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Research Article

Dynamics of Mood Swings during Menstrual Cycles between Physically active and Inactive Adolescents: A Tripura-based Study

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Abstract:
The menstrual cycle is an important biological process in women that is associated with a range of physical symptoms that can shape how women think, feel, and participate in daily life activities. This study employed a qualitative survey design to investigate the effect of physical activity and menstrual cycle on mood variability in adolescents. Purposively, 40 participants from Tripura University (n=20, physically active and n=20 Inactive) completed the Brunel mood scale questionnaire that explored menstrual cycle events: anger, tension, depression, fatigue, confusion, happiness and calmness. The participants' response was further analysed descriptively through percentage analysis and differences between physically active and inactive students were assessed using the Mann Whitney-U test. The descriptive results depicted a mean rank of 16.20 and 24.80 of mood swing among Physically Active Students and Physically Inactive students respectively which shows a higher mood swing in inactive women. The significant difference was observed between physically active students and physically inactive students (two groups as U-value was 114.000 which was smaller than the critical value i.e., 127). Persons involved in physical activity have less chance of mood swing compared to sedentary people. In addition, the study concluded that regular moderate exercise helps reduce factors that enhance mood swing during the menstrual cycle.
Keywords: Depression, Fatigue, Inactive, Menstrual Cyle, Mood Variability, Physically Active

1. INTRODUCTION

The menstrual cycle is a monthly event that occurs in women. This cycle is a normal and healthy part of every woman, and it is one of the most important events in womanhood because it is the only way to bring new life into this world (Kashyap & Choudhari, 2023). The duration of the menstrual period typically lasts from 2 to 7 days. Over time, girls experience different changes such as anger, depression, stress, happiness, and many other mood conditions (Singh et al., 2022). The condition of sudden change or enormous change in the moving state is the mood swing factor in humans. Everyone experiences mood swings from time to time, and psychological facts such as feeling happy or sad, getting angry, frustrated, and being easily irritated indicate severe mood changes (Hussein et al., 2022). It mainly occurs because of hormonal changes in the human body and is a rapidly and intensely fluctuating emotion (Hantsoo et al., 2023). All the factors that disrupt people's daily life, including stress of work, relationships, and uncertain occurrence of any event, etc., make people moody and uncontrolled outbursts of frustration, temperament, irritability, and depression-like condition can arouse (Schmalenberger et al., 2021). During this period of the menstrual cycle, women go through different stages, and being moody or having mood swings is one of the most common factors. The condition of mood swing arouses because of changing factors in the body, among which hormonal change is one of the general factors (Itriyeva, 2022). Fluctuations in hormonal balance and estrogenic production in women affect mood. During the menstrual cycle, one experiences different fervent shifts, which may differ from person to person (Findlay et al., 2020). Some people report not feeling any difference, but some people become very different during their entire menstrual period (OBOS anatomy and menstruation contributions, April 01, 2014).

The premenstrual phase of the cycle seems to be the increased vulnerability for the appearance of a period of severe depression along with ongoing period of depression is also measured (Pritschet et al., 2020). In addition to depression, they also experience many other psychological mood-changing factors, the most common being a feeling of frustration due to uncomfortable conditions during periods, easily irritability, aggression, and bipolar disorder. Haryanti

& Legiran (2023) This condition varies from person to person and matters according to the physical and biological state, and this factor arouses mood swings in women. To identify individual differences in mood swings during the menstrual cycle, this study was conducted to assess the comparative status of mood swings among Physically Active Students and Physically Inactive Students.

Witkoś & Hartman-Petrycka (2021) conducted a study aimed on effect of physical activity on pain, mood disturbances and cognitive function during the menstrual cycle. 30 women were taken for sample and 15 were divided as experimental group and other 15 were divided as control group. The experimental group were performed 30 minutes of physical activity during the first three days of their menstrual period and other controlled group were performed their normal routine during the menstrual period. The resulted were taken through PSSAT and VAS scales. Experimental group showed with p-value < 0.005 while the controlled group showed p value > 0.005. As per the result the study concluded that women with physical activity during menstruation have positive change as compared to the women with no physical activity.

Rajbhar et al. (2021) conducted a cross sectional study on 1000 healthy young women between the age range of 11-28 years and standardized self-reporting questionnaire were used. The information of physical active and inactive females was compared by using chi squared test by SPSS 16. Their result showed that young women with involvement in physical activity had positive effect on menstrual characteristics. Therefore, the study concluded that it is necessary to do regular physical activity to reduce menstrual cycle disturbances.

Prado et al. (2021b) conducted a comparative study between oral contraceptive users and non-users on mood swings across the menstrual cycle. In this study a total of 62 young women between the age group of 20 to 25 years were presented, with a regular menstrual and not clinically depressed. Eighteen women were oral contraceptive and forty-four were non users. To collect the daily records of five weeks of mood, irritability, energy and tension visual analog ratings were used. However no significant differences were found between the two groups. The study concludes that oral contraceptives do not change the physiological fluctuation and mood during menstruation in young healthy woman.

