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Menstrual Patterns and Identifying Health Trends

Rusudan Vadatchkoria

Batumi Shota Rustaveli State University

Devasi Rupal Ramesh

Batumi Shota Rustaveli State University

Abstract: Menstrual cycle is natural and one of the most important processes of female life, which gives us insight about significant hormonal and behavioral changes in female organism. In this regard, in order to have a better understanding of the different, and very specific factors, associated with menstrual health status, we conducted a survey study of some aspects of menstrual period. The survey was based on several targeted groups of the age between 8 and 49 years old, Indian and Georgian women. Various assumptions were made on behalf of the survey regarding the menstrual health and factors affecting or relieving the menstrual cycle related problems. Besides, the survey was a precious confirmation of the assumption of females conceive, that menstrual cycle affects their everyday lifestyle, the survey research method undoubtedly has some priorities to facilitate the understanding of real circumstances and to provide a basis for planning subsequent studies, which will certainly be expanded and deepened in the near future. In addition, factors that may be associated with the state of menstrual health, as well as the level of awareness of the female population about the characteristics of the menstrual cycle are shown. The final achievement of this study is a broader knowledge of the characteristics of the female body during these rather difficult days in the life of every woman, in order to properly manage this period, better adapt to everyday life and maintain normal ongoing activities.

Keywords: Menstruation, Tracking, Modifiable, Non-modifiable factor.

Introduction

Menstrual period in the female health has some natural and important physiological and psychological parameters. It is insight to hormonal balance and co-ordination, to understand menstrual cycle and its pattern and the alleviating and prevocational factor, which affect menstrual cycle is very important, since hormonal imbalance can lead to various disorder, such as: mood swings, depression and affect work life and day to day life of female, in this case, having better understanding of menstrual period features are very important. Menstrual health is not just about periods, its far way more important and deeper than understanding of your own body, ensuring the holistic care to one's body, tracking cycle, prioritizing mental, social and emotional factor affecting menstrual cycle. In various regions of Asian countries, even the speaking about Menstruation it's still a topic of stigma and embarrassment, therefore awareness regarding Menstrual health, hygiene and association with everyday lifestyle and its affect are less known by population. Apart from this, there are various modifiable and non-modifiable factors, which affect menstrual cycle, including eating habits, sleep cycle, smoking, drinking, exercise, stress, genetics, chances in environment, and etc.

Methods

To test the assumption of the "Menstrual Patterns and Identifying Health Trends" we conducted an online survey among women of menstrual age (8yrs-49yrs) (N=115) from India and Georgia. Based on the previously

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developed on-line questionnaire the females' responses done remotely and were collected. The obtained data were statistically processed, summarized in the tables and presented in diagrams for further discussion, analysis and conclusions.

Result and Discussion

Menstrual Cycle Duration

In scientific term, menstrual cycle is regulated by complex interplay of hormonal changes in endocrine system. It consists of distinct phases, such as menstruation, the follicular phase, ovulation and luteal phase. Duration of menstrual cycle means the time interval between onset of one menstrual period (the first day of bleeding) and onset of next period. The average length of menstrual cycle is individual and varies from person to person. However, the healthy cycle is considered between 26 to 35 days (in average 28-30 days). Menstrual cycle duration is one of the major indicators of reproductive health, although there are various factors, which can influence menstrual cycle, namely stress, hormonal imbalance, side effect of medication, weight, exercise.

Certain Medical Condition, Hormonal Contraceptive

In order to understand the factors influencing menstrual cycle, set of an online questionnaire was prepared and were answered by female participants. Collected and analyzed responses regarding the menstrual cycle duration are demonstrated below accordingly (Figure 1).

