Those who menstruate experience significant physiological changes over the course of a monthly cycle, and also over the course of a lifetime. Some of these changes include changes in hippocampal volume of the brain which impacts emotional regulation and response. Premenstrual Syndrome (PMS) and Pre Menstrual Dysphoric Disorder (PMDD) are

not only physical disorders, they impact mood and overall wellness significantly. In the following section, the experiences of menstruators and mental health is explored along with the correlations between biological changes and thoughts, feelings, and behaviours.

### **How Does Menstruation Affect Mental Health?**

Menstruation not only impacts physical health but also mental health. While biological factors like hormones have a large role in mental well-being, sociocultural factors like period stigma cannot be ignored when discussing the mental health of menstruators. Both social and biological elements combine to create the landscape of well-being and mental health for menstruators. This section addresses the mental health touchstones for typical menstruators. Other mental disorders like PMS (premenstrual syndrome) and PMDD (premenstrual dysphoric disorder) will be touched on subsequently. Oral contraceptive use or other hormonal contraceptive methods make the relationship between hormones, brain activity, and mood, much more complex. Therefore, these sections will not address menstruators using hormonal contraceptives.

Testosterone, estrogen, and progesterone all intermingle and balance in a way that significantly impacts brain activity and mood. Estrogen, for example, modulates brain activity through the hippocampus and depending on concentration, can alter mood (Paludo et al., 2022, p. 2). Estrogen levels are highest during the follicular phase of a typical menstrual cycle and these higher levels are hypothesized to protect against certain psychiatric symptoms like psychosis as estrogen lessens dopamine transmission similar to many antipsychotic medications (Handy et al., 2022). The opposite is also true. When estrogen levels are lower during the luteal phase, vulnerability to psychiatric symptoms increases (Handy et al., 2022). Estrogen also increases activation in the hippocampus which can improve memory consolidation and even has been

known to help sufferers of posttraumatic stress disorder and their ability to recall fearful memories (Handy et al., 2022).

During ovulation, some studies on athletes report that motivation and competitiveness are higher as well as the desire to compete. The increase in testosterone levels is cited as the reason behind this increase in motivation (Paludo et al., 2022, p. 6). At this point in the cycle, mental health outcomes start to decline as progesterone rises and estrogen diminishes. When higher levels of progesterone correspond with outside stressors, progesterone is converted to cortisol which increases stress responses and decreases emotional processing (Handy et al., 2022). This leads some researchers to suggest that progesterone may be the underlying cause of the exacerbation of mood symptoms during the menstrual cycle including addictive behaviours, psychosis, anxiety, suicidality, depression, binge eating, and post-traumatic stress disorder (Handy et al., 2022).

Aside from the direct psychological outcomes from hormones during the menstrual cycle, socio-cultural attitudes as well as experiences of discomfort, and pain, can significantly alter one's mood during menstruation. Physical discomfort on its own is associated with decreased self-esteem and increases in psychological distress (Handy et al., 2022). Many menstruators report increases in interpersonal conflict during the time of menstruation and one study went so far as to identify that more than half of violent crimes committed by women occur in the late luteal phase (d'Orbán, 1980). While studies like this acknowledge the challenges in mood that menstruators experience, they also perpetuate the shame and negative attitudes towards menstruation that are still prevalent today.

Socio-cultural perspectives towards menstruation can significantly impact the perceptions of the experience. This negative perspective can in turn impact mood. Even the suggestion of

menstrual blood in conversation can lead to avoidance and distancing (Johnston-Robledo, 2011, p. 10). One study examined the internal emotional labour done by menstruators in an interview scenario. Two groups were interviewed while menstruating. One group knew the interviewer was not aware of their menstrual status. The second group was aware the interviewer knew about their menstrual status. The second group believed they had made a more negative impression than the first group. Members of the second group were also less concerned about making a positive impression than the first (Johnston-Robledo, 2011, p. 14). In another example, study participants were asked about their perceptions of the competence of an interviewer who dropped a hair clip in one scenario and a tampon in another. Those who had witnessed the interviewer drop a tampon reported her significantly less likable and competent than those who saw her drop the hair clip (Johnston-Robledo, 2011, p. 14). This awareness and shame associated with menstruation can often result in hypervigilance, high levels of self-consciousness, and discretion when managing periods (Johnston-Robledo, 2011, p. 14). This hypervigilance and self-consciousness does not bode well for positive mental health outcomes. Individuals often perceive that their cycle has a strong effect on mood, motivation, sleep quality, and other menstrual symptoms (Paludo et al., 2022, P. 4). Even this perception of negative outcomes can impact mood and mental health at these times. While the late luteal phase of the menstrual cycle brings many biological and social factors that contribute to poorer mental health outcomes, it is important to be cognizant of the protective factors higher levels of estrogen in the follicular phase can bring to one's experience.

### **Mental Challenges of Menstruation at Menarche**

Mental challenges of menstruation at the onset of menses are similar to other times throughout reproductive years; however, the difference is that these are the first times individuals are experiencing these cognitive and physical changes. Ovarian hormones impact the brain significantly, especially the hippocampus which demonstrates a high degree of neuroplasticity during reproductive years (Zsido et al. 2023, p. 761). Menarche, pregnancy, and the menstrual cycle all trigger significant brain changes (Zsido et al. 2023, p. 761). The hippocampus has a high concentration of estrogen and progesterone receptors and during estrogen-dominant phases, the hippocampus is associated with higher volume (Zsido et al. 2023, p. 761). The hippocampus is also significant for emotional regulation and cognition which is susceptible to fluctuations in the cycle (Zsido et al. 2023, p. 761). All of these changes and fluctuations lead many menstruators to suggest a sense of being out of control (Izadi-Mazidi et al., 2016, p. 1). Likewise, a dearth of information about mental health symptoms and menstruation for young menstruators can also result in increased vulnerability, and anxiety about menstruation, an already incredibly sensitive and vulnerable experience (Asgari et al., 2020, p. 2).

The other variable that can increase negative mental health outcomes is the early onset of menstruation. Early onset of menstruation can result in several outcomes including earlier age of sexual precocity, depression, antisocial behaviour, disordered eating, delinquency, school, dropout, and substance use (Mendle et al., 2017; Parent et al., 2003, p. 669). This is concerning as between the mid-19th and mid-20th century the average age of onset of menarche dropped from 17 to under 14 years old in the United States. This could be because the standard of living in the Global North has increased (Parent et al., 2003, p. 673-674).

The depressive symptoms and antisocial behaviour of people who have an early onset of puberty are not only disconcerting because of the challenges it poses for those individuals but also because of the lingering effects into adulthood (Selkie, 2018). Chronic stress can exacerbate depressive symptoms and antisocial behaviour in these individuals and often results in seeking out older friends who may encourage them to engage in risky behaviours (Selkie, 2018). Those with earlier physical maturation can find themselves entwined with social circles of an older chronological age and experience conflict with their peer group (Mendle et al., 2017). Larger body size also correlates to a higher risk of depression (Selkie, 2018). Finally, those with depressive symptoms due to the early onset of puberty are more prone to depressive symptoms in adulthood as this vulnerability persists over the next decade and a half (Mendle et al., 2017). These vulnerabilities underlay the importance of a trauma-informed practice so that helpers are aware of the stressors of the individual. It also highlights the importance of mental health support needed for those experiencing earlier menarche than their peers.

### **Mental Challenges of Menstruation: PMS & PMDD**

Two disorders that should be considered independently from typical menstrual cycles are premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD). While these two disorders share similar symptoms, PMDD is characterized by psychological distress whereas PMS is more normalized and considered milder in our current society. While PMDD is diagnosable, a PMS sufferer cannot be distinguished from someone who does not have PMS in a lab report. Even some individuals with hysterectomies have been recorded as experiencing PMS symptoms (Chrisler, 2008, p. 157). While this may appear to suggest PMS symptoms are

fabrications of the mind, it is important to recognize the widespread cultural experience of PMS as an influencing factor in the perception of symptoms.

