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Research Article

Emotions and Moods during Menstruation as Predictors of Adaptability, Resilience, and Mental Wellness of Young Women

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A B S T R A C T

Background: Emotional and mood fluctuations are common during menstruation. The extent to which it bears on the mental well-being and personality of women throughout their lives is less studied.

Objectives: This exploratory study aims to explore the effects of menstruation on the behavioural and personality aspects of young women.

Methods: The data from the inventory, gathered by administering to young women, have been used to explore the behavioural and personality aspects of young women. The inventory comprises 72 items and encompasses various behavioral dimensions, including locus of control, mental wellness, critical thinking, and resilience, which may be influenced by menstruation, resulting in the development of both negative and positive traits. Bivariate and multivariate logistic regression were also applied by converting the Likert scale to low and high scores.

Results: A total of 114 girls responded to the inventory. The Cronbach alpha value of each component ranged between 0.91 and 0.92, and the KMO measure of sampling adequacy was .682, and Bartlett's test of sphericity was significant. Principal Component Analysis using varimax and Kaiser normalisations, rotation converged in 6 iterations, extracted 4 components, and all 12 variables were identified with 4 major components. It was found that awareness and low fearfulness during menstruation were significant predictors of traits such as adaptability, resilience, and mental well-being.

Conclusion: High awareness and low fearfulness were predictors of mental health, which is characterized by traits such as locus of control, curiosity, awareness, critical thinking, interpersonal skills, and inquisitiveness, ultimately leading to the development of various skills and competencies in young women.

Keywords: Menstruation, Adolescents, Youth, Fearlessness, Mental Health, Resilience

Introduction

The Adolescents and youth are expected to shape the future of the world. Their energies are tremendous, and addressing any problem or issue requires examining their own issues, which could provide insights to conserve their energy overall. Several pieces of evidence suggest the persistence of these vulnerabilities, which can lead to a less healthy life and reduced energy levels. The challenges and opportunities in addressing young people's health needs need to be looked at from a new perspective. The health situation of young people is central in determining India's health, mortality, morbidity, and population growth. While these are important, it also needs to be understood that if some initiatives could be developed addressing the mindsets of the adolescents in terms of better understanding of their problems and deciding to live a more disciplined, less violent, less reactive and less aggressive life, probably it could become not only the most important but also the most powerful human resource of the country, which could lead to a large-scale social transformation of the society.

One can develop focused initiatives, interventions, and plans to foster an understanding of the 'healthier self-concept' and the energies propelling it, which could resolve many of the mid- and late-adolescent problems. The positive attributes help in learning to live in a positively activated state of mind, preventing the entry of negative thoughts and thus also preventing the mind from moving to a negatively activated state. Negative states are likely to lead to a state of sadness, boredom, and living in these states for prolonged periods may create strains, and dysfunctional stress states may compel adolescents to go to a doctor who may label them with anxiety or depression and put them on drugs. Srivastava (2016)[2] mentioned that adolescent problems and issues need to be looked at from a much wider perspective so as to achieve a significant 'societal transformation'. It is for this reason that an attempt at deep exploration for establishing various connections through an exploratory study was undertaken with respect to adolescent girls, focusing on their menstruation journey from puberty onwards up to early youth. The study included girls aged 18 to 25.

This paper has explored various issues and challenges faced by adolescents and young women during menstruation.

The Theoretical Assumption

Behavioural and Personality Traits are formed under the influence of emotions and mood, as well as the response processes that occur in a girl while menstruating, and the thoughts (both positive and negative) that also evolve from these experiences. The questions are: Could these be captured by an assessment tool? Additionally, is it possible to predict the variables responsible for resilience and mental wellness, among other factors, in individuals?

Building on the Conceptual Framework:

Building on the conceptual framework for a subject like this, where not much work has been previously done, except limited to menstrual hygiene, health, pubertal behaviour, mood swings during menstruation, and so on. The challenges were several. Several research questions came to mind. The basis of this was discovering the cause of reduced concentration of a high-scoring girl student in class, to severe menstrual cramps, pain, and discomfort, absenteeism from class, changed mood, and behaviour. Some of these concepts have also been explored by the Menstrual Attitude Questionnaire (MAQ), developed by Jeanne Brooks-Gunn and Diane N. Rube in 1980, which is widely used internationally. The scale consisted of 35 items on dimensions linked to menstrual phenomena, such as debilitating, bothersome, natural, challenges, and effects.

Alexander et al. (2021)[3] referred to emotions as greatly affecting and influencing individuals' attitudes towards themselves and others. Both attitudes towards self and others are important. Many a times, we forget, that when we are exhibiting a negative attitude towards others, we are also simultaneously affecting our own selves and the response comes in the form of varying degrees of feelings and thinking and the response driven out from there affecting decision making, behaviour, and this again impacting development of behavioural and personality traits which could possibly over a period of time become a part of ones behaviour and personality. Emotions that generally tend to hinder performance are negative emotions, while positive emotions tend to accelerate performance.