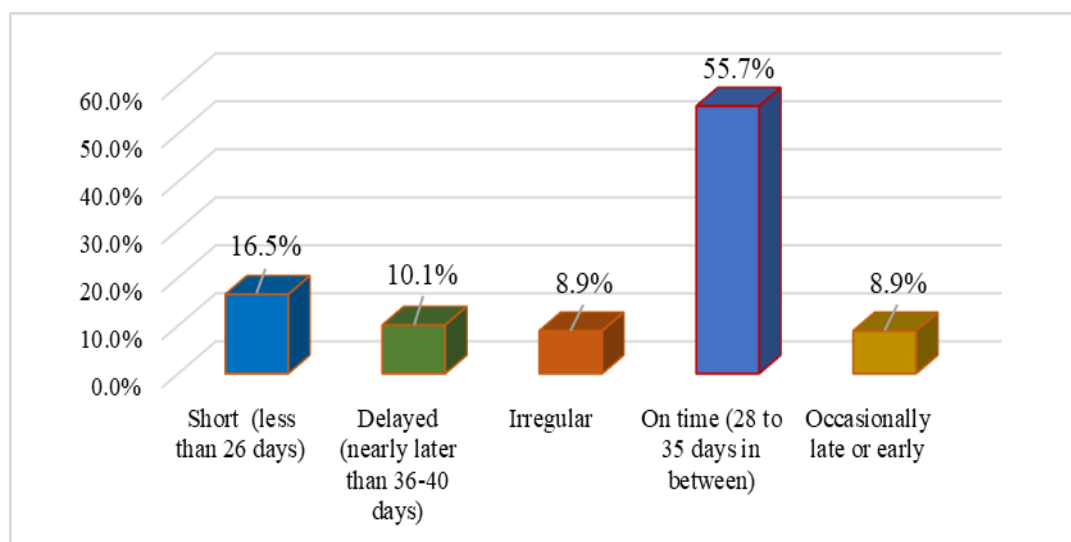


Figure 1. Character of menstrual cycle

Based on the survey results, about 55.70% of female are having healthy menstrual cycle duration falling within in range of 26 to 35 days; whereas around 16.50% of women are having early periods. From other side, roughly 10.10% of females are contend with delayed periods, lasting from 36 to 40 days, and about 8.90% participant encountered irregular menstrual cycle characterized by occasional lateness or earliness.

The data collected from online survey suggest that around 44.4% of females have imbalance in their menstrual cycle either maybe early, late, or irregular. There can be various factor affecting the cycle. Given that this study relies on observation and online surveys, its limitation lies in its inability to ascertain the root cause of irregular periods. Nonetheless, imbalance in menstrual cycle serve as a significant indicator for individuals to consider making improvements in healthy habits, lifestyle or seeking consultation with medical professionals for a thorough evaluation. The survey with similar study was conducted by Grieger J.A., which stated, that the average typical 28 days cycle length is not common for enough high percentage of female. Only 13.08% of women noticed their ovulation on 14th day, rest of them have very varied cycle, which is, again, affected by varied causative factors, and cultural and ethnic diversity tends to play a major role as well. (Grieger, 2020).

Menstrual Flow Duration Currently; Change in Flow in First Year of Menarche; Regularity in Flow

Menstrual flow usually consists of combination of blood, uterine tissue and mucus which is shedding of uterus during the period of menstruation. The amount of menstrual flow varies in every woman, and can differ in every cycle. There can be large variation in flow in females, which can also be categorize as normal flow depending on time and associated factor, unless and until flow is consistently not lighter and nor heavier.

In the conducted survey, when enquired about the women current status of flow duration as depicted in (Figure 2), around 60.30% of women experience their flow for 3-5 days and 26.90% of women indicated that their menstrual flow extended for duration of 5-7 days, while roughly 9% reported a flow lasting 2-3 days and 3.80% women reported having menstrual flow for more than 7 days.

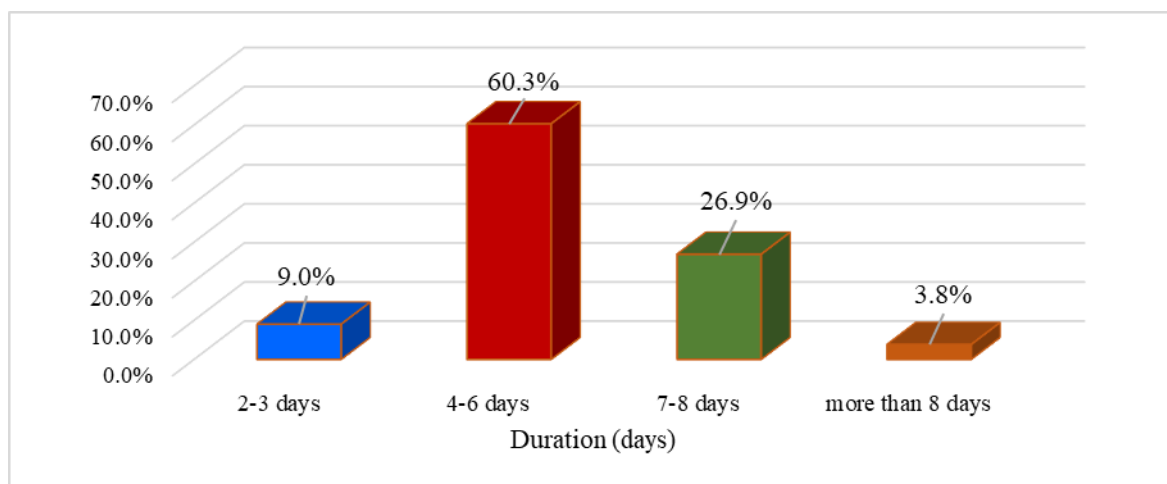


Figure 2. Duration of first year menstrual cycle

Similarly, in order to study how the flow of menstrual cycle varies among female, we drafted a set of additional questions concerning the first year of menarche character, which is done in the graph below (Figure 3).