### *PMS*

Both PMS and PMDD are explained as occurring in a cyclical pattern and serotonin plays a large role in the psychological symptoms of both (Dilbaz et al., 2021, p. 139, 141). Psychological changes of PMS include but are not limited to, irritability, depression, anxiety, lethargy, sleep changes, low morale, crying spells, and hostility (Chrisler, 2008, p. 155). Studies have shown these symptoms can be exacerbated if the individual has experienced abuse and/or chronic stress in their lifetime. Higher instances of psychological abuse in childhood have been correlated with higher reporting of PMS and higher instances of suicidal ideation (Kfoury et al., 2024, p. 2,6). Interestingly, only childhood maltreatment in the form of emotional and physical abuse shared this relationship with PMS and suicidal ideation. Childhood sexual abuse did not share the same relationship (Kfoury et al., 2024, p. 2,6). The chronic stress one experiences with abuse can alter hormonal balance; however, survivors of abuse can develop heightened brain sensitivity to emotional changes (Kfoury et al., 2024, p. 3). Maladaptive coping mechanisms for abuse such as disordered eating and substance abuse can further increase the reported instances and severity of PMS symptoms (Kfoury et al., 2024, p. 3).

Because PMS is such a culturally significant disorder, some researchers question the validity of the widespread nature of symptom reporting (Chrisler, 2008, p. 156). Chrisler describes PMS as a “constellation of symptoms that have been categorized by some societies but not others as a disease” and labels PMS a “culture-bound syndrome” (Chrisler, 2008, p. 159). Meaning, PMS is a socially constructed narrative of the menstrual experience that is relevant and real for some, but ultimately insubstantial. If PMS is socially constructed it may have been

created for women to protect their femininity in a way that is palatable for our patriarchal western society. Many women find PMS symptoms a violation of appropriate femininity. For example, showing anger that one would normally suppress, or experiencing the body as “out of control”, feeling sadness and emotionality that makes others uncomfortable are ways women stifle their femininity (Johnston-Robledo, 2011, p. 13). The label of PMS is a form of “behavioural self-policing” that allows distance between the body and one’s identity to maintain the guise of feminine perfection (Johnston-Robledo, 2011, p. 13). This begs the question: would there be PMS without negative attitudes towards menstruation? (Chrisler, 2008, p. 161). Perhaps not. However, more recent attitudes towards periods and PMS in general are shifting towards the positive. Menstruators and those in the research community are slowly embracing symptoms rather than avoiding them, and shifting the narrative to the physical and psychological benefits of menstruation.

### ***PMDD***

PMDD is not a “culture-bound syndrome” nor are attitudes towards PMDD shifting into towards positive. PMDD is a diagnosable and very real disorder that affects approximately 6% of menstruators and is a severe reaction to typical hormonal changes during menstruation (Eisenlohr-Moul, 2022). At the core of PMDD diagnosis is significant psychological distress that impacts daily life. For PMDD to be diagnosed, it is required that at least one emotional symptom and five total symptoms must be reported cyclically across the menstrual cycle (Eisenlohr-Moul, 2022). This means the symptoms must arise (usually in the luteal phase) and disappear after menstruation. Individuals diagnosed with PMDD must experience at least one of these psychological symptoms: anxiety, mood swings, rejection sensitivity, depression, anger, or irritability (Eisenlohr-Moul, 2022). Contrary to popular belief, irregular menstrual cycles and

imbalanced hormones are not the cause of PMDD. People who experience PMDD have particular brain chemistry that makes their brains more sensitive to changes in hormones. PMDD is a psychiatric disorder not a hormonal disorder (Eisenlohr-Moul, 2022).

Because PMDD is a psychiatric disorder triggered by hormonal changes in menstruation, there are high rates of suicidal thoughts and behaviours (STBs) for those who have been diagnosed (Eisenlohr-Moul et al., 2022, p. 1). Those with a diagnosis are more likely to have a history of psychiatric hospitalization for suicidal thoughts and behaviour in the premenstrual phase and any psychiatric comorbidity with other diagnoses can increase the risk of STBs as well (Eisenlohr-Moul et al., 2022, p. 6). This is very alarming as suicide attempts and deaths are most likely to occur in the late luteal and menstrual periods of the cycle compared to other phases (Eisenlohr-Moul et al., 2022, p. 1). Even more alarming is the report that those with psychiatric comorbidity were more likely to be marginalized identities already associated with increased psychiatric risk due to minority stress (Eisenlohr-Moul et al., 2022, p. 6).

The most common symptoms of PMDD include irritability, and anger and are established risk factors for suicidality. Psychiatric symptoms like depression, hopelessness, rejection sensitivity, perceived burdensomeness, and anhedonia all had a closer connection with suicidal ideation than other reported symptoms (Ross et al., 2023). Suicidal ideation peaks around menstruation and can occur regularly across an individual's lifetime (Ross et al., 2023). Shockingly, STBs do not persist during other phases of the menstrual cycle, although they are repeated monthly. Educators and mental health professionals must be aware of the risks of PMDD and know how to look for signs and symptoms.

## **Mental Benefits of Menstruation**

Estrogen is the hero hormone of mental performance and well-being during the menstrual cycle. While research is still emerging, estrogen is associated with some benefits for cognitive functioning for menstruators (Sundström Poromaa et al., 2014, p. 1). People who menstruate have an advantage in verbal tasks and communication like object location and during the follicular or high estrogen phase, verbal fluency and memory are increased (Sundström Poromaa et al., 2014, p. 5). During the early and late follicular phase, better emotion recognition accuracy is possible (Derntl et al., 2013). Menstruators also display a greater tendency to perceive fearful expressions during higher phases of progesterone like in the luteal phase (Derntl et al., 2013, p. 8). During the luteal phase there also appears to be an increased amygdala response to negative emotional stimuli and an increase in emotional reactivity to these stimuli (Derntl et al., 2013, p. 12).

The relationship between estrogen and progesterone continues to impact mental stress as well during the respective phases of the menstrual cycle. During periods of high estrogen levels, there was noted significantly less response to psychological stress compared to those with low levels of estrogen. Menstruators with high estrogen also had a lower response to distress than those with lower estrogen. This suggests that in those with a typical cycle, estrogen manages and balances the brain activation changes and negative mood in response to stress. This also means a higher level of vulnerability to stress during periods of low estrogen (Albert et al., 2015, p. 1). Areas of the brain that are central to mood regulation like the hippocampus and amygdala show some of the biggest collection densities of estrogen receptors in the brain. These areas are also those rich in cortisol receptors and estrogen may play a role in the overall activity of these areas (Mercenthaler et al., 2004; Ostlund et al., 2003). Interestingly, social-evaluative threat is one

piece of psychological stress that for women in particular can be very salient. This is particularly impactful for those at risk of certain mood disorders (Albert et al., 2015, p. 3). If these social evaluative processes such as interviews, evaluations, presentations, or performances occur during low estrogen periods this can exaggerate the effect of stress on the brain. The opposite is also true. Those with overall higher rates of estrogen have lower distress scores during tasks involving psychological stress which suggests that higher estrogen may support hippocampal activity during these times (Albert et al., 2015, p. 10).