Affect encompasses a broad range of feelings, including both short-lived emotions and long-term moods, which are caused by specific or non-specific events. Menstruation elicits varying degrees of emotions and moods, which can culminate in changes in behavioral and personality traits (Barsade and Gibson, 2007; Frijda, 1993).[4-5] There are many emotions that can be recognized, including anger, contempt, enthusiasm, envy, fear, frustration, disappointment, embarrassment, disgust, happiness, hate, hope, jealousy, joy, love, pride, surprise, sadness, boredom, contentment, and others. A direct consequence of these emotions, if they persist and recur, may lead to the development of various issues. Additionally, things that trigger these emotions may become a characteristic of an individual's behavior and personality. Sometimes it is difficult to identify by facial expression (Solomon, 2002).[6] Some problems felt that some emotions are too complex to be easily represented on faces, complicated by the cultural paradox (Elfenbein and Ambady (2002).[7] A girl undergoing menstruation, because it has several cultural dimensions to disclose or not to disclose the event, is generally referred to as a menstrual taboo. However, there is likely to be a deeper

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impact of emotions, feelings triggered by the menstrual event when it occurs. Cultural norms have significantly influenced the expression of emotions during menstruation, and the way they are recognized differs from how they are portrayed. Their understanding of the menstrual process is limited and often confusing, which gives rise to a range of emotions and mood fluctuations (Sabur et al., 2024; Thakur et al., 2014).[8,9] Tracy and Randles (2011)[10] mentioned six universal emotions: anger, fear, sadness, happiness, disgust, and surprise/astonishment. There is a significant connection between these emotions and menstruation. Smiling during emotional moments may help reverse certain negative emotions altogether and contribute to the development of positive behaviors and traits, as well as several associated beneficial behavioral phenomena, such as problem-solving rather than obsession, resilience, critical thinking, interpersonal skills, and adaptability. These are important traits that may be necessary for managing emotions during menstruation, as they develop inquisitive, centered awareness due to rising curiosity. Having come to this logical conclusion, the stage was set to focus on the following broad components to understand what we may call 'menstrual behaviour', and they are: Internal and external locus of control, fearfulness, curiosity, resilience, mental wellness, awareness, critical thinking, Interpersonal skills, inquisitiveness, and adaptability. Based on these understandings, a tool was constructed to assess 'menstrual behaviour'.

Puberty in women is marked by the presence of menarche. Lack of knowledge about menstruation in adolescent girls can have an impact on their readiness to face menarche (Sabur et al. 2024; Thakur et al. 2014).[8,9] Adolescence is a transitional period between childhood and adulthood, during which there is a rapid physical, cognitive, social, and emotional maturation process in both boys and girls. It's a period to prepare them to become adult men and adult women. Menarche usually occurs between the ages of 10-16 years, depending on several factors, including the woman's health, nutritional status, heredity, and social environmental factors. Young women will have difficulty dealing with their first menstruation if they have never known or talked about it with their peers, mother, or any other person or the media. Adolescents who are not ready to face menarche may have a desire to reject the physiological process; they may feel that menstruation is something cruel and threatening. This situation can continue to deteriorate further. Children's ignorance about menstruation can result in children finding it difficult to accept menarche. Difficulty accepting menarche can arise due to adolescents' ignorance of the physiological changes that occur at the beginning of a teenage girl's life and lack of knowledge, where this can be caused by the physical and psychological aspects of immature adolescents, lack of information from parents causes feelings of anxiety and fear in adolescents when the first menstruation arrives Tracy and Randles (2011),[10] Jackson and Falmagne (2013).[11]

Despite the fact that every girl has to deal with menstrual hygiene, there is a lack of awareness about the process of menstruation and proper menstrual hygiene among adolescent girls, and it is more prominent among tribal girls. They pointed out that poor knowledge and practices included various myths and misconceptions about menstruation among tribal adolescent girls. (Tang et al. 2021; Kumari, et al. 2012).[12, 13]

Menstruation is generally considered unclean in Indian Society. Isolation of the menstruating girls and restrictions imposed on them in the family have reinforced negative attitudes toward this phenomenon in girls. The perception of menstruation varies across different cultures and religions (Kumari et al., 2012; WHO, 2009).[13, 14] Several studies have reported restrictions in daily activities such as not being allowed to take a bath, change clothes, comb hair, and enter religious holy places. Apart from these, dietary restrictions (forbidding the consumption of foods such as rice, curd, milk, lassi, potato, and onion, as well as sugarcane) are also imposed during the menstrual period. This gives rise to avoidable anxiety and fear and may also lead to undesirable practices (Goel and Kundan (2011).[15] Girls do not take part in ceremonies and the social activities with family during menstruation. Along with cultural constructs that lead to the formation of a certain preconception, the reaction to menstruation also depends on awareness and knowledge about the subject. Social, cultural, and religious factors have a larger effect on women's mental health, as in some cases these are highly restrictive and disrespectful. Females are highly embarrassed to talk about menstruation in public, amongst family, classrooms, and community gatherings (Davis et al., 2018);[16] Malik et al., 2023a;[17] Mason et al., 2013;[18] UNICEF, (2019).[19]

The Inventory, Behavioural and Personality Traits Determinants Inventory – Adolescent Girls (BPTDI -AG) by Srivastava & Srivastava (2024),[1] for which copyright has also been obtained, was used as it appeared to address some of the unanswered questions. It has 12 components related to menstruation – Locus of control (external and internal), curiosity, obsession, fearfulness, resilience, mental wellness, awareness, critical thinking, interpersonal skills, inquisitiveness, and adaptability. These are placed in the following four broad clusters:

1. Curiosity, inquisitiveness, obsession
2. Internal locus of control, external locus of control, Awareness, critical thinking,
3. Inter-personal skills, Fearfulness
4. Adaptability, Resilience, and Mental Wellness

The logical rationale for the choice of the 12 variables in different clusters used in the development of the Behavior

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and Personality Traits Determinants Inventory- Adolescent Girls (BPTDI-AG) is given in Box 1.

The following were categorised as independent variables and dependent variables:

Box 1

Cluster 1 related to 'Knowing': In cluster 1, the source point of changed behaviour of adolescent girls is increasing curiosity and trying to seek answers to curiosities of puberty. Inquisitiveness increases, and this heightened inquisitiveness may develop an initial obsession in the minds of girls to know, explore, and experience. The three variables in this cluster, chosen in relation to Knowing, are Curiosities, Inquisitiveness, and Obsession, which arise largely from the 'Feelings' set of Emotions and Moods.