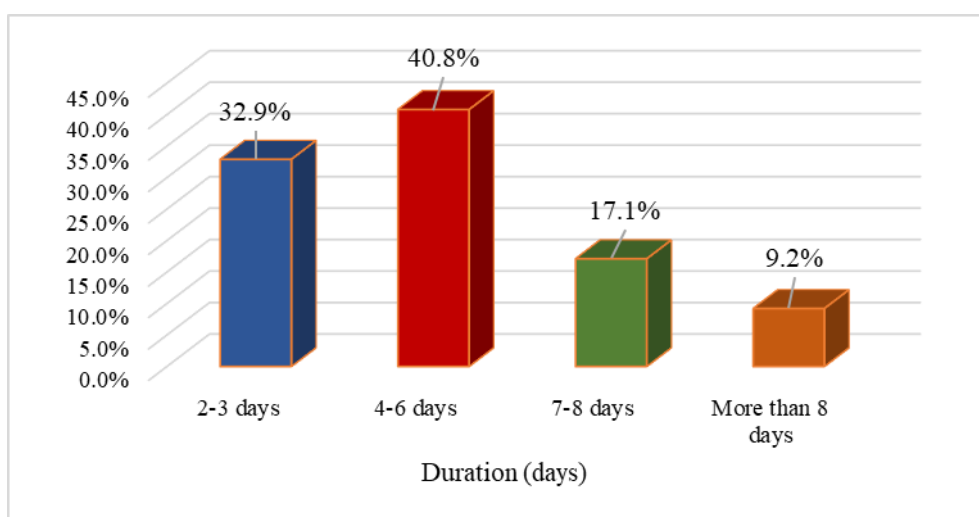


Figure 3. Duration of first menstrual period (for the period of survey)

During the first year following menarche, it was observed that moderate number of female experienced menstrual flow lasting for 5-6 days, while small proportion participants reported menstrual flow duration of 7-8 days, and roughly around 9.20% young women had a flow lasting more than 8 days. Supporting these empirical findings, a parallel study conducted in Tbilisi corroborated this observation by identifying oligomenorrhea as most prevalent menstrual cycle disorder. Oligomenorrhea is characterized by infrequent menstrual periods, typically marked by extended intervals between cycles. These investigations collectively yield valuable insights into the variation of menstrual flow duration and prevalence of menstrual cycle flow days among the participant during initial year of menarche (Dzhorbenadze, 2006), whereas amenorrhea can be caused by a broad spectrum

of causes, such as anatomic deficiencies of the reproductive tract and hormonal disorders. (Deligeoroglou, 2010).

The other set of questions which was put forward, concerned the first year of menarche regularity and demonstrated, that about 69.20% female had regular period or menstrual cycle during first year of menarche, whereas by around 30.80% females' irregularity of period was noted. One of study conducted by Williams via pediatric gynecology department stated, that menstrual disorders in adolescent girls are very common and their periods can be irregular, heavy and/or painful, especially in the first few years following menarche. (Williams, 2012).

To be exact and deepen the study in regularity of flow of women, which previously, during first year of menarche had irregular flow, some questions regarding regularity of periods was put forward further (when periods became regular and is the flow still irregular?). Received data are evaluated and reflected on the diagram below (Figure 4).

