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Primilinary study of affinity of estrogen on mood swings among females of Hyderabad, Sindh Pakistan

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Abstract
The main aim of the present study was to find out estrogen level with respect to menstrual cycle and effects on mood swing among girls. The proposed study was descriptive in nature. The target population of the study was comprised on 100 girls with range of age in between 13-22 years. During present study mood swing were observed through questionnaire and blood investigation of estrogen level in three phases. Data was collected during January 2016 to December 2016 from schools and colleges of Hyderabad region for the first time. This study is based upon three phases these were as Phase I showed observation before menstruation. Phase II showed observation during menstruation and Phase III showed observation after menstruation. In findings headache, depressive mood, mood change, sleep problem, mental confusion, irrational anger, tension, showed lack of motivation and increased fatigue. The obtained consequence of laboratory and questionnaires clearly indicates the estrogen levels have strong impact on mood swings in girls. This study is carried out first time from Hyderabad and has excellent impact on school and college girls. Majority of the girls goes to stress due to unawareness about the facts of menstrual cycle, which is a biological phenomena. The girls take it serious and go to stress and create other conceptions in their mind. This study will be help them during menstrual cycle and will aware them about this biological process.

Keywords: preliminary, affinity, estrogen, mood swings, females, Hyderabad, Sindh, Pakistan

Introduction
Estrogen (Oestrogen) is the female sex hormone which is created from ovary and in small amount from adrenal gland (AG) and in insignificant amount from liver. It has influence more supplementary than four hundred (400) jobs in female. This female gland is considered as mood changer, winch or pulley in girls. The grown-up girls have at drastically superior risk or, danger up to two and a half times that of men, of having a mood disarray well studied by [1, 2, 3]. In adding together the accomplishments it move up the tempo of devastate of monoamine oxidase (MAO) and intra-neuronal serotonin (INS) transportation, estrogen provide to raise serotonin accessibility in synapse and consequently boost up the mood. To gather alteration in estrogen levels is stumble upon in a variety of phases and involvements interconnected to a female's reproductive which is biological process and phase of low estrogen are connected with mood turbulence, together with gloominess, sadness in many adult females. As the word estrogen is a Greek word taken from estrus which means manufacturing the compounds, the 3 three naturally happening estrogens glands are as: E1, E2, and E3. The EH play an indispensable role in the enlargement and progress of female (SSC) Secondary Sexual Characters like the growth and enlargement of the breasts, increase of pubic and armpit hairs, growth of endometrial, and the instruction of the (MC) menstrual cycle and reproductive system. In females ovaries are the major sites for estrogen hormone synthesis. The estrogens hormones are unconventional from ovarian follicles and from the corpus luteum (a yellowish mass tissue formed after ovulation) following the discharge of an ovum or egg as of the follicle and the placenta. FSH causes the release of estrogen hormone or secretions and conversely, estrogen inhibits the release of FSH; which is known as negative feedback loop. At youth or puberty females ovaries start in on discharging the estrogen hormone in association with each and every month hence called monthly menstrual cycle. Intensity of EH go up unexpectedly mid menstrual cycle MC, which bring forth the discharge of an ovum or egg. The EH level or intensity then superficially declines subsequent to ovulation. This endogenous, Female Sex Hormones (FSH) frequently flow all the way through the blood circulation in the body, work together with cells in a variety of goal or target cells and tissues in the body of the female and distribute a message in the case just point out; the message is ovulate or form and egg. Estrogen family divided into three classes 1. Estrone (E1) 2. Estradiol (E2), and 3. Estriol (E3) This E1 hormone considered as weak or minor female sex hormone (FSH) which is a form of estrogen and is the major estrogenic form found in naturally menopausal women who are not taking Hormone replacement therapy (HRT). The E1 or oestrone is the only estrogen with the intention of is present in any quantity in females subsequent to menopause. E1 is the only hormone which is slightest copious of the three hormones. The E1 is made in small quantity in the majority tissues of the body; conspicuously fat and muscle, further see the molecular structure of the E1.

Effects of estrogen on mood swings
Estrogen not only influence many parts of brain only but are transformed the brain occupations and mood swings (MS). As in the hypothalamus, estrogen manipulates levels of neurotransmitters that standardized the temperature and the