Cluster 2, related to 'Exploring': In Cluster 2, the increasing curiosity, inquisitiveness, and obsessions lead to a tendency to explore more and more. Depending on whether a girl is high in internality (high internal locus of control) or high in externality (high external locus of control), and depending on the degree of awareness and the validity of the information sources, critical thinking begins. In the exploring cluster, therefore, Internal locus of control, external locus of control, Awareness, and critical thinking are taken as important variables. These processes become important contributors to positive adolescent behaviour.

Cluster 3 related to 'skill development': In cluster 3, the skill development process begins, which is dependent on the degree of fearfulness (low fearfulness or high fearfulness). In this cluster, therefore, two variables are chosen: Inter-personal skills and Fearfulness. All further skills are dependent on the nature of interpersonal skills developed. Variables in cluster 3 require developing interpersonal skills and overcoming fearfulness to develop fearlessness.

Cluster 4 related to 'Mental Health': In Cluster 4, finally, the most important thing in life is Mental Health, which is possible with high Adaptability, Resilience, and Mental Wellness, and therefore, the three variables chosen in this cluster are Adaptability, Resilience, and Mental Wellness.

The variables in Clusters 1, 2, and 3 were categorised as independent variables, and the variables in Cluster 4 were categorized as dependent variables.

The Methodology Adopted

The inventory was administered only to the respondents who were willing to give responses for each of the question, which are both from the felt and taught concepts of life, and needed to be answered based on the Likert scale - 1 if it is not at all true of her, 2 if it is not true of her, 3 if it is somewhat true of her, 4 if it is true of her, and 5 if it is totally true of her. For analysis in some places, scores 1, 2, and 3 were considered low, while scores 4 and 5 were considered high.

This inventory was administered to 114 girls by sending the link of the questionnaire to their personal email IDs to maintain the full privacy of their responses. All girls were above 18 years of age, except for a few, for whom it was administered at their parents' request. Informed consent was obtained from the participants before sending the questionnaire. The data was analysed using SPSS 21.

Results

The following table presents both the counts and percentages of respondents in each category (Low = 1, High = 2) for every variable included in the analysis. This descriptive breakdown offers insight into the sample composition and complements the regression findings by highlighting which traits were most prevalent among participants. In the study population, a high proportion of scores for critical thinking, externality, internality, and interpersonal skills was found, compared to other characteristics. Young women had more low-score characteristics, such as inquisitiveness, obsession, and resilience (Table 1).

Table 1.Frequency Distribution of Low and High Scores (Counts and Percentages)

Characteristics	Low (1) – n (%)	High (2) – n (%)
Adaptability	64 (57.1%)	48 (42.9%)
Awareness	59 (52.7%)	53 (47.3%)
Criticalthinking	43 (38.4%)	69 (61.6%)
Curiosity	60 (53.6%)	52 (46.4%)
Externality	42 (37.5%)	70 (62.5%)
Fearfulness	62 (55.4%)	50 (44.6%)
Inquisitiveness	70 (62.5%)	42 (37.5%)
Internality	42 (37.5%)	70 (62.5%)
Interpersonal Skills	39 (34.8%)	73 (65.2%)
Mentalwelness	55 (49.1%)	57 (50.9%)
Obsession	69 (61.6%)	43 (38.4%)
Resilience	88 (78.6%)	24 (21.4%)

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Logistic regression was performed, with the dependent variables being adaptability, resilience, and mental wellness. In the model, independent variables or predictors were awareness, fearfulness, inquisitiveness, obsession, internality, externality, curiosity, interpersonal skills, and critical thinking. Predictors selected for multivariable modelling were those with an unadjusted p-value ≤ 0.2 and a VIF ≤ 5 in bivariate analysis (Table 2).

In the adjusted penalized logistic model for adaptability, AWARENESS was independently associated with increased odds of being categorized as High (OR = 2.31, 95% CI 1.01–5.30, p = 0.049). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for resilience, FEARFULNESS was independently associated with decreased odds of being categorized as High (OR = 0.15, 95% CI 0.03–0.69, p = 0.015). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for resilience, AWARENESS was independently associated with increased odds of being categorized as High (OR = 12.64, 95% CI 2.55–62.73, p = 0.002). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for resilience, CURIOSITY was independently associated with decreased odds of being categorized as High (OR = 0.21, 95% CI 0.05–0.85, p = 0.028). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for resilience, CRITICALTHINKING was independently associated with decreased odds of being categorized as High (OR = 0.20, 95% CI 0.05–0.80, p =0.023). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for mental wellness, FEARFULNESS was independently associated with decreased odds of being categorized as High (OR = 0.23, 95% CI 0.10–0.55, p = 0.001). This association remained after adjustment for other covariates included in the model.

