УДК 612.542:618.17-008.8

Ashraf Eman, Abdullah Reem

Scientific supervisor: Ph.D., Associate Professor I. A. Korbut

Educational Establishment
«Gomel State Medical University»
Gomel, Republic of Belarus

IMPACT OF FASTING ON MENSTRUAL CYCLE

Introduction

Fasting can trigger both stress and hormone imbalances, both of which can be detrimental to your menstrual cycle. Hormonal fluctuations are closely tied to the menstrual cycle, and changes in dietary patterns, including fasting, can lead to various menstrual irregularities. Intermittent fasting can also decrease estrogen levels. This happens because of a hormone called kisspeptin. Kisspeptin stimulates the production of luteinizing hormone (LH) and follicle-stimulating hormone (FSH). Fasting can cause kisspeptin to decline, which can lower your overall estrogen levels. Lower estrogen levels can negatively affect your menstrual cycle, also tied to amenorrhea and infertility. In addition, estrogen levels also start to decline the week before your period starts. The decline in estrogen can be very stressful on your body and can trigger your cortisol levels to rise even more. Menstrual cycle alone imposes physiological stress on the body and fasting during this time can further aggravate this stress with declining estrogen levels. From day 1 up till about day 10 to 12, our body is building estrogen and it is a great time for the body to be in a fasted state and for longer fasts. The week before your cycle is the time for synthesis of progesterone hormone, recommended to eat hormone building foods and avoiding ketosis [3]. Fasting, whether for religious, health, or dietary reasons, has become increasingly popular in recent years. During the month of Ramadan, it is estimated that, worldwide, millions of healthy adult Muslims are required to abstain from food and drink from dawn to sunset daily. While the benefits of fasting include weight loss, improved metabolic health, and enhanced mental clarity, its impact on women's reproductive health, particularly the menstrual cycle, is less understood. Considering that the menstrual cycle plays a significant role in women's health and disease, evaluating the effect of fasting on it seems necessary [1].

Goal

The aim of this study is to investigate the effects of fasting on menstrual cycle

Material and Methods of research

We performed study in a population-based random sample. Subjects were female. At the beginning of investigation, detailed medical histories of the participants were taken via a questionnaire including demographic and fasting and menstrual calendar characteristics. We questionnaire 101 female participants.

Information on body mass (kg) and stature (m) were obtained from all participants and BMI was calculated. All statistical analysis of the study was performed using Microsoft Excel and SPSS Statistics version 29.0. Analysis was done by nonparametric Chi-square test to evaluate the distributions. P-value for menstrual pattern between these times were 0.017 that indicate significant probability distribution of individuals. As for the evaluation of the degree of association between groups, Pearson's and Spearman's correlation coefficients were used. A probability level lower than 5% ($p<0.05$) was considered significant.

The results of the research and their discussion

The study population comprised 101 female subjects with mean age 24.03±5 years. Among the participant's majority of them practiced Ramadan fasting (70.3%) followed by intermittent fasting (12.9%) and other (12.9%) and water fasting (4%). Duration of fasting hours each day reported were <12 hours (25.6%), 12–16 hours (57.8%) and >16 hours (16.7%). Regarding menstrual cycle characteristics among the participants, 30.7% females reported very regular (cycle is consistent), 53.5% females reported somewhat regular (cycle length varies by few days) and 15.8% females reported irregular (cycle length varies significantly) prior to fasting. Majority of individuals reported an average menstrual cycle length of 21–35 days (61.4%) followed by cycle length <21 days (29.7%) and >35 days (8.9%). Majority of individuals reported menstrual flow as moderate (76.2%), followed by light (11.9% and heavy (11.9%) menstrual flow. Among the common symptoms experienced included mood swings (79.2%), cramps (68.3%), fatigue (64.4%), bloating (52.5%), breast tenderness (39.6%) and so on. 28.7% females reported changes in their menstrual cycle due to fasting having prior regular cycle throughout. Among them 52.9% female noticed changed during the period of fasting, 32.4% after the fasting month and 14.7% before the period of fasting. The majority of females who reported changes in their menstrual cycle during the month of fasting had previously experienced regular cycles. Notably, 81.8% of the participants indicated that their menstrual cycle changes returned to normal within one month after fasting while 18.1% reported that it took 2–3 months for their cycle to stabilize. Regarding stress levels and menstrual changes, it was observed that 14 out of 29 (48.3%) with low stress, 30 out of 50 (60%) with moderate stress and 9 out of 13 (69.2%) with high stress reported changes in their menstrual cycle. With regard to daily fasting hours and menstrual changes it was seen that 32 out of 52 (61.5%) with 12–16 hours fasting, 8 out of 15 (53.3%) with >16 hours fasting, 10 out of 23 (43.5%) with <12 hours fasting reported changes in their menstrual cycle. Association between fasting and change in menstrual cycle was statistically significant ($p<0.05$) with strong positive relationship between them and between daily fasting hours, stress levels and physical activity showed moderate positive correlation. The analysis indicates that increased fasting durations, longer daily fasting hours, moderate to high stress levels, and varying levels of physical activity are positively correlated with changes in menstrual cycle. The statistical significance of these correlations suggests that fasting may indeed influence menstrual health.