Most studies on the menstrual cycle focus on negative side effects and challenges. However, one study offered participants the option to complete a questionnaire about their symptoms of menstrual joy. The menstrual joy questionnaire included 10 symptoms including: “high spirits, increased sexual desire, vibrant activity, revolutionary zeal, intense concentration, feelings of affection, self-confidence, sense of euphoria, creativity, and feelings of power” (Chrisler et al., 1994, p.377). Those participants who completed the questionnaire about menstrual joy before a questionnaire about their overall menstrual symptoms had a less negative attitude towards menstruation than those who did not do the menstrual joy questionnaire (Chrisler et al., 1994, p. 379). When participants were asked if they considered menstruation a positive part of life, 65% had not thought of any positives associated with menstruation until they completed the menstrual joy questionnaire (Chrisler et al., 1994, p. 384). While menstruation can be challenging, this study proves that an entire piece of the cycle has been ignored. This erasure of strength and joy derived from menstruation and fertility could potentially increase negative feelings toward periods as a whole. As new scientific research comes into focus, perhaps attitudes about periods will change along with them.

## **Conclusion**

Menstruation is not simply a biological process. It impacts the wellness of the whole person deeply at each stage of the cycle. Mental health is an often overlooked component of menstruation but it should be recognized as closely related to the brain changes that occur during the menstrual cycle. Knowledge of these changes can be empowering and can mobilize more people to push back against the stigma and shame associated with periods, and to seek diagnosis for mental health related challenges.

## ***Menstruation and Puberty Education***

### **Introduction**

Menstruation and puberty education have been pillars of sexual health curriculums for many years yet the way in which we support menstruators does not seem to be improving nor do the experiences of menstruators in schools. Most mental health curriculums and ways of implementation centre too heavily on the biological and don't do enough to address pain management, and emotional health, and educators often position menstruation as something shameful or worthy of stigma. This section discusses the experiences of students as menstruators in schools, resources available for cycle tracking, resources for educators of menstruation and puberty education, as well as recommendations for schools and educators to design a system that is equitable and adapted to the needs of menstruators.

### **Cycle Tracking Education**

Since Menstrual Cycle tracking apps were released in 2013, an estimated 50 million menstruators worldwide use these apps (Worsfold et al., 2021, p. 1). While app use is the most documented and notorious mode of cycle tracking, manual tracking with a written diary is an

alternative method. This section will focus on app use including an overview of how apps work, the benefits of cycle-tracking app use, and the challenges presented with the app design.

### ***How apps function***

Almost all cycle-tracking apps use self-learning algorithms to provide predictions for the main events of the menstrual cycle including menstruation, ovulation, PMS, and a fertile window. Most of these predictions are based on typical 28-day cycles although some apps claim that predictions are improved with longer usage and data tracking by the user. Some apps are free while some are paid subscriptions (Worsfold et al., 2021, p. 2). Many apps are customizable and allow the user to track cycle-related symptoms like mood, pain, sleep, medication and contraceptives, vaginal discharge, energy, digestion, and more. These symptoms are often organized in a calendar or on an analytics tab with graphs, tables, or other ways of interpreting data (Levy and Romo-Avilés 2019, p. 2). These health observations are valuable information not only for individuals but for the companies who design the apps. This has the potential to be a privacy concern for many people. The benefits of app use revolve around individuals knowing more about the connection between cycle-associated hormones, psychological, and physical symptoms (Levy and Romo-Avilés 2019, p. 7).

### ***Benefits***

Since most apps use a baseline of data from with a typical cycle (28 days), those users with a 28-day cycle receive very accurate predictions for dates of ovulation and menstruation (Worsfold et al., 2021, p. 6). When individuals can use apps to predict their cycles accurately and can use their calendar to plan for the future, there is a strong sense of empowerment, reassurance, and calm (Levy and Romo-Avilés 2019, p. 5). The ability to accurately document and interpret data plays an important role in the relieving of menstrual stress and emotions associated with the cycle.

Some users even feel a sense of validation and recognition as they feel understood in an area where they previously experienced shame (Levy and Romo-Avilés 2019, p. 6).

Some with irregular cycles find that tracking these changes has a calming effect while others find the opposite and are distressed by the highlighting of these irregularities (Levy and Romo-Avilés 2019, p. 8). In most cases, cycle tracking helps to establish associations between symptoms, experiences, and menstrual cycles which allows users to understand their health better, increases bodily awareness, and provides critical information about psychological and physiological states (Levy and Romo-Avilés 2019, p. 8). The benefits of menstrual cycle tracking are widespread as high usership promotes feminist representation in the field of technology and app development and can also provide individual-level and population-level insights into menstruation and reproductive health. This has the potential to challenge oppressive structures and inspire social change (Pichon et al., 2021, p. 385-386).

### ***Challenges***

While cycle tracking apps are helpful for those on a 28 day cycle, approximately only 16% of the Flo app users had a 28-day cycle (Worsfold et al., 2021, p. 2). This means the vast majority of users were not getting the predictive consistency that those on a 28-day cycle received. Cervical mucous changes, basal body temperature, and the luteinizing hormone surge are more specific ways to track ovulation and fertility; however, out of 90 marketed fertility apps, 54% of them only used calendar dates to make predictions (Worsfold et al., 2021, p. 2). Educators should include these inconsistencies in the curriculum. Young people need to know that they cannot use apps alone to inform decisions about their health as there is very low contraceptive reliability for most apps (Worsfold et al., 2021, p. 7). For example, people who are peri-menopausal may want

to have a more scientifically accurate record of cycle change and their last period, as would those trying to conceive (Worsfold et al., 2021, p. 6).

Finally, many users of apps have cited the lack of accurate predictions as a source of anxiety and stress when their period comes at a different time than what is predicted (Worsfold et al., 2021, p. 7). This distress is often associated with users with menstrual irregularities as these individuals tend to hold their body and lifestyle responsible instead of the app (Levy and Romo-Avilés 2019, p. 5). Other negative consequences include app users relying on technology instead of health professionals to be responsible for menstrual health (Levy and Romo-Avilés 2019, p. 8). This ease of access to health information should be examined critically by the user. Until more research is available on the impact of apps, individualized tracking and monitoring should be the approach taken by menstruators (McGawley et al., 2023 p. 352).

Menstrual cycle tracking is not a new process, especially for those wanting to know their fertile windows. However, with the rise of apps, more menstruators are using technology to track their cycle for a variety of reasons other than family planning. This section synthesizes the benefits and drawbacks of app usage and highlights several popular cycle tracking resources that are available. There are few comprehensive research reviews of cycle tracking apps so Pichon et al., 2022, is heavily cited here.

The two biggest areas of note when analyzing the use of “Femtech” or apps specifically designed for menstruator’s bodies are gender equity, and privacy. First, in the visual design of many apps, there are clear assumptions about menstruators and femininity including colours (soft pastels, pinks etc.) and in imagery and language (cartoon animals and mermaids) (Pichon et al., 2022, p. 390). Only a handful of apps avoid gendered language, images, and colours in their overall aesthetic design thus supporting the concept that not all menstruators are women and not

all women menstruate (Pichon et al., 2022, p. 390). The critique lies in the monolithic representation of the lived experiences of menstruators as hetero, feminine, cis, and monogamous as the oft used word “every” suggests that all people’s experiences are similar (Pichon et al., 2022, p. 390). It is also implicitly suggested through the app’s biases that predicting a period is helpful as you can prevent an accident, leaking, or you can coordinate work and leisure around your period. There is no suggestion of menstrual joy or benefits to menstruation (Pichon et al., 2022, p. 390). Apps should be considered carefully for the biases they implicitly exude regarding sexuality and mental health. Many apps do not include language around menstrual joy, intimacy, and pleasure, and sexuality is rarely touched on. Most mentions of sexuality are primarily focused on managing fertility (Pichon et al., 2022, p. 391).