In the adjusted penalized logistic model for mental wellness, INTERPERSONAL_SKILLS was independently associated with increased odds of being categorized as High (OR = 2.79, 95% CI 1.14–6.83, p =0.025). This association remained after adjustment for other covariates included in the model

Table 2.Multivariate logistic regression for predictors of adaptability, resilience, and mental wellness

Variable	Coef	SE	OR	CI_low	CI_high	P
ADAPTABILITY						
Const	-0.696	0.486	0.499	0.192	1.293	0.152
AWARENESS	0.837	0.424	2.309	1.005	5.304	0.049
FEARFULNESS	-0.548	0.443	0.578	0.243	1.376	0.215
INQUISITIVENESS	0.686	0.466	1.987	0.798	4.948	0.140
OBSESSION	-0.102	0.483	0.903	0.350	2.327	0.832
RESILENCE						
Const	-0.063	0.747	0.939	0.217	4.061	0.932
FEARFULNESS	-1.867	0.766	0.155	0.034	0.694	0.015
AWARENESS	2.537	0.817	12.644	2.548	62.734	0.002
EXTERNALITY	-0.071	0.666	0.931	0.252	3.435	0.915
OBSESSION	-1.002	0.808	0.367	0.075	1.790	0.215
INQUISITIVENESS	0.009	0.626	1.009	0.296	3.441	0.988
CURIOSITY	-1.584	0.723	0.205	0.050	0.846	0.028
INTERNALITY	-0.651	0.700	0.522	0.132	2.056	0.352
CRITICALTHINKING	-1.591	0.698	0.204	0.052	0.800	0.023
MENTAL WELLNESS						
Const	-0.523	0.456	0.593	0.242	1.450	0.252
FEARFULNESS	-1.450	0.432	0.235	0.101	0.548	0.001
INTERPERSONAL SKILLS	1.025	0.458	2.787	1.137	6.833	0.025
INTERNALITY	0.666	0.484	1.946	0.753	5.028	0.169
CURIOSITY	0.263	0.463	1.301	0.525	3.221	0.570

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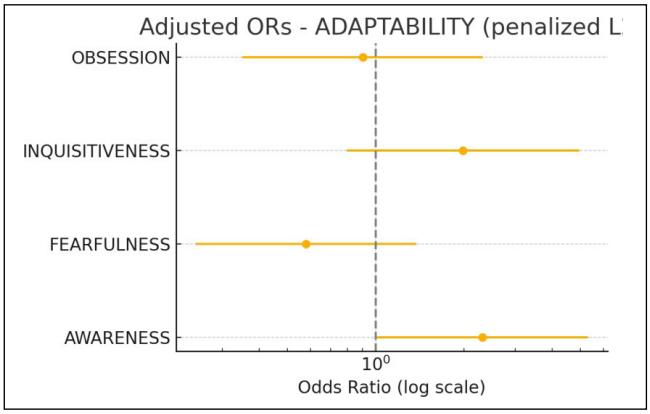

Figure 1.Predictors of adaptability

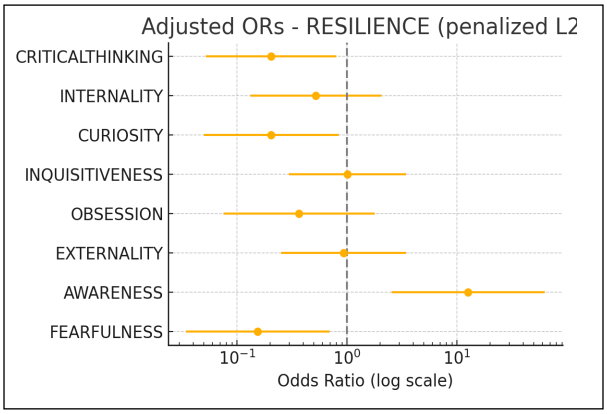

Figure 2.Predictors of Resilience

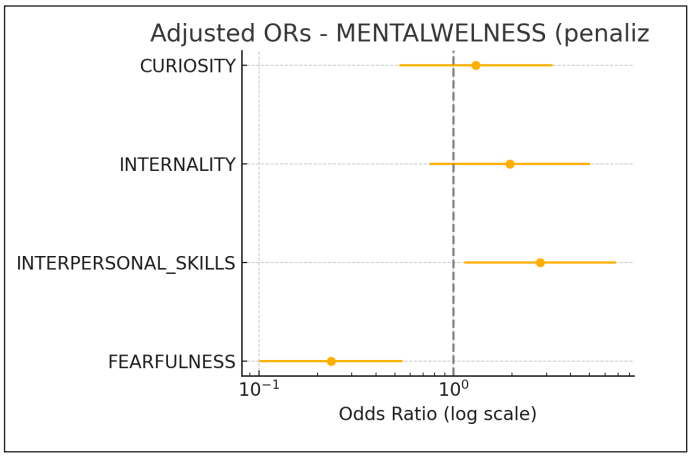

Figure 3.Predictors of Mental Wellness

Adaptability

Awareness (increasing from Low to High) significantly raises adaptability, indicating that individuals with greater awareness of their emotions and surroundings are better able to handle transitions and novel situations with composure.

Resilience

Fearfulness (decreasing from High to Low) significantly improves resilience, confirming that individuals who experience less fear recover from stress more effectively. Awareness (increasing from Low to High) also strengthens resilience, suggesting that self-reflection and emotional understanding equip individuals to manage adversity constructively. In contrast, Curiosity and Critical Thinking (increasing from Low to High) exhibit a slight reduction in resilience, suggesting that excessive cognitive engagement or over-analysis during stress may hinder recovery.

Mental Wellness

Fearfulness (increasing from Low to High) reduces mental wellness, demonstrating that elevated anxiety or fear responses undermine emotional balance and perceived well-being. Conversely, Interpersonal Skills (increasing from low to high) enhance mental wellness, underscoring that empathy, social connection, and trust-building act as buffers against stress.

Across all models, Awareness and Fearfulness consistently emerged as key psychological drivers. Awareness was positively related to Adaptability, Resilience, and Mental Wellness, highlighting its central role in emotional intelligence and adaptive behavior. Conversely, Fearfulness had a consistently negative impact, revealing how anxiety limits flexibility and well-being. Interpersonal Skills uniquely support Mental Wellness, demonstrating that emotional awareness must be coupled with healthy social engagement.