Studies have shown that fasting can decrease LH levels, which is crucial for ovulation and menstrual regularity [2]. Short-term fasting may not cause significant changes in menstrual cycles, but prolonged fasting can lead to hormonal disruptions, particularly affecting estrogen and progesterone levels. Extended fasting can result in the absence of menstrual periods or amenorrhea, especially in women with low body fat or pre-existing hormonal issues. Women with low body fat may experience more significant disruptions in their cycles during fasting because lower body fat percentages can lead to decreased estrogen levels, potentially resulting in irregular cycles or amenorrhea. Some women experience more frequent menstrual cycles due to hormonal fluctuations caused by fasting. Fasting can also cause lighter menstrual bleeding which may be attributed to lower estrogen levels. During the month of Ramadan, people actually experience repeated cycles of fasting and refeeding. In addition, there is a significant change in the daily patterns of behavior such as sleeping pattern. The impact of fasting on menstrual cycles can differ widely among individuals, influenced by factors such as baseline health, body composition, and stress levels. Longer fasting durations are associated with more pronounced changes in menstrual patterns, indicating a direct correlation between fasting length and menstrual health. Fasting can also improve menstruation and fertility in females

with polycystic ovarian syndrome (PCOS) by treating hyperandrogenism. [2] The majority of women report at least one menstrual cycle classified as irregular, and about 37% report both short and long cycles. College-age young women frequently experience a variety of menstrual-related complaints, including dysmenorrhea, menorrhagia, irregular menses, and menstrual-related mood changes. [1]

The analysis shows that fasting duration has varying degree of correlation with menstrual cycle changes. 8 out of 20 individuals (40%) with fasting duration <1 year, 5 out of 9 individuals (55.6%) with fasting duration 1–5 year and 34 out of 62 individuals (54.8%) with fasting duration >5 year reported changes in their menstrual cycle. The strong positive correlation is seen in those fasting for more than 5 years, which is also statistically significant ($p<0.05$). In contrast, shorter fasting durations exhibit moderate correlations that are not statistically significant. Therefore, longer fasting duration shows highest reported changes and these changes occurred in majority individuals during the period of fasting.

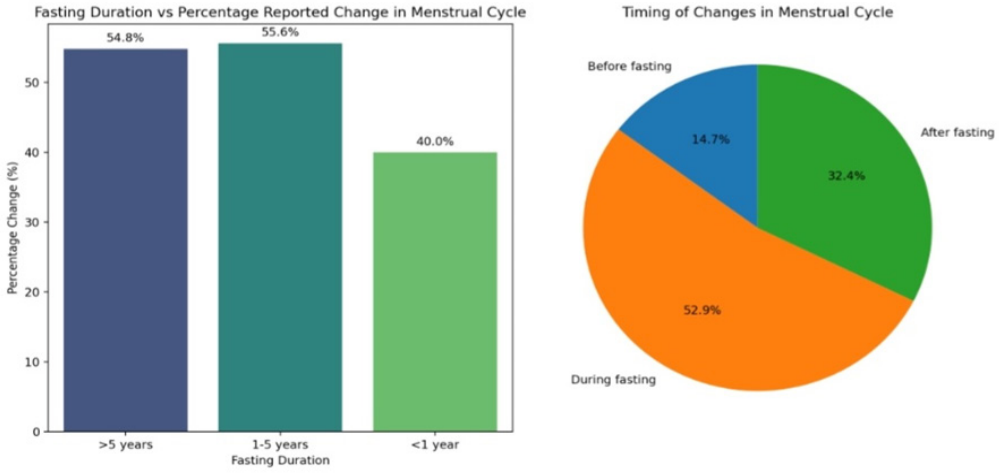

Figure 1 – Relationship between duration of fasting and changes in menstrual cycle

Conclusions

We found that 14.7%, 52.9%, and 32.4% of participants had irregular menstrual patterns before, during and after Ramadan, respectively.

Menstrual abnormalities including polymenorrhea and hypermenorrhea increase during Ramadan. Hormonal imbalances may lead to conditions such as amenorrhea, polymenorrhea, and hypomenorrhea, with individual responses varying widely. Weight changes and overall health effects were also noted, with some participants reporting weight loss or improvements in conditions like PCOS. While fasting alone may not directly cause significant changes in menstrual cycle, it can play a key role alongside other factors such as stress, body composition, and overall health. For individuals practicing long-term fasting, especially during periods like Ramadan, it may be important to monitor menstrual health and consider how fasting practices could be influencing their cycles. This analysis highlights the need for further research to better understand the mechanisms behind these changes and to provide guidance for balancing fasting practices with menstrual health.

LITERATURE

1. Does Ramadan fasting has any effects on menstrual cycles? / M. Yavangi, M. A. Amirzargar, N. Amirzargar [et al.] // Iran J Reprod Med. – 2013. – Vol. 11(2). – P. 145–150.

2. Effect of Intermittent Fasting on Reproductive Hormone Levels in Females and Males: A Review of Human Trials. / S. Cienfuegos, S. Corapi, K. Gabel [et al.] // Nutrients. – 2022. – Vol. 14(11) – P. 2343.

3. Annierubin. Fasting and your menstrual cycle// The Autoimmune Dietician. – URL:https://annierubin.com/fasting-your-menstrual-cycle.