Information around privacy and data collection are critical for educators to know as their work encompasses minors. In recent years, Canadians have seen the tangible impact on reproductive rights that cases like *Roe v. Wade* have had on our American neighbours. One article discusses how cycle tracking apps could be used by law enforcement to prove guilt in the case of an (now illegal in some states) abortion (McQuillan, 2022, CBC News). Menstruation is political and many invested parties are extremely interested in the flow of information and communication about menstruating bodies. Pichon et al. calls for more policy around the ethics of data collection when it comes to person-generated health data, ownership, and privacy (Pichon et al., 2022, p. 395). The term “designing from the margins,” suggests a need for marginalized identities to be involved in the app design to bring equity and a more universal design to the apps in the future (Pichon et al., 2022, p. 395).

Finally, cycle tracking can be effective in order to offer the user a greater sense of agency over their body; however, claims that apps will remove guess-work, or that data can make sense

of the body are not always accurate. These claims suggest the users are already disconnected or confused about their bodies and need the guidance of the app to know themselves more closely (Pichon et al., 2022, p. 391). While this may be true for some users, space to quantify lived experiences on apps is also helpful (Pichon et al., 2022, p. 391). Promises to fix or control the menstrual cycle by apps are misguided and some apps overpromise on helping the users to become symptom free (Pichon et al., 2022, p. 393). This is problematic as the menstrual cycle is nuanced and individualized. Several resources are available that have been designed with gender equity, and marginalized identities in mind. Below is a summary of their offerings.

***Australian Institute for Sport Female Performance and Health Initiative: Menstrual Cycle Tracking Guidelines***

This downloadable information sheet, provides a general overview and guidelines of the menstrual cycle and some prevalent issues athletes should be aware of. It also includes guidance for sport organizations and whether or not they can mandate and retain information connected to health for athletes.

***Clue***

Clue is a cycle tracking app that claims to use research-informed methods to help users identify trends in their menstrual cycle. Clue also has an extensive network of articles and an “encyclopedia” on their website with scientifically backed information.

***“She’s the First” Manual Period Diary***

She’s the first is a manual period diary intended for youth, girls, and young menstruators. This free, downloadable, 12 month cycle tracker is intended to educate and empower young people regarding their cycle. There is no concern over privacy as the trackers are paper and pen and should not be collected by an organization like a school for data analysis.

### ***“Oky” Menstrual Health and Hygiene Management App***

Oky is an app generated by Unicef co-created by girls and young menstruators. This is the first period tracking app that has been co-created by girls and it includes a cycle tracking calendar as well as information about menstruation and health. Oky has a gamified design with avatars, quizzes, and different features to unlock. It is also customizable and available internationally in many languages.

### **Menstruation and Puberty Education**

Menstruation and puberty education is an essential component of sexual and health education as outlined in the Physical and Health Education Curriculum in British Columbia. Menstrual health is defined as, “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (Spencer, 2022, p. 4). It is not enough to provide purely physiological education and information as menstrual wellness encompasses the whole person. This section will identify the gaps in implementing this curriculum using evidence from global sources and will include recommendations for how schools and educators can improve.

### ***Gaps***

One of the biggest barriers to education is the stigma and discomfort surrounding the topic as conversations about menstruation have been actively discouraged within schools (Spencer, 2022, 10). If adults embrace or adhere to this sense of discomfort, young people can be left inadequately prepared for menstruation (Spencer, 2022, p. 8). This is a gap in the system as menstruation is often a barrier to formal education and education that centers biology and unruly hormones does not mitigate this issue (Spencer, 2022, p. 7). Secondary schools have been critiqued for an unsympathetic attitude towards menstruation, a negative climate towards menstruation, and a lack of helpful products and sanitary measures (Spencer, 2022,8-9). One

critique of elementary schools is that teachers ignore the topic of menstruation, leadership does not see the value in this subject, there is limited time in the curriculum, and staff are afraid of parental reaction to teaching these topics (Brown et al., 2022, p. 3).

One study in New Zealand found it extremely difficult to recruit schools to participate in a review of their menstruation and puberty curriculum. Most schools questioned the validity and ethics of studying menstruation with only 2 schools out of 96 agreeing to participate (Agnew & Gunn, 2019, 671). While the protection of privacy for young people is important, the dominant discourse of menstruation as shameful, problematic, and unhygienic remains damaging to the health of menstruators (Agnew & Gunn, 2019, 671). Professors and teachers may also demonstrate discomfort with teaching the subject and with student's boredom, giggling, or absence. Teaching factual information about the menstrual cycle is necessary and vital to correct misinformation and to shift the cultural understanding of this social, cognitive, and physiological process (Chrisler, 2013, p. 129).

### ***Recommendations***

Recommendations for schools and organizations working towards equity in education for menstruators can focus on not only the curriculum but also the systems of the school and the policies under which the school is run (Spencer, 2022, p. 2). Out of US residents 42% would support a menstrual leave policy in the workplace without reservation (Spencer, 2022,11). Organizations can train their members on menstruation, and gender equity and consult those most affected by those decisions. For example uniform policies and dress codes at schools should be made in consultation with the people wearing the uniforms (Canadian Women in Sport, 2023). Within the school, accommodations can be made for assessments, and students who are experiencing dysmenorrhea could be allowed to take a test on a different day. Teachers

could provide online class options, or provide homework alternatives if menstruators need to miss school (Ferfolja et al., 2023, 507). As previously discussed, 20% of young women have experienced absenteeism due to period pain (Armour et al., 2019, p. 1166). This problem is not isolated to the Global South. Many countries in the Global North are growing in awareness that they are overdue to address the menstrual needs of young people (Brown et al., 2022, p. 2).

Aside from policy and systems, schools can also support menstruators by the universal design of their buildings. Not having access to facilities or sanctuary disposal bins during the school day has been cited as a barrier to education (Armour et al., 2019, p. 1162). Participants in one study recounted how the sanitary bins at their school were overflowing, and not cleaned frequently enough (Ferfolja et al., 2023, 504). Schools could provide extra sanitary bins, ensure maintenance and provision of soap and extra uniforms or clothing could be borrowed in the case of leakage (Ferfolja et al., 2023, 504). School routines should include adequate breaks and allowance of time in the bathroom, and some studies even suggest schools provide pain management in the form of hot packs and medication (Ferfolja et al., 2023, 502-505). Students want their teachers to understand how period pain can be debilitating and can be a serious medical issues requiring direct attention (Ferfolja et al., 2023, 505).

Finally, the way menstruation education is taught and managed by educators can be improved. Some students identified the focus of education about menstruation only including biological anatomy and function. This ignores the complex nature of menstruation as well as relational, physical, and emotional aspects (Ferfolja et al., 2023, p. 500). This emphasis in the school system on biology is the biggest area of improvement for educators yet in order for change to occur, teachers must first examine their personal constructions and perspectives on menstruation (Agnew & Gunn, 2019, p. 670). Most teachers who are comfortable discussing

these topics are female but it is also necessary for male teachers to disseminate this education (Takabayashi-Ebina et al, 2022, p. 59). Not only do teachers of all genders need to discuss menstruation adequately, they also need to educate about dysmenorrhea. Especially in elementary schools, dysmenorrhea is likely to be omitted from the school curriculum (Armour et al., 2019,1168). One teacher used humour and laughter as a teaching tool as students did experiments with tampons measuring their absorbancy in water (Agnew & Gunn, 2019, 676). When taught well, puberty education can provide students with a sense of peer support and shared experience (Agnew & Gunn, 2019, 676). Ultimately, when young menstruators learn in a way that subverts the dominant discourse of shame, they feel powerful, and important, and some girls with knowledge about menstruation may even feel special and valued (Agnew & Gunn, 2019, 677). This can be a goal of menstrual cycle and puberty education everywhere.

### **Experiences of Menstruation and Puberty Education**

Menstruation and puberty education is essential in shaping the experiences of menstruators throughout their elementary, secondary, and university years. This section will discuss the impact of menstruation and puberty education on students and the importance of body confidence for young people to participate fully in their academic and extracurricular pursuits. The correlation between body-positive and realistic menstruation and puberty education is clear and the need is evident.