Multivariate Regression Model

Ordinal regression was performed using mental wellness, adaptability, and resilience as dependent variables. With mental wellness as the dependent variable, the chi-square for model fitting was 89.82, with a p-value of less than 0.001, indicating a highly significant result. The goodness of fit with Pearson was not significant at a p-value of 0.67, indicating no significant difference between the absolute and fitted models. As in ordinal regression, we consider McFadden R-squared, which was 0.381 (Nagelkerke was 0.625). This indicates that our model achieved at least a 38.1% improvement in prediction compared to the null model (Table 3).

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Table 3.Ordinal regression table with Mental Wellness as the dependent variable

	Estimate	p Value	95% Confidence Interval	
			Lower Bound	Upper Bound
[mental wellness = 2.00]	-4.596	0.254	-12.5	3.308
[mental wellness = 3.00]	0.344	0.932	-7.558	8.247
[mental wellness = 4.00]	4.581	0.258	-3.364	12.526
[INTERNALITY=1.00]	-23.897	0.997	-14342.525	14294.731
[INTERNALITY=2.00]	-2.464	0.09	-5.308	0.381
[INTERNALITY=3.00]	-2.01	0.123	-4.567	0.547
[INTERNALITY=4.00]	0.084	0.936	-1.98	2.149
[INTERNALITY=5.00]	0	.	.	.
[EXTERNALITY=2.00]	-0.8	0.6	-3.796	2.195
[EXTERNALITY=3.00]	0.858	0.464	-1.439	3.155
[EXTERNALITY=4.00]	1.701	0.112	-0.395	3.798
[EXTERNALITY=5.00]	0	.	.	.
[AWARENESS=1.00]	-24.146	.	-24.146	-24.146
[AWARENESS=2.00]	-2.347	0.213	-6.044	1.35
[AWARENESS=3.00]	-4.041	0.024	-7.555	-0.527
[AWARENESS=4.00]	-3.101	0.066	-6.402	0.2
[AWARENESS=5.00]	0	.	.	.
[CURIOSITY=1.00]	0	.	.	.
[CURIOSITY=2.00]	0.161	0.86	-1.623	1.944
[CURIOSITY=3.00]	0.09	0.896	-1.267	1.448
[CURIOSITY=4.00]	0	.	.	.
[INQUISITIVENESS=2.00]	0.802	0.427	-1.179	2.784
[INQUISITIVENESS=3.00]	1.417	0.043	0.042	2.792
[INQUISITIVENESS=4.00]	0	.	.	.
[ADAPTABILITY=2.00]	-4.328	0.164	-10.422	1.767
[ADAPTABILITY=3.00]	-4.418	0.146	-10.379	1.543
[ADAPTABILITY=4.00]	-2.788	0.376	-8.959	3.383
[ADAPTABILITY=5.00]	0	.	.	.
[fearfulness=1.00]	1.471	0.464	-2.465	5.407
[fearfulness=2.00]	2.722	0.027	0.309	5.135
[fearfulness=3.00]	2.253	0.035	0.158	4.347
[fearfulness=4.00]	1.803	0.075	-0.185	3.79
[fearfulness=5.00]	0	.	.	.
[resilience=2.00]	-2.113	0.034	-4.07	-0.156
[resilience=3.00]	-1.006	0.232	-2.653	0.642
[resilience=4.00]	0	.	.	.
[critical thinking=2.00]	-3.768	0.088	-8.101	0.565
[critical thinking=3.00]	-0.79	0.258	-2.159	0.58
[critical thinking=4.00]	0	.	.	.

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[interpersonal skills=2.00]	4.551	0.053	-0.054	9.155
[interpersonal skills=3.00]	6.025	0.005	1.862	10.189
[interpersonal skills=4.00]	5.357	0.006	1.514	9.199
[interpersonal skills=5.00]	0	.	.	.
[obsession=1.00]	4.056	0.073	-0.375	8.487
[obsession=2.00]	0.186	0.898	-2.666	3.038
[obsession=3.00]	-0.539	0.67	-3.02	1.941
[obsession=4.00]	-0.259	0.84	-2.773	2.255
[obsession=5.00]	0	.	.	.

0 is the reference category

In this model, awareness, inquisitiveness, fearfulness, resilience, and Interpersonal skills were significant, indicating them as predictors of mental wellness, although awareness has a negative relationship with the predicted variable. Hence, inquisitiveness, fearfulness, resilience, and interpersonal skills are taken as predictors of mental wellness in this model.

With resilience as the dependent variable, the chi-square for model fitting was 85.79, with a p-value of less than 0.001, indicating a highly significant result. The goodness of fit with Pearson was not significant at a p-value of 0.84, indicating no significant difference between the absolute and fitted models. As in ordinal regression, we consider the McFadden R-squared, which was 0.407 (Nagelkerke was 0.629). This indicates that our model achieved at least a 40.7% improvement in prediction accuracy compared to the null model (Table 4).