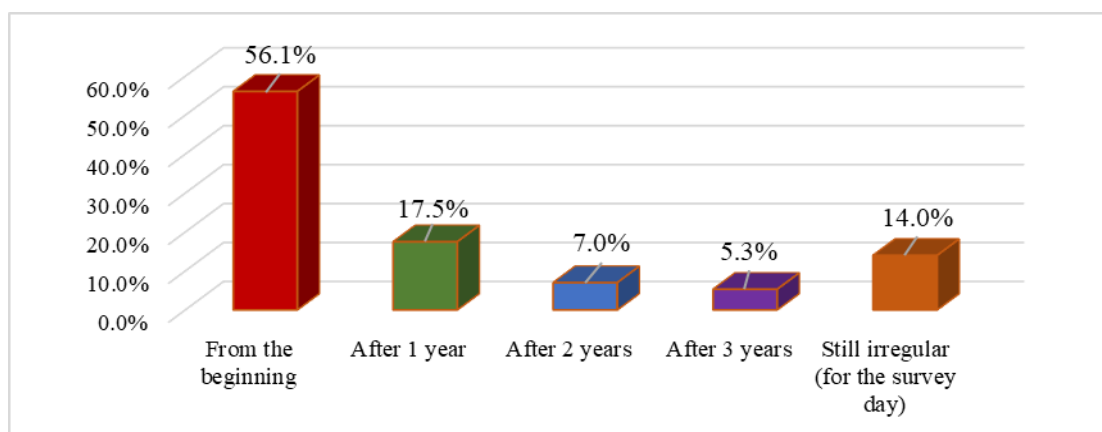


Figure 4. Stabilization period of menstruation

The evaluation of received results stated that around 14% of female are still facing irregular menstrual flow, 56.10% had regular menstrual flow during their first year, whereas 17.50% females after 1 year, 7% after 2 years, and 5.30% after 3 years. The irregular flow during first few years of menarche is considered as normal, unless other associated symptoms are absent. However, the major concern here can be seen after analyzing responses is, that 14% females are still experiencing irregular flow.

Menstrual Pain

Menstrual pain or dysmenorrhea is one of the most common symptoms among menstruating women, and usually ranges and varies from female to female. Along being one of the common symptoms, it can also be pioneer symptom to identify if there is any abnormality presented. The survey results are demonstrated below (Figure 5).

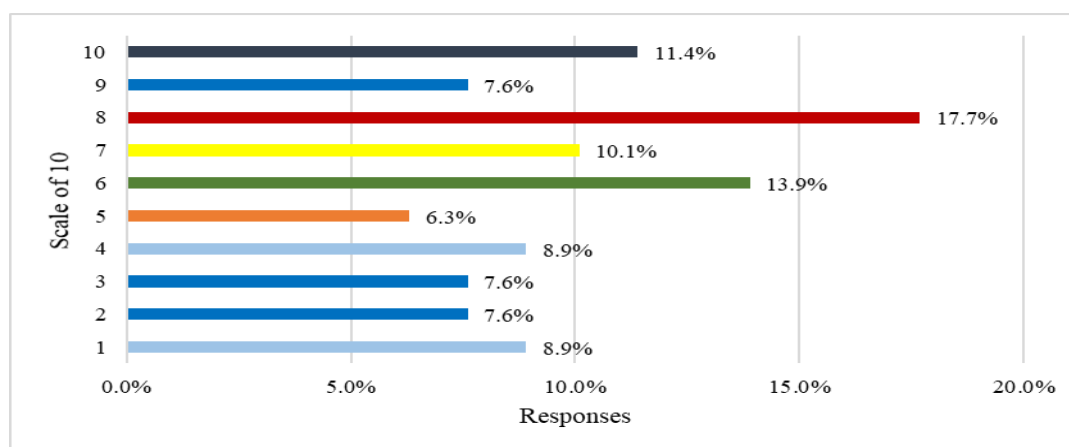


Figure 5. Rating of menstrual pain on the scale of 1 to 10

In these regards participants were asked to rate the menstrual pain on a scale of 1 to 10. According to data received, it is observed that approximately 11.40% participant report experiencing extreme menstrual pain, rating it at the highest intensity of 10 on scale 10. Additionally, 7.60% women rate their menstrual pain at level of 9, while an equal percentage, 7.60% assign a rating of 3 and 2, respectively, on the pain scale. Furthermore, 17.70% of females feel pain at an intensity of 8, 10.10% marked at level of 7 and 13.90% at 6. A lower percentage, 6.30% rate their menstrual pain at 5 and 8.90% of females assign a rating of 4 and 1 respectively.

In the context of dysmenorrhea, it is categorized in two groups. The first is known as Primary Dysmenorrhea, which entails pain associated with menstruation and is supposed to be not attributed to any underlying medical condition. The etiology of primary dysmenorrhea is often linked with hormonal factors, such as the release of substance like prostaglandins and vasopressin. On the other hand, the second category, Secondary Dysmenorrhea, is characterized by menstrual pain that is consequence of underlying medical condition. It is imperative to identify and address the root cause of dysmenorrhea for effective management. (Marjoribanks, 2015). The above (Figure 5) statistics underscore the significance of understanding the various levels of menstrual pain experienced by women, with notable portion reporting from moderate to severe discomfort.