sleep matters. The modifications of the dopaminergic, cholinergic, GABAergic, glumatergic and the serotonergic time-honored. It is also a potent antioxidant and anti-inflammatory mediator which is known to get better memory and attentiveness or concentration. May perhaps be due to age-related turn down or decline in females are predominantly vulnerable to loss of verbal memory. Girls regularly or often have unpredictable MS which are caused by unknown events or some unknown occurrence. Though the females are extremely dissimilar but many times MS and touchiness are used interchangeably. The unexpected changes in feeling or emotion, mood or temperament are the examples of MS, but the impatience or anger towards an event is irritability. The MS in females or women are unexplainable for the reason that they are tremendously exasperating. The premenstrual syndrome PMS affects a percentage of female (women) of childbearing age, while in many cases females feeling mood revolutionizes in the days earlier than menstruation. Like menstrual warning signs are mostly petulance, anger and MS are monthly inconvenience for most females. For some severe PMS can be emotionally debilitating women can be helped regarding to these issues i-e mood changes and other emotional difficulties by treating PMS with medication and life-style changes. In emotional regulation and development of depression, reproductive hormones are also thought to be involved. Some large epidemiological studies using interview measure have found a significantly greater incidence of major depression in females than in man (overall ratios of about 3:2) in the United States US and in some additional Nations according to [4]. While according to Cohort analyses, the sex dissimilarity in gloominess appears at adultness or adolescence and the ratio leftovers stable over a 40-year period [5, 6, 7]. Further the research recommend that the greatest risk for female or women is between the commencement of puberty until the mid-50s and intensify with hormonal alteration, such as suggest itself during premenstrual, postpartum, or perimeno pause [8, 9, 10, 11, 12, 13].

Materials and methods

To study the various effects of female estrogen gland (FEG) especially on mood swings in girls from Hyderabad region was carried out by two methods one by chemical analysis of the blood during the menstrual cycle and by questionnaires. The present project of research was accomplished upon 100 girls of different age groups enrolled in schools of the Hyderabad region. It was formulated while knowing the importance of estrogen gland secretions (hormone level) during menstrual cycle on mood swings in girls. Partakers were 100 girls having the age above 13 and below 20. No partakers took any contraceptive medication. All the partakers were volunteers. Foremost all the girls were demonstrated the importance of the Oestrogen or estrogen. On their request they were given guarantee while their name will not be mentioned in the thesis and nor their photo or videos. Partaker's blood samples were taken once a week for four to six weeks, in order to cover all stages of menstrual cycle and processed in ISRA, Hospital Hyderabad for chemical analysis. 5ml blood of girl for each interval was tested through serum estrogen by (HCG), human ELISA 96 test in ISRA diagnostic lab Hyderabad. All samples were stored at 20^{o}C until assays were performed.

Results and discussions

The present study describes the analysis of estrogen level, mood swings throughout the menstrual cycle. The total 50 girls were observed for present study from Hyderabad and Jamshoro under age group of 13 to 22 years. The total of three phases of menstrual cycle covered through sampling of blood and questionnaire. Study was alienated into three phases. Phase I showed observation before menstruation. Phase II showed observation during menstruation and Phase III showed observation after menstruation. In results of phase I which is before menstruation which is comprised on luteal phase (16 to 28 days) lasts up to 12 to 14 days of menstruation. During luteal phase level of estrogen is 75 to 450 pg/ml. Luteal phase is the final phase of ovarian cycle and it corresponds to the secretary phase of the uterine cycle. During luteal phase corpus luteum of ovary release progesterone. Increased level of progesterone in the adrenals starts to induce the production of estrogen. Fluctuation of estrogen during luteal phase triggers mood swing in females. And results of this phase showed headache by 56% girls, 54% showed depressive mood, 46% showed mood change, 44% showed sleep problem, 40% showed mental confusion, 38% showed irrational anger, 36% showed tension, 30% showed lack of motivation and 20% showed increased fatigue. According to blood analysis and questioners the following causes of Mood swings among girls were found these are overwhelm, emotional stress, constant flux between extremes, fatigue, uppers and downers, energy need and some hormonal causes. A female especially girls acts in response in a diversity of behaviors to the stress and anxiety caused by overwhelm. The causes of mood swings MS in females or women may be a variety of like an argument with her husband or spouse, disrespectful children, money troubles and difficult co-workers etc. In females, more than a few mood swings MS can be caused due to depression. Some woman put across anger while some may experience or occurrences sadness, when they are depressed. Most people pursue council only when they are disheartened but do not when they are agitated bipolar disorder is when you are in a constant flux between depression and manic extremes; this also can cause severe MS in woman. The hormone estrogen also effects on females due to lack of sleep can become extremely irritable for a woman. The females who have be deficient in sleep face complicatedness with deal with everyday stress of life. The drugs like alcohol can give a woman a far above the ground or high emotion and when she comes down, the emotions run in the other direction. Constantly having the up and downs affects both your physical and mental health. The females ingest large quantities of sugar and caffeine, due to the need for energy. These two substances can definitely cause changes in mood from the energy high to the crash when it wears off. Our mood and emotions change as the hormone of our body change. The dopamine and serotonin levels in our brain play a big role in our overall mood. When women reach a certain time during the month, they have changes in their estrogen level which affects the serotonin and dopamine levels as well. The added pain only makes the mood worse. Low level of thyroid hormone causes hypothyroidism. Condition slightly more common in women than in men is hypothyroidism. This condition affects the production of hormones that help the body burn

fat and provide the body with energy (table & fig 1).