Table 4.Ordinal regression taking Resilience as the dependent variable

Variable	Estimate	P value	95% Confidence Interval	
			Lower Bound	Upper Bound
[resilience = 2.00]	2.936	0.299	-2.605	8.478
[resilience = 3.00]	7.988	0.007	2.206	13.77
[INTERNALITY=1.00]	-18.884	0.998	-19180.938	19143.17
[INTERNALITY=2.00]	1.465	0.341	-1.551	4.482
[INTERNALITY=3.00]	-0.196	0.889	-2.945	2.552
[INTERNALITY=4.00]	-0.965	0.396	-3.195	1.264
[INTERNALITY=5.00]	0	.	.	.
[EXTERNALITY=2.00]	-0.923	0.523	-3.756	1.91
[EXTERNALITY=3.00]	-1.579	0.165	-3.807	0.648
[EXTERNALITY=4.00]	-1.211	0.246	-3.255	0.833
[EXTERNALITY=5.00]	0	.	.	.
[AWARENESS=1.00]	-15.238	.	-15.238	-15.238
[AWARENESS=2.00]	-1.907	0.327	-5.722	1.908
[AWARENESS=3.00]	0.17	0.926	-3.414	3.754
[AWARENESS=4.00]	0.313	0.854	-3.017	3.644
[AWARENESS=5.00]	0	.	.	.
[CURIOSITY=1.00]	0	.	.	.
[CURIOSITY=2.00]	0.302	0.747	-1.532	2.137
[CURIOSITY=3.00]	1.385	0.089	-0.211	2.982
[CURIOSITY=4.00]	0	.	.	.
[INQUISITIVENESS=2.00]	-1.05	0.347	-3.238	1.138

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[INQUISITIVENESS=3.00]	0.369	0.595	-0.992	1.731
[INQUISITIVENESS=4.00]	0	.	.	.
[fearfulness=1.00]	6.804	0.004	2.23	11.377
[fearfulness=2.00]	3.03	0.019	0.49	5.57
[fearfulness=3.00]	2.81	0.015	0.537	5.082
[fearfulness=4.00]	1.833	0.108	-0.403	4.069
[fearfulness=5.00]	0	.	.	.
[critical thinking=2.00]	3.513	0.063	-0.193	7.218
[critical thinking=3.00]	0.723	0.281	-0.591	2.038
[critical thinking=4.00]	0	.	.	.
[interpersonal skills=2.00]	2.231	0.309	-2.065	6.527
[interpersonal skills=3.00]	2.055	0.259	-1.511	5.621
[interpersonal skills=4.00]	2.642	0.115	-0.64	5.925
[interpersonal skills=5.00]	0	.	.	.
[obsession=1.00]	0.967	0.672	-3.508	5.443
[obsession=2.00]	4.095	0.013	0.853	7.338
[obsession=3.00]	3.099	0.036	0.21	5.989
[obsession=4.00]	1.213	0.415	-1.704	4.13
[obsession=5.00]	0	.	.	.
[mental wellness=2.00]	-3.851	0.04	-7.535	-0.167
[mental wellness=3.00]	-3.444	0.014	-6.196	-0.692
[mental wellness=4.00]	-2.043	0.124	-4.649	0.563
[mental wellness=5.00]	0	.	.	.

0 is reference value

In this model, obsession, fearfulness, and mental wellness were significant, showing them as predictors for resilience. As mental wellness has a negative relationship with the predicted variable, in this model, only obsession and fearfulness are taken as predictors for resilience.

With adaptability as the dependent variable, the chi-square for model fitting was 67.57, with a p-value of less than 0.001, indicating a highly significant result. The goodness of fit with Pearson was not significant at a p-value of 0.78, indicating no significant difference between the absolute and fitted models. As in ordinal regression, we consider the McFadden R-squared, which was 0.368 (Nagelkerke was 0.559). This indicates that our model achieved at least a 36.8% improvement in prediction compared to the null model (Table 5).

Table 5.Ordinal regression taking Adaptability as the dependent variable

Variable	Estimate	Sig.	95% Confidence Interval	
			Lower Bound	Upper Bound
[ADAPTABILITY = 2.00]	-12.395	0.001	-19.707	-5.083
[ADAPTABILITY = 3.00]	-6.22	0.072	-13.007	0.567
[ADAPTABILITY = 4.00]	-1.625	0.638	-8.4	5.15
[INTERNALITY=1.00]	-22.372	.	-22.372	-22.372
[INTERNALITY=2.00]	-0.358	0.826	-3.555	2.838
[INTERNALITY=3.00]	0.016	0.992	-2.955	2.987
[INTERNALITY=4.00]	1.344	0.288	-1.134	3.823

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[INTERNALITY=5.00]	0	.	.	.
[EXTERNALITY=2.00]	0.315	0.844	-2.82	3.45
[EXTERNALITY=3.00]	-0.966	0.461	-3.535	1.602
[EXTERNALITY=4.00]	-1.877	0.111	-4.189	0.434
[EXTERNALITY=5.00]	0	.	.	.
[AWARENESS=1.00]	-0.793	0.861	-9.638	8.053
[AWARENESS=2.00]	1.039	0.642	-3.345	5.424
[AWARENESS=3.00]	1.696	0.427	-2.489	5.881
[AWARENESS=4.00]	1.401	0.492	-2.597	5.399
[AWARENESS=5.00]	0	.	.	.
[CURIOSITY=1.00]	0	.	.	.
[CURIOSITY=2.00]	0.524	0.606	-1.466	2.515
[CURIOSITY=3.00]	0.297	0.729	-1.381	1.976
[CURIOSITY=4.00]	0	.	.	.
[INQUISITIVENESS=2.00]	-0.987	0.378	-3.182	1.208
[INQUISITIVENESS=3.00]	-1.127	0.161	-2.704	0.45
[INQUISITIVENESS=4.00]	0	.	.	.
[fearfulness=1.00]	-1.924	0.369	-6.118	2.27
[fearfulness=2.00]	0.603	0.662	-2.105	3.312
[fearfulness=3.00]	-0.45	0.72	-2.906	2.007
[fearfulness=4.00]	-1.259	0.272	-3.504	0.986
[fearfulness=5.00]	0	.	.	.
[critical thinking=2.00]	5.236	0.007	1.417	9.056
[critical thinking=3.00]	1.425	0.047	0.019	2.831
[critical thinking=4.00]	0	.	.	.
[interpersonal skills=2.00]	-7.522	0.002	-12.232	-2.813
[interpersonal skills=3.00]	-7.511	<.001	-11.689	-3.332
[interpersonal skills=4.00]	-7.009	<.001	-10.923	-3.095
[interpersonal skills=5.00]	0	.	.	.
[obsession=1.00]	-3.792	0.138	-8.809	1.225
[obsession=2.00]	0.108	0.951	-3.343	3.559
[obsession=3.00]	0.382	0.81	-2.735	3.5
[obsession=4.00]	0.245	0.878	-2.892	3.382
[obsession=5.00]	0	.	.	.
[mental wellness=2.00]	-2.67	0.159	-6.389	1.049
[mental wellness=3.00]	-3.889	0.013	-6.942	-0.836
[mental wellness=4.00]	-1.803	0.205	-4.589	0.983
[mental wellness=5.00]	0	.	.	.
[resilience=2.00]	0.855	0.44	-1.316	3.025
[resilience=3.00]	0.718	0.454	-1.163	2.599
[resilience=4.00]	0	.	.	.
0 as reference value				