Sachs et al. (2023) conducted a study on relation between mood changes and the menstrual cycle to 30 healthy young women. In the point of view of this research, there was no correspondence between one-time retrospective reports and the actual reports of mood in the menstrual cycle. 50 percent of the group had their lowest, 40 percent felt worst, and 10 percent have a low at mid cycle. Interview and psychological test information suggest that these two major groups may differ in some important attitudes and feelings.

2. MATERIAL AND METHOD

The study was designed with a main objective to find the status of mood swing during the period of menstrual cycle between Physically Active Students and other students. Total of N = 40 subjects of 23-28 years of female students were purposively selected, where twenty (n = 20) were physically active and twenty (n = 20) were physically inactive. The Brunel mood scale questionnaire which was developed by Mc Nair, Dropplemen and Lorr (1971), consist of 32 questions dealt with eight variables like anger, tension, depression, vigour, fatigue, confusion, happy and calmness, each with four items (Lew et al., 2023).

The researcher explained questionnaire clearly and read the instructions to the subjects to fill the questionnaire. The researcher has also given all the required items to fill the questionnaire. To know the strength of feeling of mood swing “five points” Likert scale was used. The formats of scale are given as: extremely = 4, quite a bit = 3, moderately= 2, a little= 1 and not at all = 0. To obtain raw data, in accordance with Brunel mood scale questionnaire “five points” Likert scale (extremely = 4, quite a bit = 3, moderately= 2, a little= 1 and not at all = 0) score percentage was distributed for Physically Active Students and Physically Inactive students as subject of the study. Descriptive statistics and Mann-Whitney U test were used for analysing data. The level of significance was set at 0.05.

3. RESULT AND DISCUSSION

3.1 Result

Statistical finding of mood swing factor among the students of Physically Active Students and Physically Inactive Students tables are shown below.

Table 1. Percentage distribution of Moods swing Level on Numerical Rating for Physical Active students and inactive students as Subject of the Study

	Number of Samples	Not at all	A little	Moderately	Quite a bit	Extremely
Physically Active Students	20	19.57%	18.61%	38.18%	16.98%	6.66%
Others Students	20	13.61%	16.93%	25.95%	26.42%	17.09%
Total Subject	40	17.97%	19.06%	27.89%	22.81%	12.27%

It was highlighted from the above table-1 that the percentage of mood swing level among Physically Active Students, Physically Inactive students and total of Physically Active Students and Physically Inactive students were rated on numerical point of zero to four (0=not at all, 1=a little, 2= moderately, 3 = quite a bit, 4 = extremely). The response over the Physically Active Students (N=20) on not at all, a little, moderately, quite a bit and extremely were 19.57%, 18.61%, 38.18%, 16.98% and 6.66% respectively. The result showed that Physically Active Students faced mostly moderate mood swing during the menstrual cycle. The response over the others students (N=20) on not at all, a little, moderately, quite a bit and extremely were 13.61%, 16.93%, 25.95%, 26.4 2% and 17.09% respectively. The result showed that other students faced mostly quite a bit mood swing during the menstrual cycle. However, the total subject (N=40) on not at all, a little, moderately, quite a bit and extremely were 17.97%, 19.06%, 27.89%, 22.81% and 12.27% respectively. The result showed that Physically Active Students and Physically Inactive students faced moderate mood swing during the menstrual cycle.

Table 2. Difference on mood swing among the students of Physically Active Students and Physically Inactive students

Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W
Physically Active	20	16.20	324.00	114.000	324.000
Sedentary	20	24.80	496.00		
Total	40				

*Significant at 0.05 level

The above table-2 shows mean rank of mood swing among Physically Active Students and Physically Inactive students were 16.20 and 24.80 respectively.

The result of the Mann-Whitney U Test on mood swing during the menstrual cycle revealed the difference in mood swing among Physically Active Students and Physically Inactive students. It was found significant difference of mood swing among the two groups as U-value was 114.000 which was smaller than the critical value i.e., 127.

Table 3. Mean, Standard Deviation and t-test of Mood swing sub variable Anger, Tension, Depression, Vigour, Fatigue, Confusion, Happy and Calmness among Physically Active Students and Physically Inactive students

Name of the Variable	Subject	No. Of Subject	Mean	Standard Deviation	t-value	p-value
Anger	Physically Active Students	20	1.55	±0.905	2.853	0.003
	Other Students	20	2.4125	±1.004		
Tension	Physically Active Students	20	1.37	±1.043	2.868	0.003
	Other students	20	2.012	±0.879		
Depression	Physically Active Students	20	1.87	±0.854	2.478	0.009
	Other Students	20	1.837	±0.804		
Vigour	Physically Active Students	20	2.0375	±0.722	1.235	0.112
	Other students	20	2.35	±0.871		
Fatigue	Physically Active Students	20	1.9	±0.958	2.315	0.013
	Other students	20	2.575	±0.885		
Confusion	Physically Active Students	20	1.6	±1.053	1.542	0.066
	Other students	20	2.05	±0.772		
Happy	Physically Active Students	20	1.975	±0.734	0.047	0.481
	Other students	20	1.987	±0.944		