Evaluation of menstrual pain by medical profession or doctors also was included in the current online survey. The result of the responses received and analyzed revealed around 63.30% female even after having menstrual pain never visited hospitals or been consulted to medical professionals, 13.90% females visited doctors during the starting years of pain, 21.50% females sometimes do visit a doctor, and around 1.30% female regularly visit doctor and follow medical advice regarding their menstrual pain. (Fig.6). Similar result is stated in one of the studies, which reveals the fact, that dysmenorrhea is the major health problem in adolescent, therefore, awareness about this issue should be increased (De Sanctis, 2015).

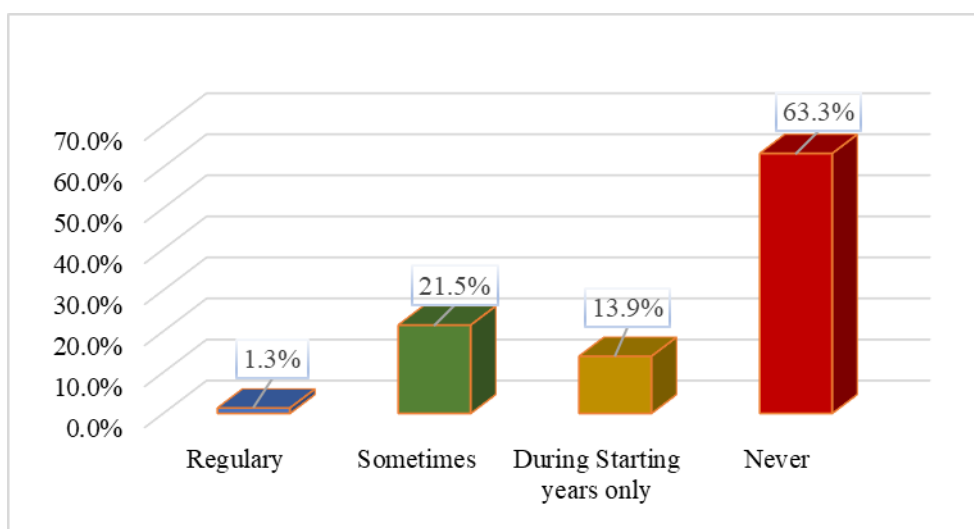


Figure 6. Visiting a doctor concerning the menstrual pain

Medications for Menstrual Pain

Menstrual pain may impede lifestyle of women. In order to avoid any interference in their day-to-day life and to gain relief from pain, many females all over the world take medication. The survey revealed, that around 41.80% of females are taking medication for menstrual pain whereas 58.20% of respondents do not need or abstain from taking of any kind of medications.

There have been contacted various studies for the aim to know the prevalence of females taking medication for menstrual pain, one of which stated that around 86.14% of female from the study participant are following pharmacological methods for menstrual pain (Tataj-Puzyna, 2021). Similar study conducted stated, that 25% women systematically take medication for relieving menstrual pain (Grandi, 2012).

The exact period of medication intake started were also determined and it was estimated that around 78% of study participants started taking medication in the recent years, whereas 22% of females were taking from start of menarche. Regarding the frequency of taking medication intake it was ascertained, that around 48.80% of

females take medications occasionally, 34.10% women just on the first day of menstruation and around 17.10% of females - on every menstrual cycle and precisely for more than two days.

More details about widely used specific pharmacological drug among participants of the study, is demonstrated on the Fig 7. In particular, the study showed, that 65.10% of women use Meftal-Spas, 12.20% uses Ibuprofen, 10.40% - Dexagin Sachet, 7.30% - Paracetamol, and 5% of women uses Cetrolac.