Table 1: Showing level of estrogen in luteal phase (Phase-I)

ays	Level in pg/ml	Days	Level in pg/ml
16	230	23	316
17	115	24	125
18	125	25	136
19	165	26	132
20	256	27	147
21	217	28	113
22	269	Mean	180.46

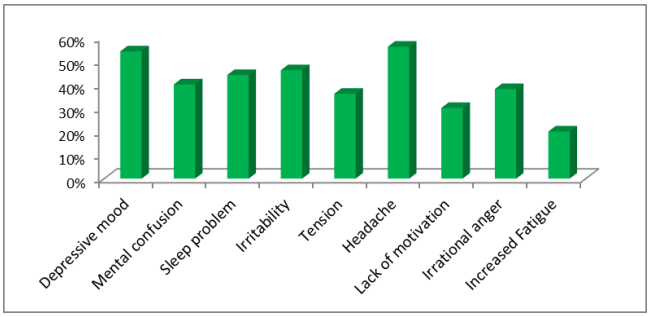

Fig 1: Histograms showing % various moods before menstruation (phase-I)

Phase II showed observation during menstruation is technically called menstruation phase (also called menstrual bleeding, menses, catamenia or periods). In this phase level of estrogen 25pg/ml to 75 pg/ml. During menstruation low level of estrogen in girls are more likely to be disturbed behaviorally. In results of phase II 74% girls showed lack of motivation, 72% showed increased fatigue, 70% showed tension, 68% showed headache, 66% irrational anger, 64% mental confusion, 62% showed sleep problem, 56% showed depressive mood and 54% showed mood change. (table & fig.2) Measured Estrogen level during menstruation.

Table 2: Showing estrogen level during menstruation.

Days	Estrogen level in pg/ml	Days	Estrogen level in pg/ml
1	32	3	41
2	29	4	19
5	22	Mean	28.6

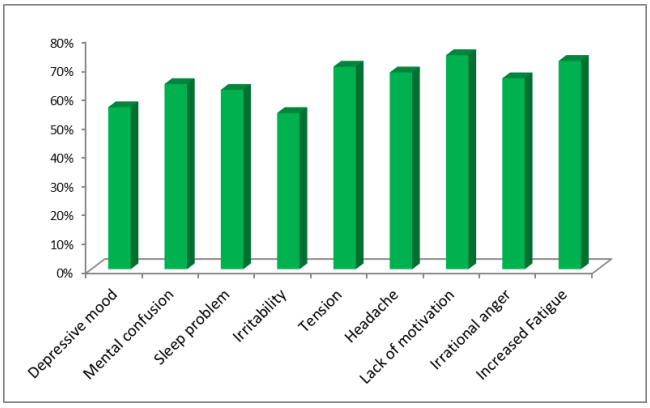

Fig 2: Histograms showing % various moods during menstruation (Phase-II)

Phase III

In results of phase III 60% showed depressive mood, 56% showed mental confusion, 54% showed sleep problem, 52% showed mood change, 50% showed headache,46% showed tension, 42% showed lack of motivation, 35% showed increased fatigue and 28% showed irrational anger. Level of estrogen after menstruation range from 25pg/ml to 195pg/ml during follicular phase and 40pg/ml to 260pg/ml during ovulation phase.

Results clearly indicated that ESTROGEN levels have strong impact on mood swings in girls. Measured Estrogen level after menstruation (table & fig.3).

Table 3: Showing estrogen level after menstruation

Days	Estrogen level in pg/ml	Days	Estrogen level in pg/ml
6	43	11	127
7	29	12	96
8	41	13	137
9	61	14	153
10	112	15	140
Mean 93.6			

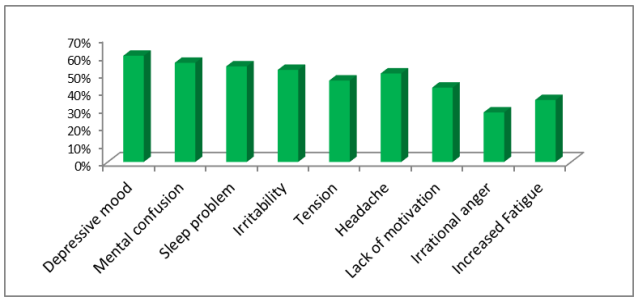

Fig 3: Histograms showing % various moods after menstruation (Phase-III)

Conclusion

Low estrogen levels can make women more vulnerable to trauma at some points in their menstrual cycles, while high levels of the female sex hormone can partially protect them from emotional disturbance, the research suggests. Self-medication affects estrogen levels. In present study it has been observed that behavioral changes such as fatigue, anger, headache and tension were at low or mild level before menstruation. During menstruation fatigue, anger, lack of motivation, headache and tension were at mild level but problems concerning with sleep were at severity level. After menstruation sleep problem, mood changes, depressive mood at mild level but problem concerning with lack of motivation, tension and irrational anger were at severity level. We can conclude from the results obtain during present study that estrogen level play a vital role in the mood swings and behavioral changes among girls.

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