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In this model, critical thinking, interpersonal skills, and mental wellness were significant predictors of resilience. As mental wellness and interpersonal skills have a negative relationship with the predicted variable, they are not considered predictors of the outcome. Only critical thinking is considered a predictor of Adaptability.

Discussions

A high prevalence of characteristics such as critical thinking, externality, internality, and interpersonal skills was found, compared to other characteristics, including inquisitiveness, obsession, and resilience. These characteristics are usually common in postgraduate management students. Similarly, Preetha & Deepa (2017) described the Big Five personality traits that influence the management of students as openness, conscientiousness, extraversion, agreeableness, and neuroticism.[20]

The present study aimed to find the relationship between emotions and moods during menstruation as predictors of adaptability, resilience, and mental wellness in adolescents and young women. Excluding the predictors having a negative relationship, the scenarios emerging, model-wise, are given in Table 6.

From Table 6, it can be seen that, excluding the predictors having a negative relationship, the actual variables that can be regarded as predicting mental wellness in Model 1 are – inquisitiveness, fearfulness, resilience, and inter-personal skills. When resilience in Model 2 was used as the dependent variable, only obsession and fearfulness were found to be positively related. For Model 3, where adaptability is taken into account, only critical thinking is a predictor.

Personal development is the process of realizing capabilities, unleashing full potential, and achieving personal goals. Personal development is important because it helps to improve self-awareness, build skills and knowledge, increase self-esteem, set and achieve personal and professional goals, and cultivate positive relationships. Personal development can be divided into five categories: mental, social, spiritual, emotional, and physical development, with a major emphasis on health approaches. Promoting health and well-being in life is considered a growing challenge due to its great importance. The search for effective interventions to improve health and well-being has led to the therapeutic use of humour and happiness as a way to promote mental and physical health (Ganz & Jacobs, 2014).[21] Humour and happiness reduce negative emotions, improving anxiety, improving the quality of sleep, improving depression, increasing pain tolerance, coping with pain, improving cardiovascular function, balanced growth, and human health, leading to improved immune system function (Nahid, 2022, Savage et al., 2017.[22,23]

This exploratory study though brings out role of the six important variables - inquisitiveness, fearfulness, interpersonal skills, obsession, critical thinning and resilience in predicting mental wellness, residence and adaptability, further study with large sized data of girls between 15 – 17 years of age with due informed consent is needed to find out the truth surrounding these revelations, which are important aspects and indicators that may be greatly needed tomorrow for becoming successful in life and career that can bring in true happiness in life of girls and women.

In Model 1, Inquisitiveness, fearfulness, resilience, and interpersonal skills emerged as predictors. Awareness has not truly emerged as a predictor, as a negative relationship was found. Inquisitiveness is highest in the third stage of the Freuds model of individuals personality development, and the awareness, rather positive awareness raises inquisitiveness levels and the same when appropriately managed by parents or elders, high self-assertion and self-control needed for managing the challenges that could arise as mentioned in the Freuds third stage – the Phallic stage, that prepares the child for the fourth stage of development – the Genital phase, which says, living in a healthy heterosexual relationship in the form of marriage. Superimposing Freud's[24] development stages with McClellands[25] four stages of clienthood, self-discipline, self-assertion, and self-control, and institution building, we can connect the importance of Freud's human development stages with McClelland's organizational progression stages and arrive at the importance of the predicted variables for mental wellness, resilience, and adaptability. Superimposing the two models of Freud[24] and McClelland & Burnhams[26] created a model of Institution Building, given in Table 7.

Table 6.Predictors of Mental wellness, Resilience, and adaptability in adolescent girls and young women

Dependent Variable in the three models	Predictor and positive relationship	Predictor and negative relationship
Model 1: Mental Wellness	Inquisitiveness, fearfulness, resilience, and interpersonal skills	Awareness
Model 2: Resilience	Obsession and fearfulness	Mental wellness
Model 3: Adaptability	Critical thinking	Mental wellness and interpersonal skills

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Table 7.Model of Institution Building, given by Burnhams, 1976, cited in Institution Building Framework by Pareek

Stage 1	**Stage 2**
Oral Client hood	Anal Self-Discipline
Stage 4	**Stage 3**
Genital Institution Building	Phallic Assertion and Control

This model has a great relevance and bearing on balanced individual development as can be explained by a behavioural process of development of high adaptability, helping become more resilient and finally achieving mental wellness.