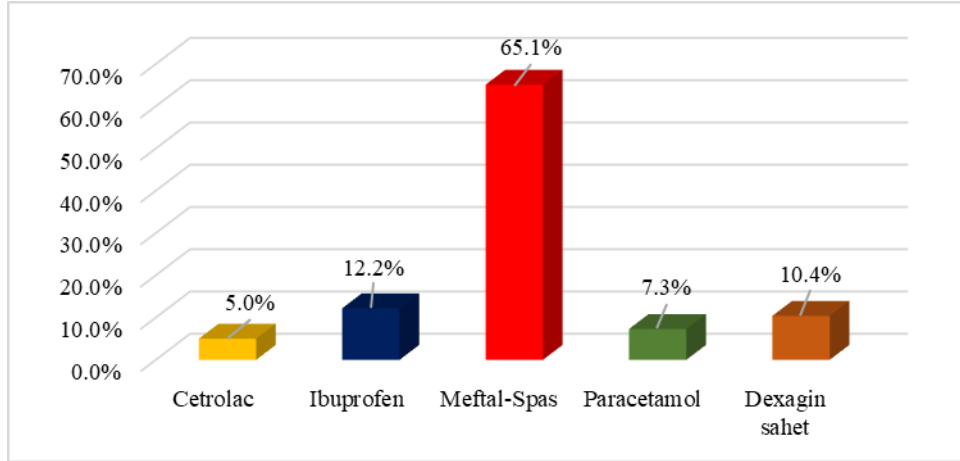


Figure 7. Type of intake medicine

Mood Swings/ Cravings during Menstrual Cycle

Mood swings and cravings are the very common premenstrual or menstrual symptoms seen in population. The symptoms widely range from female-to-female and can be experienced before the menstruation or during menses, as given below in Fig. 8. There are wide variety of feelings or emotions, which participants of online survey experience. 49% females stated that they feel irritated, 37% females feel anxious and anger, 27% females noted more fatigue, 21% females were not able to concentrate on work, 17% had the sense of hopelessness, 14% stated loss of appetite, 5% described some other kind of emotions and 6% of females did not feel any such mood swings.

Similar study conducted by Nworie among Nigerian students stated the prevalence of pre-menstrual symptoms among participant is enough higher (Nworie, 2018). Another meta-analysis study (Ramcharan, 1992) affirm that the prevalence of pre-menstrual symptoms among females have been increased during 1996-2011.

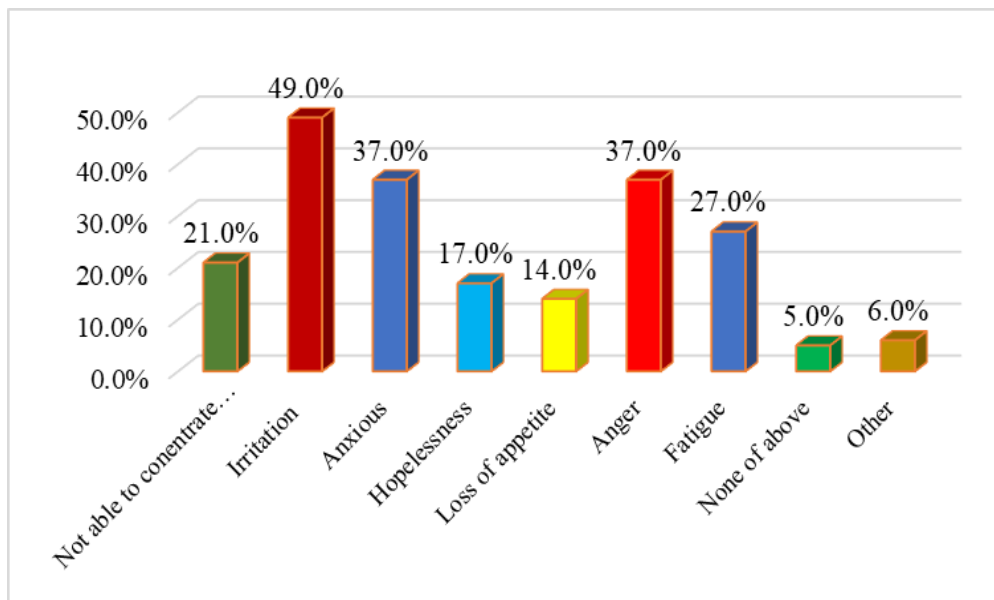


Figure 8. Mood swings or changes experience during menstrual cycle

Among the menstruating females one of the main symptoms which is seen in participants is craving or binge eating during or before menstrual cycle. As depicted in the image below (Figure 9) 41% of females stated that they crave for junk foods, 40% of women - for sweets products/deserts, 12% of females - dairy products, 11% participant - cold drinks only, or none of any such thing respectively.