These needs exist in the context that teachers and curriculums still engage with the discourse of shame and secrecy surrounding menstruation. Students, however, have begun to resist this narrative and construct new meanings of menstruation on their own (Agnew & Gunn, 2019, p. 670). Menstruation education focused on controlling and managing menstruation

secretly may result in young people not listening to their bodies. Globally, 40% of young menstruators, reported classroom focus and performance being affected while on their periods (Armour et al., 2019, p. 1166). More concerning is a trend of young menstruators thinking period pain is normal (Armour et al., 2019, p. 1166). The misconception that period pain is normal, is very problematic. This type of misinformation can cause young people to have negative expectations of menstruation even before menarche and can prevent those with pain from seeking medical help (Ferfolja et al., 2023, p. 499). In Australia, 90% of menstruators experience dysmenorrhea, but not even half of them seek medical advice (Ferfolja et al., 2023, p. 499). Instead, students participate in risk management behaviours to avoid leaking at school, and have poor menstrual health literacy overall when it comes to pain management and signs and symptoms of atypical menstruation. Some even miss the signs of endometriosis because period pain was positioned as normal during their education (Ferfolja et al., 2023, p.500).

Students want information about how to avoid surprises, prepare for upcoming periods, manage typical pain, and identify atypical pain (Levy & Romo-Avilés, 2019, p. 5). Neurodiverse menstruators with autism identify the importance of reassuring menstruators about what is normal and what is not regarding menstruation (Steward et al., 2018, p. 4290). Young people want to be supported in their schools and want to be prepared with what to expect. As of 2019 in British Columbia all schools and Boards of education “must provide menstrual products to all students who may require them. Relevant product information should be made available to all students. Boards of education must have policies and procedures regarding the provision of menstrual products in their school to ensure products are provided in an equitable and accessible manner that addresses student needs. These policies and procedures must be made publicly

available” (Government of British Columbia, 2019). Students who menstruate and educators can fall back on policy, advocate for their needs, and know their rights within a school environment.

### *Need for Body Confidence*

The purpose of menstrual cycle and puberty education in schools is to provide accurate health information and to remove barriers to inclusion for young people. One huge barrier is body confidence with racialized girls, girls with disabilities, and people who identify as 2SLGBTQIA+ experiencing higher levels of body insecurities than others (Canadian Women in Sport, 2023). Designing environments of learning and play in a way that takes girls’ body confidence into consideration is key to create better and safer environments for all people (Canadian Women in Sport, 2023). Of adolescent girls in Canada, 15% are not satisfied with their body and appearance and this limits their participation in learning and sport and 25% of girls said menstruation affects their sport participation negatively (Canadian Women in Sport, 2023). These numbers are problematic yet only 10% of girls in sport feel comfortable asking their coaches, teachers, or other leading adults concerns about their bodies. Many feel the adults are not always aware of how these concerns affect their experience (Canadian Women in Sport, 2023).

This insecurity around bodies and menstruation extends into university age groups if educational interventions do not occur at the grade school level. Only 16.2% of menstruating students globally felt completely confident to manage menstruation at university with bathroom facilities, privacy, and pain management all proving to be barriers to participation (Munro et al., 2022, p. 5). Some students seek alternative means of support for menstruation through social media if prior education is insufficient (Ferfolja et al., 2023, p. 498). While this demonstrates resilience, it also identifies how critical and underestimated the importance of menstrual

education is in schools (Ferfolja et al., 2023, p. 498). Students want to gain confidence through education which means all genders need to be educated together. If girls are separated during puberty education class based on their gender, they feel alienated, embarrassed, or different (Ferfolja et al., 2023, p. 500). This has an impact on the psychology of menstruators because their natural body systems are isolated, hidden from male bodies and referred to as shameful and “gross” (Chrisler, 2013, p. 130). This reproductive shame can lead to lowered self-esteem and can have mental health implications leading to negative health outcomes like menstrual suppression, elective cesarean sections, and high-risk sexual behaviour (Chrisler, 2013, p. 131). While these negative outcomes are concerning, helping young menstruators to feel confident in their bodies is not an impossible task. Institutions and educators can make changes ranging from small to systemic that can significantly aid in the experiences of young menstruators at school.

This section reviews some pre-existing solutions and resources for menstruation and health education for schools and educators. It does not review the curriculum but overviews some tools that could aid in the learning of both teachers and students in relation to menstruation and puberty.

### ***Shift Education***

Shift Education is founded by Jessy Wollen, a British Columbia-based educator, and provides educational consultation, professional development and resources for both families and educators. Their resource, “The Sex Ed Circuit” is a set of station activities that can be purchased and used by teachers for sexual health and puberty education. Some of these stations include the period game, an interactive board game with cards containing questions and tips about period pain management, and endometriosis facts. The stations also include the “Healthy Relationships Station” where students are prompted to examine different relationship cue cards and identify

where the action falls on the spectrum of abusive to healthy relationships. There is also a “Safer Sex” station where students learn about different types of contraceptives. Shift Education also provides professional development modules for teachers to learn how to use these resources.

***Relationships and sex education (RSE) and health education (Government of UK Department of Education)***

Some countries have online downloadable resources and guidance for teaching sexual health education. It is outlined very clearly at the outset of these guidelines that teaching relationships and sex education is mandatory and describes “what schools should do and sets out the legal duties with which schools must comply when teaching Relationships Education, Relationships and Sex Education (RSE) and Health Education” (Department of Education, 2021). There are further hyperlinks and sections that include more specific information. The section on puberty and menstruation suggests that educators should teach “key facts about the menstrual cycle including what is an average period, range of menstrual products and the implications for emotional and physical health. In addition to curriculum content, schools should also make adequate and sensitive arrangements to help girls prepare for and manage menstruation including with requests for menstrual products. Schools will need to consider the needs of their cohort of pupils in designing this content” (Department of Education, 2021).

***Power to Play Period***

Power to Play Period is an organization founded by Dr. Sara Zipp, a leading researcher in menstrual health and sport and exercise science. This organization’s goal is “to create supportive, inclusive education on menstrual health in sport and physical education” and they provide lessons, seminars, and resources for coaches, and teachers (Power to Play Period, 2024). These resources include downloadable infographics about the menstrual cycle, informative videos

synthesizing the latest research, recommendations for cycle tracking, and links to other cultivated resources available online.

### ***Leventhal's Model***

This model is less of a tool an educator would use in the classroom, but a theory to understand the complex interaction between cognition, emotion, and illness that has been used to conceptualize the perceptions of pain of menstruation. Leventhal's Commonsense model of self-regulation posits that when someone experiences illness, their cognitive perceptions are related to five dimensions. These dimensions include 1) beliefs about identity concerning diagnosis and symptoms, 2) Causes and ideas about the origins of the illness, 3) consequences and impact throughout life, 4) Timelines and thoughts about the duration of the illness, and 5) Treatment or control and improvement of the disorder (Asgari et al., 2020, p. 2). This model explores the feelings and negative reactions such as fear, discomfort, and anxiety and how these feelings impact the outcomes for the client. This method is ultimately used to guide coping strategies for those experiencing illness (Asgari et al., 2020, p. 2). While this process should not be undertaken by an educator and their student, it may be helpful to understand the interplay of these various factors in relation to dysmenorrhea and have some solutions to period pain ready to communicate with students. These coping strategies could include, seeing a medical professional, adapting lesson plans and assessment, using pain medication, and either continuing or refraining from intense physical activity.