Name of the Variable	Subject	No. Of Subject	Mean	Standard Deviation	t-value	p-value
Calmness	Physically Active Students	20	1.975	±0.854	0.137	0.446
	Other students	20	1.937	±0.877		

The above table table-3 shows the 't' value of mood swing sub variable i.e anger, tension, depression, vigour, fatigue, confusion, happy and calmness. As the critical t value and computed p-value of anger (2.853, 0.03); tension (2.868, 0.003); depression (2.478, 0.009) and fatigue (2.315, 0.013) were lesser than the significant level 0.05 there is a significant difference in mood swing during menstrual cycle among the two group. However, it was found insignificant difference in vigour (1.235, 0.112); confusion (1.542, 0.066); happy (0.047, 0.481) and calmness (0.137, 0.446) as the critical t value and computed p-value was greater than the significant level 0.05 among Physically Active Students and Physically Inactive students.

3.2 Discussion

The result of the study revealed that the condition of sudden change or enormous change in emotional state is the mood swing factor in human. It mainly happens due to the hormonal change in human body, and it is the condition which is known as the rapidly and intensely fluctuating emotion (Ramesh et al., 2022). Women's emotion and menstrual cycle symptomatology are positively impacted by physical exercise, and there was notable change in mood during menstrual cycle. With the study carried out there was insignificant change in calmness along with the interference of physical exercise in different individual during menstrual cycle. The level of calmness and arousal is abided according to the individual during menstrual cycle (Kanning et al., 2021). Women who get themselves involve in moderate physical activities help them to cope up in daily normal activity like any other regular days. And also, it has been set up that the influence of any kind of middling physical fitness course help to overcome with PMS problems and other problems like anger, depression and tension. By reducing these problems factors, it brings balance to the daily leaving of the women (Muhammad et al., 2022). The inactive physical state of women can cause them to go through mood swings, such as changing their moods within a short amount of time. Regular physical activity has been shown to have a positive impact on mood and emotional regulation. Exercise promotes the release of endorphins and other neurotransmitters like serotonin and dopamine, which can help stabilize mood. According to the Harvard Health Blog, exercise improves mental health by reducing anxiety, depression, and negative mood and by improving self-esteem and cognitive function. Women who engage in regular moderate physical activity help to stabilize the condition of PMS and reduce the negative mood swing among the menstruating women (Mahindru et al., 2023). The high intensity training was beneficial in reducing the negative effects of mood swings in females (Castanier et al., 2021). For women, especially those experiencing hormonal fluctuations due to menstrual cycles, pregnancy, or menopause, HIIT has been shown to help in regulating hormonal imbalances. This regulation can mitigate severe mood swings. Research in the Journal of Women's Health Physical Therapy suggests that high-intensity exercise can help stabilize hormones, reducing the intensity and frequency of mood swings (Kundakovic & Rocks, 2022). However, it is also seen that the sedentary girls and student suffer during menstrual cycle and live in a constant fear menstruating signs such as depression, fatigues, anger. And for the majority physical activity is the way to reduce the condition like psychological and physiological factors (Saglam & Orsal, 2020). Female has the higher level of degree to plummet in different psychological factors like tension and depression as compare to male because of monthly loss of blood known as monthly cycle, and this type of psychological factors can be reduced by involving themselves into regular moderate physical activities. And involvement in moderate physical exercise has helped the women to reduce the PMS (Pre-menstrual Syndrome) and inclusion of physical exercise helped to aid the depression more (Saglam & Orsal, 2020).

The monthly event in woman life is combination of triumph and agony at the same time, furthermore this study has given an out-turn that there is a different significance in some factors which are anger, depression, tension and fatigue but there is also an insignificance differences other psychological factors that are vigour, confusion, happy and calmness which reveals that the factor of menstrual cycle affects the women living. And the study shows that because of the participation in lessen physical activity it helps to make the few psychological factor trouble free and plain sailing living; therefore, the moderate physical activities will improve the health outcome among women (Prado et al., 2021a).

CONCLUSION

It is apparent from the findings that the study concludes with a significant different among physical active women and physical inactive women. The person who are involve in physical activity having less chance of mood swing as compared to sedentary people. The study also concludes that engaging in regular moderate exercise help in reducing the factors which enhance the mood swing during menstrual cycle. Involving in the physical activities regularly decreased the negative menstrual psychological symptoms. Physical inactive women facing differentpsychological factors like depression, anxiety, vigor, anger due to the hormonal changes during the menstrual cycle. And there was a positive impact on mood factor during menstrual cycle after involving regular physical exercise. So, everyone especially women should engage to physical activity, regular exercise to lessen the psychological factors which affect during the monthly cycle.

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