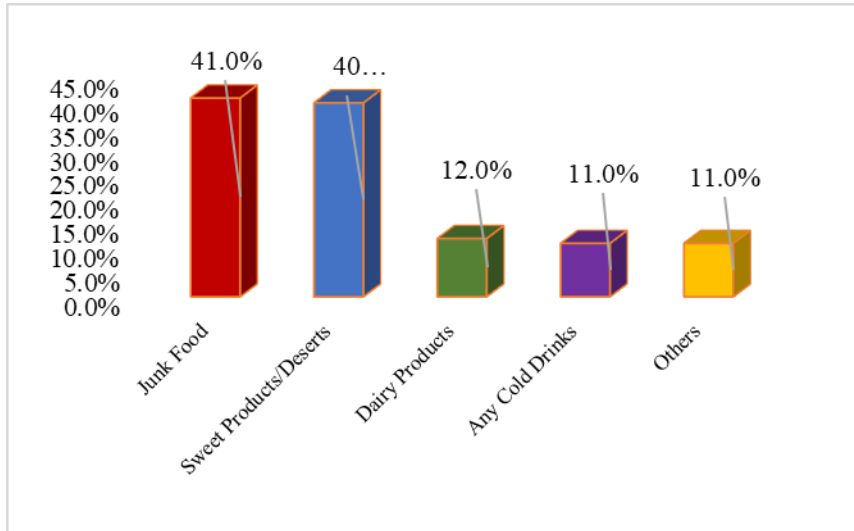


Figure 9. Craving types of food during the menstrual period

The menstrual cycle/period cramps and their effect on their day-to-day life evaluation asserted, that 49.49% of women think they have menstrual pain/mood swings which affect their life and various other activities, in contrast 39.20% participants perceive it as intermittently influencing their circumstances of day-to-day life and 11.40% of females think that menstrual pain/mood swings have no impact on their day-to-day life. Correspondent study was conducted among Mexican students, and it was deduced that dysmenorrhea constituted one of the factors contributing to short-term absenteeism among the student population (Ortiz, 2009).

Menstrual Tracking, Diet, Exercise Impact

In social media there are various kinds of technological applications, like “Flo App for menstrual cycle - calculate menstrual cycle”, “Flo tracker”, “Period tracker”, etc.), which are developed to track menstrual cycle. The Flo App have the inbuilt feature to predict next menstrual cycle, to assess the symptoms and emotions which females are feeling, and can prognose female’s ovulation day respectively. To evaluate the utilization of menstrual cycle tracking applications, a series of questions was formulated, and findings demonstrate, that 54.40% women do track their menstrual cycle, whereas 45.60% of them do not control their menstrual cycle.

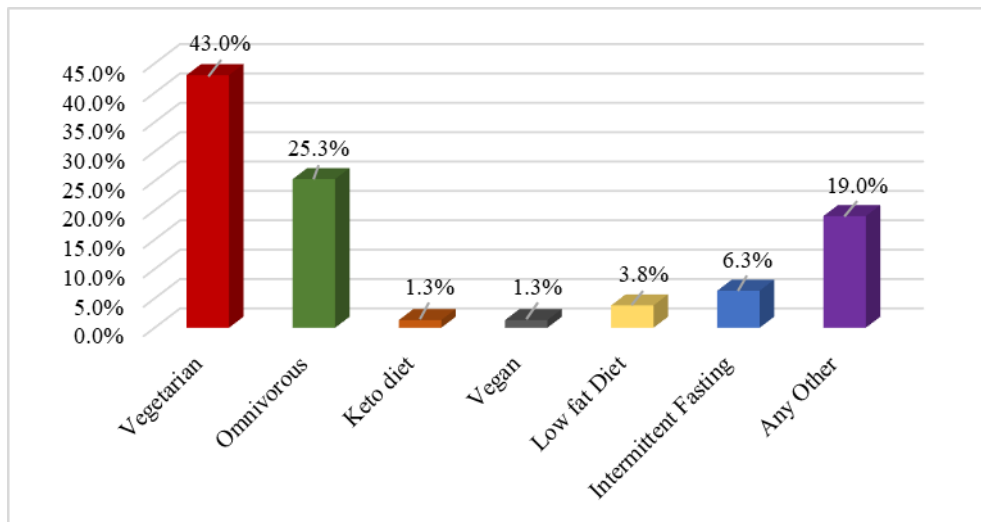


Figure 10. Type of usual diet

Diet has great impact on menstrual cycle. As it seen below (Figure 10) 43% of females choose vegetarian diet, 25.30% have opinion, that their diet have to be omnivorous, 19% review other type of diet, which are not specifically mentioned, 1.30% think that their diet should be keto and 1.30% vegan respectively, 6.30% females state that they are intermittent fasting, and 3.80% females prefer low fat diet. Due to great diversity in diet of women it cannot be highly assured, that their menstrual cycle is probably being affected or not including other various causative factors

The impact of physical activity on menstrual cycle regularity was noted in responses: for 77.20% females exercising routine or physical activity have a great impact on menstrual cycle, 22.80% females stated that physical exercise do not have any impact on their menstrual cycle.

Disorders

There is various correlation of various disorders, high body mass index (BMI), and hormonal changes, which evidently have impact on menstrual cycle (Figure 11). It was revealed, that 57% of females have no specific disorder, 9% of participants expressed, that they are suffering with depression symptoms, 6% are noted overweight, 4% stated polycystic ovary syndrome, 3% females are suffering from endometriosis, and 2% females have the thyroid related problem. Clarification the question whether there are other female close relatives with similar dysmenorrhea problem shown, that 52.90% females have other family member with similar kind of pain, and 47.10% female stated that they don't have any other female with dysmenorrhea in the same family.