### ***Chrisler's Menstrual Joy Questionnaire (MJQ)***

This questionnaire was developed by Joan Chrisler and associates in response to the oft used Moos Menstrual Distress Questionnaire (MDQ). The MDQ "is a 46-item self-report inventory for use in the assessment and treatment of premenstrual and menstrual symptoms"

which “can distinguish cyclical from noncyclical changes in physical symptoms, mood and behavior, and arousal...and can aid researchers and clinicians in specifying the effect of therapeutic interventions” (Rudolf H. Moos, 2010). While an important tool, the MDQ contained symptom reporting that was overwhelmingly negative and pain-centric. The MJQ; however, focused on the benefits and positive symptoms of menstruation including, “high spirits, increased sexual desire, vibrant activity, revolutionary zeal, intense concentration, feelings of affection, self-confidence, sense of euphoria, creativity, and feelings of power” (Chrisler et al., 1994, p.377). Again, educators should not partake in questionnaires about student’s health nor should they record any health data. It is important, though, to note the positive symptoms of menstruation and be able to relay these to students to avoid casting a completely negative perception of menstruation with young people.

### **Conclusion**

Education about menstrual cycles must be compassionate, holistic, realistic, and inclusive. This means schools and educators must work hard to reduce stigma around menstruation, normalize conversations about periods for all genders, provide accurate information about pain management and when to seek help, and make systemic accommodations in design for menstruators at school. Policies of support for menstruators are clear, schools must now continue to implement curriculum that focuses on more than just biology, and make sure the school itself is a place where menstruators feel comfortable and cared for.

## ***Conclusion***

This literature review has highlighted both the benefits and challenges menstruators experience regarding physical and mental health symptoms during their menstrual cycle, as well as discussing the experiences of menstruators in schools. Menstruation is not a purely biological phenomenon, but it has very real implications for both the social and psychological lived experiences of menstruators. While sociocultural shifts towards attitudes regarding menstruation are necessary, younger generations are advocating for changes and more accommodations for their needs. This could have many benefits for both physical health (more menstruators seeking help and diagnosis for pain) and mental health (the correlation between premenstrual syndrome, adverse childhood experiences, and suicidal thoughts and behaviours becoming more widely known). Education that is empathetic, and inclusive can bring more changes, and help foster more body confidence, knowledge about menstruation, and improve the experience of menstruators in schools. It is time more young menstruators experienced the validation and joy of a caring school experience.

### Chapter 3

#### *Summary*

The aim of this capstone is ultimately to bring awareness to educators and counsellors who work with menstruating and pubescent youth about the challenges this demographic faces in school settings. The most impactful professional development I have ever undergone as a teacher is training regarding menstruation and sport performance. This training helped me to make accommodations in my PHE classes which made my classroom more accessible and equitable for menstruators. This spurred me to wonder what outcomes for mental health and menstruation could we as educators be missing in schools. Through my research, I learned that many young people do not feel supported as menstruation is connected with the social stigma of being unclean, shameful, and secretive. Although not all women menstruate and not all menstruators are women, the stigma also associates women and girls with intense emotionality, unruly hormones, lack of emotional control, and an overall sense of weakness that pervades their ability to do everyday tasks. Schools often reposition menstruation and puberty education to the biological sphere and do not address absenteeism due to dysmenorrhea, the emotional or social outcomes of having a period, nor do schools highlight the joyful and positive aspects of menstruation (Spencer, 2022,8-9). As a result, many menstruators are absent from school during their periods and when present they feel distracted and less than their best when managing the risks associated with menstrual shame in a public place (Armour et al., 2019, p. 1166). They also often do not seek help for physical pain and discomfort, nor mental pain as they may not have the education to link patterns between their cycle, their mental health, and overall wellness (Abay, 2019, p. 151).

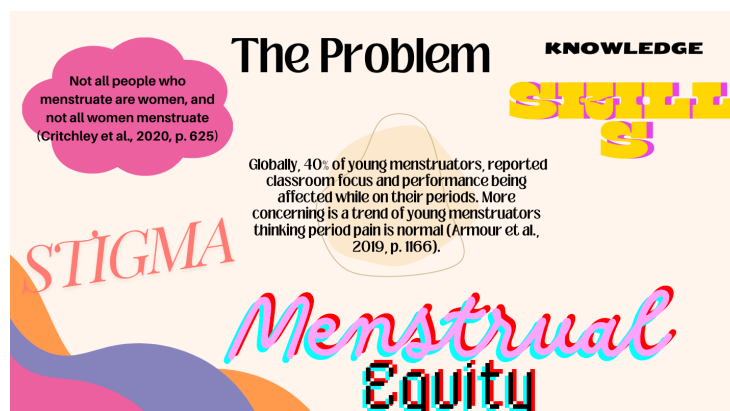
The link between menstruation and mental health is also clear. Psychological and physical abuse in childhood have been correlated with higher reporting of PMS and higher instances of suicidal ideation (Kfoury et al., 2024, p. 2,6). For some, this suicidal ideation occurs monthly around menstruation and does not continue at any other point in the cycle (Ross et al., 2023). It is important for counsellors and other educators to inform young people to look for signs of typical menstruation and to seek help when experiencing negative symptoms. Even early onset of menstruation can result in adverse outcomes like antisocial behaviour and even substance use (Mendle et al., 2017)(Parent et al., 2003, p. 669). While menstruation does have positive impacts on mental health as well, it is critical for educators to be aware of the extent of the experiences of menstruators they teach.

This action piece proposal will offer education for teachers, administrators, and counsellors, on some salient topics that newer research has unveiled regarding menstruation and mental health and wellness. These include the connection between suicidality, PMS, and childhood abuse, the social implications for those who experience early onset of puberty, and the positive and beneficial aspects of menstruation. This action piece will also include recommendations for schools and educators in the realm of universal design, systemic changes, and changes in the implementation of menstruation and puberty education.

### ***Recommendations***

The information gathered in this capstone will be presented as a slideshow with 4 corresponding station activities. The slideshow is directed towards teacher and counsellor professional development. The goal of this presentation is to be F. U.N. Flexible, Uplifting, and Numberless. This presentation is intended to be informative, interactive, and provide practical solutions for the challenges menstruators and educators of menstruators face in schools.



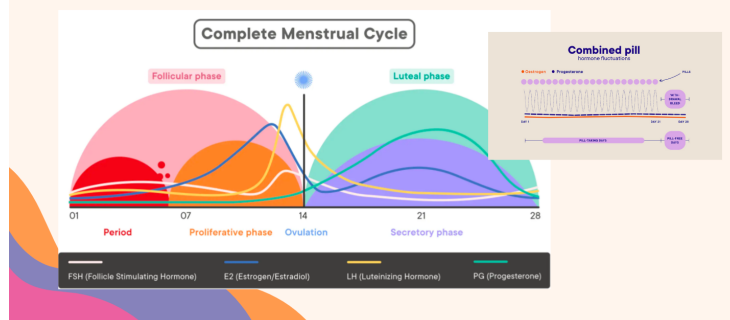


This slide identifies the overall problem and allows me to establish some of the ways in which I will discuss and handle gender throughout. The statistic on the slide is very closely connected to our work as educators and the direct link between effective menstrual health and puberty education and young people's overall health and wellness.



This slide is intended to be humorous and gives me an opportunity to share how I was first introduced to this concept through teacher led pro D and coaching. The expression on the faces of Rachel and Monica are how I felt when first learning about this subject, validated, inspired, and excited.

## Menstruation Station Review



Before continuing on to the research, I want to review the menstrual cycle and its associated hormones. In order for participants to follow along with the remainder of the presentation it will be important for them to know the terminology present on this slide. Before showing this slide, I will ask the questions: “What are the four main hormones associated with the menstrual cycle?” and “What are the two main phases of the menstrual cycle and in which phase does menstruation occur?” If a participant answers correctly, they will get a small prize. I also have a picture of a menstrual cycle for an oral contraceptive user. This will be an important moment to discuss how the research presented does not focus on oral contraceptive users here and to distinguish between the different cycles.

