THE ROLE OF NEUROTICISM, STRESS, CHRONOTYPE IN PREMENSTRUAL DISTRESS AMONG YOUNG WOMEN

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Abstract: This study aims to assess the relationship between Neuroticism, Stress, and Chronotype with Premenstrual Syndrome in young women. A sample of 120 was used in this study of girls between the age group of 18 to 25, with the mean age being 22. Four scales, the subscale of Neuroticism from NEO-FFI, Smith's Stress Symptoms Inventory, Morningness-Eveningness Questionnaire and Shortened Premenstrual Assessment Form were used. Pearson's product moment correlation showed a significant positive correlation between Neuroticism and Stress scales with Premenstrual distress. Chronotype did not correlate with Premenstrual distress. T-test was used to determine the difference between the exercising and non-exercising group on premenstrual distress. No significant differences emerged.

Key words: Chronotype, neuroticism, stress, Premenstrual distress.

Introduction: Menarche marks the beginning of a very crucial phase in the life of a woman. The little 'girl' now becomes a 'lady'. Her thoughts, looks, mannerisms, right down to her self-image all undergo a radical change. However menstrual cycles begin and sometimes continue to be erratic for women. Most women report significant pain during and especially a couple of days before their monthly periods. The Premenstrual Syndrome or PMS is any recurring cyclic symptom or combination of emotional and physical features that occur before the menstrual cycle and stop shortly afterwards (Dalton, 1964). In India, there has been no clear statistics, showing the percentage of population having 'Premenstrual Syndrome' (PMS). But according to a research (Agarwal, 2010), 50% of the female adolescents suffer from Dysmenorrhea (painful periods), in India. Surveys clearly indicate that Premenstrual Syndrome is one of the most common health issue reported by women in their reproductive age. The American Congress of Obstetricians and Gynaecologists estimates that at least 85 % of menstruating women have at least 1 PMS symptom as part of their monthly cycle. Most of these women have fairly mild symptoms that don't need treatment. Others (about 3 to 8 percent) have a more severe form of PMS, called premenstrual dysphoric disorder (PMDD). The actual causes or etiologic basis of the disorder, (PMS) is unknown. There are a lot of studies done to gain some factual knowledge about this. And this present research, aims at finding out a correlation between stress, neuroticism and chronotype with Premenstrual syndrome.

Neuroticism is defined as a disposition towards irritability, anger, sadness, anxiety, worry, hostility, self-consciousness, and vulnerability (Costa & McCrae, 1992). High Neuroticism tended to strengthen the effect of life situation change on psychological distress. It was found that temperamental dispositions were more powerful than environmental factors in predicting psychological distress. It is likely that persons high in neuroticism are more likely to engage in behaviours that increase the risk of health problems (Contrada et al, 1999). Neuroticism is also related to disruption of circadian rhythms (Murray, Allen, Trinder and Burgess, 2002). Chronotype is the concept which comes from another concept named as 'circadian clock'. It refers to an individual's preference for morning or evening hours for mental or physical activities. There are persons who prefer neither of the preference are intermediate type. These inter-individual differences are remarkable in humans, and they have a genetic basis and are heritable, although environmental, social and cultural influence controls them (Horne & Ostberg, 1997). Few studies show that chronotype or morningness-eveningness is a predictor of depressive symptoms (Randler, Stadler, Vollmer Morales, 2002). Research on young adults suggests that larks and owls differ in terms on well-being and susceptibility to psychiatric illness (DeYoung, Hasher, Djikic, Criger and Peterson, 2007) and greater subjective wellbeing (Randler, 2008). In contrast, eveningness is associated with increased susceptibility to depression (Drennan, Klauber, Kripe and Goyotte, 1991). The present study aimed to investigate the relationship between Neuroticism, Stress, Chronotype, Exercise and premenstrual distress among young women.

Method

Participants: The sample size was 120 girls in the age group 18-25, (Mean age 22). Sample was drawn from colleges, girls' hostels and educational institutions where senior collegiate girl students were ready to be a part of this research.