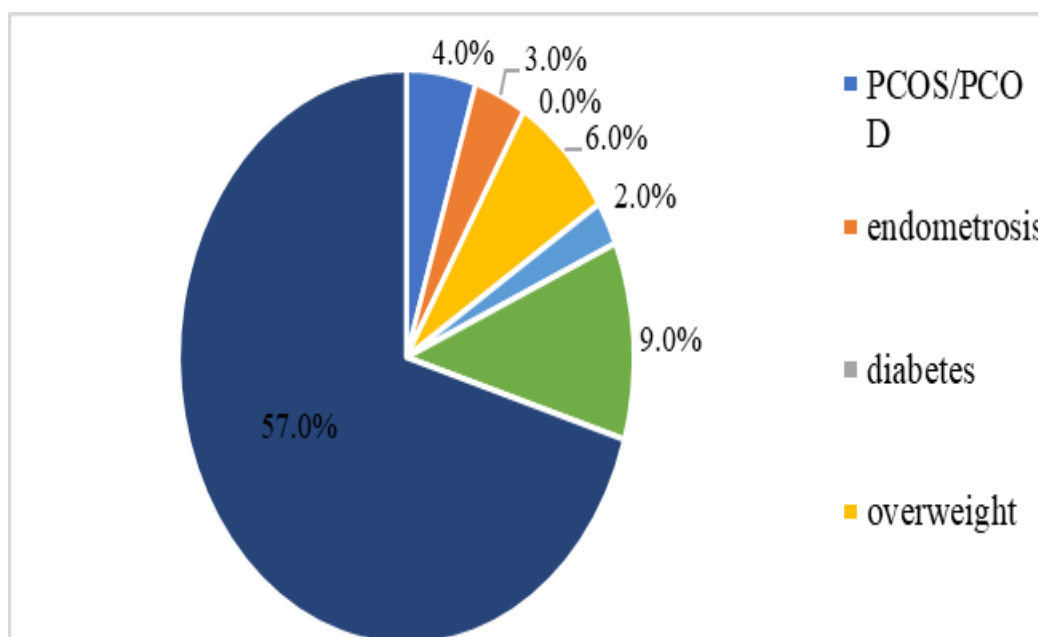


Figure11. Any past or current history of the following health problem

Conclusions and Recommendations

From all the data collected and analyzed from online survey and various studies supporting with the received information as evidence it can be concluded the followings:

1. Among the study participants the most are Indian and Georgian women with the age between 18 and 49 years old;
2. In target groups the menstrual flow duration for 3-5 days was noted, while during first year of menarche the flow lasted for 5-6 days;
3. Menstrual cycle/period cramp has a great impact on their day-to-day life, due to various pre-menstrual symptom faced by females, it has negative impacts on their work and study lives;

4. Even after having menstrual pain or dysmenorrhea majority of female population do not visit a medical profession, or do not seek medical professional help. Therefore, it's very important to increase awareness among women;
5. Women on large scale track their menstrual cycle to understand their ovulation timings and their cycle period;
6. Physical activity, diet and sleep routine has major impact on their menstrual cycle;
7. On a large-scale female has been using Meftal-Spas (NSAID) for dysmenorrhea. These are medications, which are taken largely for menstrual pain, but due to study limitation it couldn't be identify the kind of dysmenorrhea (primary or secondary);
8. Desserts/Chocolates are consumed on large scale before and during menstrual cycle, Junk food is majorly consumed by females before their menses;
9. The genetic variation, ethnicity (Indian and Georgian in study survey), diet, lifestyle and habit, are diverse, so we directly cannot conclude about the common causative factor of dysmenorrhea or menstrual cycle length variation reason, but despite this, some patterns have nevertheless been identified and research in this area is expected to be continued and in-depth.
10. Presented information is very essential to support updates of existing clinical guidelines concerning menstrual cycle length and patterns for clinical use in Indian and Georgian fertility programs, as well as to supply women with wide popular information about women's health and to increase their awareness about their specific period.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPHELS journal belongs to the authors.

Acknowledgements or Notes

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Author Information

Rusudan Vadatchkoria

Batumi Shota Rustaveli State University

Address: Georgia, Batumi, 6010,

Ninoshvili/Rustaveli str. 35/32, Georgia

Contact e-mail: rusudanvadatchkoria@gmail.com

Devasi Rupal Ramesh

Batumi Shota Rustaveli State University

Address: Georgia, Batumi, 6010,

Ninoshvili/Rustaveli str. 35/32, Georgia

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