Below, the slides consist of pertinent research in relation to mental health and menstruation. I chose to focus on three main areas. These areas are, PMS, PMDD, and early onset of menstruation. I chose pieces of the research to highlight that I found were particularly relevant for educators. I also would identify the interconnectedness of the biological, social, and psychological spheres and how they intersect to construct an individual's overall experience of menstruation (Salkind, 2004, p. 3). Menstruation is not experienced in isolation, but it is influenced by the various systems we inhabit, like schools.

## Research Spotlight: PMS

- No cure nor diagnosis for PMS
- Autism related sensory challenges (Steward, 2018, p. 4287)
- "constellation of symptoms that have been categorized by some societies but not others as a disease" and labels PMS a "culture-bound syndrome" (Chrisler, 2008, p. 159)
- While PMDD is diagnosable, a PMS sufferer cannot be distinguished from someone who does not have PMS in a lab report. Even some individuals with hysterectomies have been recorded as experiencing PMS symptoms (Chrisler, 2008, p. 157)
- Higher instances of psychological & physical abuse in childhood have been correlated with higher reporting of PMS and higher instances of suicidal ideation (Kfoury et al., 2024, p. 26)

## Research Spotlight: PMDD

- 6% of menstruators are diagnosed with PMDD (Eisenlohr-Moul, 2022)
- Diagnosis must include one emotional symptom and 5 total symptoms reported cyclically across the menstrual cycle (Eisenlohr-Moul, 2022)
- Individuals diagnosed with PMDD must experience at least one of these psychological symptoms: anxiety, mood swings, rejection sensitivity, depression, anger, or irritability (Eisenlohr-Moul, 2022)
- People who experience PMDD have particular brain chemistry that makes their brains more sensitive to changes in hormones. PMDD is a psychiatric disorder not a hormonal imbalance (Eisenlohr-Moul, 2022)
- Suicidal ideation peaks around menstruation and can occur regularly across the person's lifetime (Boss et al., 2023)

## Research Spotlight: Early Onset of Menstruation

- Early onset of menstruation can result in several outcomes including earlier age of sexual precocity, depression, antisocial behaviour, disordered eating, delinquency, school, dropout, and substance use (Mendle et al., 2017) (Parent et al., 2003, p. 669)
- Those with earlier physical maturation can find themselves entwined with social circles of an older chronological age and experience conflict with their peer group (Mendle et al., 2017).
- Larger body size also correlates to a higher risk of depression (Selkie, 2018)
- Those with depressive symptoms due to the early onset of puberty are more prone to depressive symptoms in adulthood as this vulnerability persists over the next decade and a half (Mendle et al., 2017)

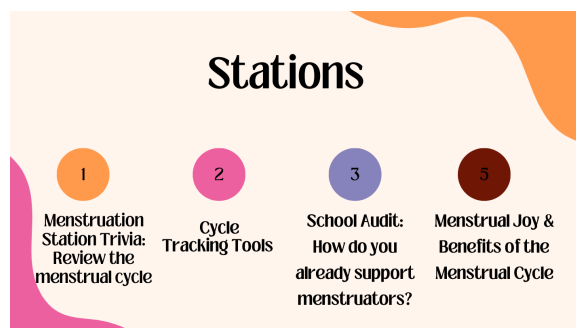
Following these pertinent snippets from my research, I will overview recommendations for schools and student experiences with menstruation in schools. I have sorted these recommendations into 5 main categories, choice and comfort of clothing and uniforms, deep empathy from all educational staff, gender inclusive menstruation and puberty health education, risk management and pain management assistance from the school, and accommodations for assessments to account for absences. It will also be important to note here the risk of positioning period pain as normal during their education as it could result in misdiagnosis or the individual missing signs of a disorder.

## Recommendations for Schools

- Education is a proactive measure. This can alleviate anxiety and prevent anxious thoughts from exacerbating the experience of symptoms as negative (Asgari et al., 2020, p. 2)
- Students participate in risk management behaviours to avoid leaking at school, and have poor menstrual health literacy overall when it comes to pain management and signs and symptoms of atypical menstruation. Some miss the signs of endometriosis because period pain was positioned as normal during their education (Ferfolja et al., 2023, p.500)
- Only 16.2% of menstruating students globally felt completely confident to manage menstruation at university with bathroom facilities, privacy, and pain management all proving to be barriers to participation (Munro et al., 2022, p. 5)

## Recommendations for Schools





I will then break out participants into 4 smaller learning stations. Each station will last approximately 5 minutes. I will use a timer and circulate amongst participants. These stations are intended to serve as further exploration for adult participants, and offer a few ways in which the participants could integrate some of these tools into their classrooms.

### 1) Menstruation Station Trivia: Review the Menstrual Cycle

Cue cards with a question on one side and an answer on the back.

Question	Answer
What are some treatments for physical symptoms of PMS?	Non-steroidal anti-inflammatory drugs (NSAIDs) are often recommended for physical pain but most menstruators do not seek help for psychological pain due to mental health stigmas (Armour et al., 2019, p. 2, 8)
What are some treatments for psychological symptoms of PMS & PMDD?	Oral contraceptives are used for psychological treatment of period symptoms and selective serotonin reuptake inhibitors (SSRIs) can be prescribed for psychological relief of period symptoms and in the case of disorders like PMDD. Sometimes SSRIs are only taken in the luteal phase of treatment (Dilbaz et al., 2021, p. 139-144). In more extreme cases, estrogen-boosting hormone therapy is used and in the most extreme circumstances bilateral oophorectomy or hysterectomy is performed (Dilbaz et al., 2021, p. 145)
What hormone results in more psychological symptoms when low?	When estrogen levels are lower during the luteal phase, vulnerability to psychiatric symptoms increases (Handy et al., 2022).
What hormone, when increased, heightens stress responses?	When higher levels of progesterone correspond with outside stressors, progesterone is converted to cortisol which increases stress responses and decreases emotional processing (Handy et al., 2022)
What significant events can change the volume of the hippocampus, the site of emotional regulation, and cognition?	Menarche, pregnancy, the menstrual cycle, and menopause all trigger significant brain changes. The hippocampus has a high concentration of estrogen and progesterone receptors and during estrogen-dominant phases it can actually increase in volume (Zsido et al. 2023, p. 761).
What are some factors that can delay the onset of menstruation?	In some populations, stressors such as trauma, chronic illness, migration, and even extreme sports training can also delay the onset of menses (Parent et al., 2003, p. 683)
How long is a typical menstrual cycle in the first gynecologic year?	21-45 Days in the first gynecologic year (American Academy of Pediatrics, 2006, p. 2246)

When does a person's cycle length normalize?	A person's cycle length is usually normalized around the 6th gynecologic year which is approximately at the age of 19 or 20 (American Academy of Pediatrics, 2006, p. 2246)
How long is a typical menstrual cycle?	28-35 days (American Academy of Pediatrics, 2006, p. 2246)
What is the name for the absence of periods?	Amenorrhea (Czajkowska, 2019, p. 1)
Aside from humans, what other species of animals menstruate?	Menstruation is a unique primate and human evolutionary feature; outside of the ape family, there are very few species of mammals that menstruate (Critchley et al., 2020, p. 629)
What is deciduization?	What marks deciduization from the reproductive cycles of other mammals is that the release of an egg, in humans, occurs monthly regardless of the presence of an embryo or not (Critchley et al., 2020, p. 639)
What is the difference between the uterine cycle and the ovarian cycle?	The uterine cycle consists of menstruation, the proliferative phase, and the secretory phase (Hello Clue, 2024). The ovarian cycle includes the follicular phase (before ovulation), ovulation (the release of an egg), and the luteal phase (after ovulation) (Hello Clue, 2024).