Tools: 1) Shortened Premenstrual Assessment Form (SPAF): Premenstrual symptoms and severity were assessed using the Shortened Premenstrual Assessment Form (SPAF). SPAF is a self-report questionnaire developed by Allen, McBride and Pirie in 1991. They developed the shortened version of the

premenstrual assessment form from the original 95 item scale developed by Halbreich, Endicott, Schacht and Nee in 1982. The SPAF consists of 10 items, which measure changes in mood, behaviour and physical symptoms during the premenstrual period. The symptoms are divided into three subscales, namely symptoms that describe affect, water retention and pain. A total score is calculated based on the summing of positive response to each symptom. The severities of the symptoms were assessed using a rating scale of 1 to 6 based on changes in comparison to the non-premenstrual state. Scale 1 indicates 'no change', 2 – 'minimal change', 3 – 'mild change', 4 – moderate change, 5 - 'severe change' and 6 – 'extreme change'. SPAF provides the same assessment of premenstrual symptomatology as the original assessment tool, as shown through its equally strong reliability (test retest coefficient range from .6 to .7) and validity (internal consistency coefficient of .95). This test had items like 'Pain, tenderness, enlargement or swelling of breasts', 'Weight gain' etc.

Results

I. Table: Showing the correlation between Neuroticism and Premenstrual symptoms.

		Neuroticism	PMS
Neuroticism	Pearson Correlation	1	
	Sig. (2-tailed)		
PMS	Pearson Correlation	.317**	1
	Sig. (2-tailed)	.000	

**.Correlation is significant at the 0.01 level (2-tailed). N= 120.

Significant positive correlation between Neuroticism and Premenstrual distress (.317**) Neuroticism and PMS have a strong positive relationship.

II. Table: Correlation between Stress and PMS

Correlations		Distress	W/Ne	Ad	AA/A	SMT	D	IC/A
Distress	Pearson Correlation	1						
	Sig. (2-tailed)							
W/Ne	Pearson Correlation	.314**	1					
	Sig. (2-tailed)	.000						
Ad	Pearson Correlation	.334**	.626**	1				
	Sig. (2-tailed)	.000	.000					
AA/A	Pearson Correlation	.361**	.712**	.512**	1			
	Sig. (2-tailed)	.000	.000	.000				
SMT	Pearson Correlation	.364**	.523**	.513**	.646**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
D	Pearson Correlation	.290**	.742**	.472**	.653**	.409**	1	
	Sig. (2-tailed)	.001	.000	.000	.000	.000		
IC/A	Pearson Correlation	.242**	.677**	.500**	.625**	.477**	.668**	1
	Sig. (2-tailed)	.008	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed). N=120.

W/Ne = Worry and Negative Emotion, Ad=Attentional deficits, AA/A Autonomic arousal and anxiety, SMT= Striated muscle tension, D= depression, IC/A= Interpersonal conflict/Anger.

All the subscales of Stress and Premenstrual distress have a high positive correlation.

2) Smiths Stress Symptoms Inventory (SSSI): Developed by Jonathan C. Smith (2002) was used to measure the level of stress. This inventory uses the state-trait approach, and measures stress as a trait and as a state. There are 6 subscales, developed from the common stress symptoms reported by people. The scale was based on the Smith Stress Costs Inventory (Smith, 1992). Each item has to be responded on a four-point rating scale ranging from 1 to 4. The alpha reliabilities for symptom category range from.79 to .89. The six subscales in the Smith's Stress Symptoms Inventory and their reliabilities include Worry/ Negative emotion, Attentional deficits, Autonomic arousal and anxiety, Striated muscle tension, Depression and Interpersonal conflict / Ange.

3)Morningness-Eveningness Questionnaire (MEQ): Chronotype was determined using the Morningness-Eveningness Questionnaire (MEQ) (Horne & Ostberg, 1976), a reliable and well-validated measure of chronotype. The MEQ includes 19 questions gauging an individual's preferred rising and sleep times, and optimal time for physically or intellectually demanding activities based on his or her own "feeling best rhythm" e.g., "Considering your own "feeling best" rhythm, at what time would you get up if you were free to plan your day?". Scores range from 16 to 86, and can be categorized as definitely evening (16 –30), moderately evening (31– 41), neutral (42–58), moderately morning (59–69), and definitely morning (70–86) chronotypes. The test-retest reliability of the MEQ is high.

4) Neuroticism: NEO Personality Inventory (Costa & McCrae, 1992), a self-report questionnaire was designed to provide a comprehensive assessment of the Five-Factor Model of personality. The neuroticism domain scales are defined by six scales of eight-item facets. Extensive evidence has supported the internal consistency and temporal stability of these neuroticism and conscientiousness scales. The convergent and discriminant validity of these scales has been exhibited in expected relations with other personality measures.

Of all the stress subscales, autonomic arousal and anxiety alone seems to predict about 13% of the total variance in premenstrual distress. Also, together with Neuroticism, it seems to predict 16% of the variance in menstrual distress. Lastly, all stress scales and Neuroticism explain about 20% of the variance in premenstrual distress.