Moving on to the predictor fearfulness, which has emerged significantly in two of the predicted models – Model 1 and Model 2, the importance of fearfulness as a predictor of mental wellness and resilience is high. If we look at the emotional wheel, (Robbins, et al 2019),[27] fearfulness emerges from the mind becoming negatively activated and phenomenon such as aggressiveness, reactions and violence also at some point of time are the offshoot of the negatively activated state of the mind, resulting in very low mental wellness, engulfed by such emotions as fearfulness, sad, bore and much later in a state of tranquil. In all these states, the mind is either negatively activated or inactivated, and a host of negative feelings and behavioral processes engulf an individual, leading to a significant loss of mental peace and a profound depletion of energy.

Interpersonal skills are related to more of free and frank disclosures, skills to share sensitive issues, self-caring skills, learning to be happy, developing a mindset to think in a positive way, supporting skills, being respectful to others, developing trusting relationships, etc. amidst menstrual period related taboos, as reported by Elfenbein and Ambady (2002)[7] Poor understanding of menstrual process may give births to many adverse emotions and mood Sabur et al. 2024; Thakur et al. 2004.[8,9] Poor interpersonal skills may exacerbate the burden of negative emotions, leading to a depletion of energy. Pareek (1997)[28] pointed out that to be anxiety-free, a person must establish a comfortable behavioral relationship with others regarding the exchange of interactions, power, and love. The need is not wholly satisfied by acting toward another person in a particular fashion. A satisfactory balance needs to be established and maintained, particularly in the context of menstruation challenges. Interpersonal skills, having emerged as a significant contributor to mental wellness, call for special attention to ameliorating the mental conditions of adolescent girls and women's mental health.

Obsessions often accompany increased inquisitiveness, exploration, and the development of abstract conceptualizations through continuous investigation, leading to a loss of focus, stress, fear, and boredom, which can result in increased anxiety. It is a state where a person is preoccupied with a thought, idea, or desire to the point that it becomes dysfunctional. It involves persistent intrusive thoughts that initially may also cause gratification, but later may also cause distress. Menstruation-related obsessiveness may prove self-hurting and may be detrimental to both physical and mental health. Malik et al. (2021)[29] have pointed out to the researches being carried out to explore how menstruation disrupts mental health in recent times and also pointed out to other reasons for menstrual distress said it could be due also to personality factors, environmental factors, psychiatric illness, impoverished diet, incorrect posture, low levels of physical activity, vitamin or mineral deficiency, and other health determinants and stress as a leading cause of irregularity in the menstrual cycle.

McPherson and Korfine (2004)[30] have reported a close relationship between menstruation and mental health. They have mentioned that females have to deal with various mental health issues, such as depression, anxiety, overthinking, and eating disorders, during menstruation. But these menstrual myths and taboos have not vanished and are prevalent in modern times as well. These myths impact the lives of adolescent females in a negative manner by influencing their attitudes, emotions, lifestyle, and health, and they even have to face discrimination and health issues owing to these misconceptions. Various cultures of the world, including the Indian culture, have spread a negative atmosphere around the world regarding menstruation. This is obviously likely to create obsessive thoughts among menstruating girls. The norms of being stopped from entering the temples, watering the plants, and not being allowed in the kitchen at home create tensions and stresses, which might get magnified by various restrictions made regarding diet, and some even advised against taking a bath (Patil et al., 2011;[31] Singh, 2006[32]). Malik et al. 2023[17] and Avasarala & Panchangam, 2008,[33] reported that around 70% of mothers believed menstruation to be impure and dirty, and 70% of girls were unaware of menstruation until they started bleeding at the start of menarche. Studies across various states of India also indicate a lack of awareness regarding menstrual hygiene; the data discloses Tamil

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Nadu (79%), Uttar Pradesh (66%), Rajasthan (56%), and West Bengal (51%) unawareness among adolescent girls (Moos, 1968;[34] World Health Organization, 1996[35]). Lack of discussion makes it more of a taboo, and this affects not only the physical health but also the psychological health. Walia DK et al., 2015[36] mentioned that the absence of knowledge regarding menstruation and menstrual hygiene creates fear in girls, and the manner in which they face the situation becomes a major cause of the school drop-outs and absenteeism among the female adolescents. These all collectively lead to obsessive behaviour among menstruating girls.

Exploring things to know more about, combined with positive influences, may encourage a person to think more critically and develop critical thinking skills, which involve the ability to analyze information objectively and form a reasoned judgment. It involves actively questioning, analyzing, and evaluating information rather than passively accepting. This includes identifying biases, considering different perspectives, and using evidence to support conclusions. Having said this, and in the context of menstruation, particularly due to a large number of taboos and many new ones coming up, for various taboos, the question comes, but if things are thought of from a critical and positive perspective, as to the rationale for the taboo, critical thinking skills may give comforting solutions. Outrightly rejecting the taboo, whatever it is, may develop negative mindset and critical thinking skills may begin to develop and may arise from being able to manage discomforts in a positive way, developing high adaptability, not getting into a sulking kind of a person, overcome decision making dilemmas, overcoming emergence of depressive mindset and coming out strong and healthy, preventing and overcoming generation of negative mindsets.

Pareek (1997)[28] referred to resilience as a person who has creative adaptability, such as managing by learning from others, accepting others' ideas, and changing their approach when required. Resilient people work through negative feelings, make appropriate disclosures, and may engage in selective sharing to adapt to situations and remain positive. Facing a challenging period of menstruation by adolescent girls and women for overcoming severe cramps, etc, by resorting to positive processes by taking help from parents, relatives, or doctors may build high resilience.

Conclusions

Emotions and moods as strong predictors of adaptability, resilience, and mental wellness of adolescents and young women. However, there is a further need for conducting more research in this new area, although there is evidence of some reflections on the connections between the various variables chosen. However, focused studies are needed to contribute to the overall well-being, happiness, and success of women, enabling them to be proactively assertive, positively strong, and powerful.

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