## 2) Cycle Tracking Tools

Participants examine the cycle tracking tools I have provided and brainstorm ways they could create one to fit their purposes. I will provide handout copies for participants to take.

DATE \_\_\_\_\_

<b>PRE-TRAINING</b>	PHASE OF CYCLE (Circle) <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <b>Follicular Phase</b>            (First 2 weeks)         </div> <div style="text-align: center;"> <b>Luteal Phase</b>            (Last 2 weeks)         </div> </div>	<b>PERFORMANCE STATE SELF ASSESSMENT</b> Hours of Sleep _____ Nutrition _____ Digestion _____ Cravings _____ Energy _____ Cramps _____ Soreness _____ Headache _____ Nausea _____ Other _____
	GOALS _____ _____ _____ _____	
<b>POST-TRAINING</b>	NOTES _____ _____ _____ _____ _____ _____ _____	<b>PERFORMANCE STATE SELF ASSESSMENT</b> Mood _____ Relationships _____ Training intensity _____ Energy _____ Recovery nutrition _____  <b>MY DAY WAS</b> Great      Okay      Awful

Above is an athlete cycle tracking tool I developed.

**Imani's Period Diary**

Below is an example of Imani's period diary: Imani started tracking her period in December. She uses a period emoji 🩸 to mark the days that she is on her period.

From the example, you can tell that Imani's menstrual cycle is 29 days (from 6th January to 3rd February) and her menstrual flow is 5 days (from 6th January to 10th January.)

	Jan	Feb	Mar	Apr	May	Jun
1						
2						
3						
4						
5						
6	🩸	🩸				
7	🩸	🩸				
8	🩸	🩸				
9	🩸	🩸				
10	🩸	🩸				
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**Common Signs Before My Period**

- Headaches
- Abdominal pain
- Ache
- Bloating/weight gain
- Fatigue
- Soreness of breasts
- Back pain
- Moody

Everyone experiences their period differently. If you experience other symptoms that are not on this list, that's okay. Take note of them.

**Notice a Pattern?**

Be on the lookout for regular or irregular patterns in your menstrual cycle. Does your period start after a certain number of days, a specific day of each month, or the same week each month?

If your period has a regular pattern, you can predict when it will start next. If you do not notice any pattern in your period, you have an irregular period, which is normal.

**Create Your Own Diary**

After tracking your period for a year using this diary, you can print or create your own as instructed below.

- Using a pen and notebook, draw a table similar to the one here
- Customize the diary to your liking
- Teach your friends how to create and track their own

Name:	Year:											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1												
2												
3												
4												
5												
6												
7												
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31												

My menstrual cycle is \_\_\_ days      My menstrual flow is \_\_\_ days

Above is a manual cycle tracker that is downloadable for free from *She's the First*.

I will add the discussion prompt, “What would you like to see in a menstrual cycle tracking journal?” and “How could you empower students to individualize this process?” It is also important to mention here that educators should never collect any data or information from these cycle trackers. If a student wants to share something from their journal with you they can, but this should never be used for assessment and students should always have a choice if they wish to track their cycle or not.

### 3) School Audit: How do you already support menstruators? Where are there areas of growth?

Answer the following questions yes or no.

- 1) Does your school have extra clothes you can borrow if you bleed on your own clothes during the day? Y/N
- 2) Are breaks between the classes long enough for you to go to the bathroom? Y/N
- 3) Do you learn about how to tell the difference between typical menstrual pain and atypical menstrual pain in health class? Y/N
- 4) Do all genders have menstruation and puberty education together? Y/N
- 5) If your school has uniforms or you use uniforms for sports, are they in a colour that won't show blood if you leak? Y/N
- 6) Are there always pads & tampons available for free in an accessible place? Y/N
- 7) Can you take a test in class or do fitness testing in PHE on a different day if you are not feeling your best? Y/N
- 8) Are your bathroom bins cleaned regularly during the day? Y/N
- 9) Is there always soap in the bathroom? Y/N
- 10) Do you have an adult in the building who you can talk to about your period? Y/N
- 11) Do teachers go over where and when bathroom visits will be on field trips? Y/N
- 12) Do you have access to pain management at school eg. advil, or hot pack? Y/N
- 13) Is there a club that supports girls & non binary folks that you can join? Y/N
- 14) Are there visible symbols of allyship for 2SLGBTQIA+ in school spaces like the cafeteria or gym? Y/N
- 15) Are teachers empathetic when you tell them you have your period? Y/N

Now it's time to figure out your school's accessibility grade. What grade will you give your school?

13 – 15 points

Terrific! Your school has lots of supports for menstruators with almost no barriers. Well done, Inspector!

10 – 13 points

Good! Your school has many supports for menstruators with just a few barriers. Well done, Inspector!

7 – 10 points

Ok. Your school has some supports for menstruators, but it has some barriers. Well done, Inspector!

0 – 6 points

Needs work. Your school has limited supports with many barriers. Finding barriers is a good thing. Well done, Inspector!

What ideas can you share about how to improve the experiences of menstruators in your classroom and/or school?

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#### 4) Menstrual Joy & the Benefits of the Menstrual Cycle

Many of these questions are personal and intended to allow menstruators to explore and share their own experiences. Participation and sharing is by choice and no person is mandated to share. These will be displayed as cue cards with a discussion prompt on the front, and some relevant information on the back.

What are some ways you cope with pain?	Exercise can reduce cortisol levels and exercising 3-4 times a week can reduce the intensity of dysmenorrhea pain and can potentially reduce stress and therefore mental pain including fatigue and headaches. However, there is not enough research to claim the benefits to mental health (Armour et. al., 2019, p. 2, 8)
Does your response to other people change throughout your monthly cycle?	The hormone fluctuations of the cycle provide beneficial immunity that is timed to protect a potential embryo. An interesting hypothesis on behavioural immunity identifies how the cyclical immunity of the menstrual cycle activates different behaviours in menstruators. For example, some menstruators are more cooperative in the follicular phase, whereas sexual desire and activity often decreases in the midluteal (rising progesterone) phase. There is also a correlation between higher progesterone levels and “disgust sensitivity” (Alvergne et al., 2018, p. 408). This hypothesis suggests that mensutrators have adapted behaviours to avoid pathogen exposure when their immunity is lower (Alvergne et al., 2018, p. 408)
In what types of sports is the gender gap of performance the smallest?	The time gap in racing events between male and female athletes is smallest in the events of the longest duration; in long-distance swimming, female athletes outperform males (Tiller et al., 2021, p. 896)
How do you notice energy and fatigue impacting your cycle?	While there are many factors contributing to the rate of development in sport, including sociocultural reform of recent decades, females generally demonstrate more capacity for fatigue resistance than males (Tiller et al., 2021, p. 896, 898)
Do you notice physical strength changes throughout your monthly cycle?	The hormones estrogen and progesterone both help to mediate metabolic rates with estrogen contributing to muscle size and strength (Tiller et al., 2021, p. 904)



## ***Conclusion***

While many schools support menstruators in some ways, there are still gaps in both knowledge and pedagogical implementation. Many menstruators are not empowered with the accommodations, supplies, knowledge, and empathy they require to attend school without participating in risk management behaviours. Often this means menstruators will be absent, distracted, or feel social evaluative threat and shame during their school day. Without this important knowledge, menstruators and educators may miss the signs to seek mental health assistance or to reach out to a doctor for pain. The goal of this action piece is to help destigmatize menstruation, highlight ways in which mental health and menstruation are interconnected, and provide practical ways schools can be more accommodating and empathetic for this demographic of learners. In this way, we can bring more equity and success to our menstruating student population.

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