III.Table: Correlation between Chronotype and PMS.

		PMS	MEQ Score
PMS	Pearson Correlation	1	
	Sig. (2-tailed)		
MEQ Score	Pearson Correlation	-.153	1
	Sig. (2-tailed)	.096	

No significant correlation between Chronotype (MEQ Score) with Premenstrual distress (-.153).

IV.   Table: Additional Analysis: Regression

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1.Predictors:AA/A	.361[a]	.130	.123	10.584	.000
2.Predictors:AA/A, Neuroticism	.405[b]	.164	.150	10.420	.000
3. Predictors: All stress subscales, Neuroticism.	.447[a]	.200	.150	10.419	0.001

Discussion: This study attempted to find out the correlations between premenstrual symptoms. Regression analysis showed that Autonomic arousal and anxiety is the strongest predictor of menstrual distress, followed by neuroticism and together they explain 20% of the total variance in menstrual distress, with the positive correlation of Neuroticism and all the scales of Stress. Puberty is a crucial phase in every woman's life. It is market by several physical, hormonal, psychological and emotional changes. In

this study, 4 participants were married and rest all were unmarried. This is a stage of competition and struggle. Sometimes it is a battle to show themselves and sometimes it's a battle to show it or prove it to the world. It is a mixed group of girls having jobs and girls that are still getting education. Hence, this age group can also be called as the transition age between being a student to being a professional. Premenstrual distress is a very common phenomenon but very less is known to girls about this. Girls, during data collection were awkard and uncomfortable about mentioning about their menstrual problems.

Results indicate that the domain of Neuroticism is highly correlated with premenstrual distress. These results indicate that they share a positive correlation. (r=.317, p<.01). Research findings show that mean neuroticism scores peak in late adolescence and decline moderately through adulthood (Costa et al., 1986; McCrae et al., 2002; Roberts & Mroczek, 2008).

According to the results of the domain of stress, every subscale has a positive correlation with that of premenstrual distress. Worry/ Negative emotion (r = .314, p<.01) Attentional deficits (r =.334, p<.01), Autonomic arousal/ anxiety (r = .361, p<.01), Striated muscle tension (r = .364, p<.01), Depression (r = .290, p< .01), Interpersonal conflict/ anger (r = .242, p<.01). Additionally Autonomic arousal and anxiety emerged as one of the strongest predictor of Premenstrual distress. The age group in this study being 18-25, most of them were taking formal education, while some girls had just started working. Stressful events like not getting a job, not passing in the exams, marriage etc. could also add to stress in this age group. Earlier research using samples in similar age groups also has demonstrated that perceived stress is a strong predictor of premenstrual distress (Lustyk, Beam, Miller & Olson, 2006).

Earlier research has demonstrated that Chronotype is a predictor of physical health (Schaal, Peter & Randler, 2010) as well as psychological health (Tonetti, Fabbri &naale, 2009). Morning types or "Larks" have been shown to be healthier than Evening types or "Owls" and they also engage in more health enhancing behaviours (Urban, Magyarodi & Rigo, 2011). Adolescent girls with Evening preference experience more menstrual symptoms than those with Morning preference (Negriff and Dorn, 2009).The present study did not show any correlation between chronotype and menstrual distress. Surprising as they are, these results could have been obtained due to the following reasons. Firstly there were only 3 purely morning type women in the sample. Most of the women were in the intermediate group, neither clearly morning nor evening types. Secondly there were no pure evening types. A larger sample with more women in the two extreme categories could have possibly shown sharper contrasts in terms of menstrual distress.

Additional findings have also pointed out the significant predictors, Autonomic arousal and anxiety emerged as the most significant predictor, which explained 13% of the variance in premenstrual distress. Along with Neuroticism they predicted 16.4% of the variance in premenstrual distress, while all the stress subscales and neuroticism predicted about 20% of the variance. Stress management programs thus seem to hold great promise in helping women with PMS.

Limitations of this study include that very less (3) samples having pure 'Morning' characteristics were found, which was insufficient. Surprisingly there were no pure 'Evening' participants in the sample either. A fixed age group had to be followed. The diet of the participants was not studied. Information about medication for menstrual distress was not included in the personal data sheet. Some participants were not willing to fill up the test of 'Shortened Premenstrual Assessment Form' as they were not comfortable doing so and certain pertinent factors like the regularity of menstrual cycle, regularity in exercises, type of physical exercises were not considered.

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