



**PERCEIVED CAUSES AND EFFECTS OF PREMENSTRUAL SYNDROME
AMONG FEMALE UNDERGRADUATES IN UNIVERSITY OF ILORIN,
NIGERIA**

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Abstract

Premenstrual syndrome occurs in days leading up to women's menstruation and it has a number of physical and emotional symptoms, which have significant impact on daily life including academic performance and social interactions. The objectives of the study examined if hormonal fluctuation and genetic factor are perceived causes, and if emotional distress is an effect of premenstrual syndrome among female undergraduates in University of Ilorin. Descriptive research of the survey type, involving 391 female undergraduates, was adopted for the study. A structured questionnaire, validated by three experts and tested for reliability which was considered reliable, was used for data collection. Chi-square statistics were employed for data analysis @0.05 level of significance. The findings of the study were that hormonal fluctuation ($\chi^2=153.184$, $p<0.05$), and genetic factor ($\chi^2=143.442$, $p<0.05$) are significantly perceived causes of premenstrual syndrome and emotional distress ($\chi^2=159.013$, $p<0.05$) is significantly perceived effect of premenstrual syndrome. The study concluded that hormonal fluctuation and genetic factor are causes while emotional distress is an effect of premenstrual syndrome as perceived by female undergraduates in University of Ilorin. It was recommended that female undergraduates should be educated on hormonal changes and provided with access to medical consultations for hormonal regulation.

Keywords: Perceived, Cause, Effect, Premenstrual Syndrome, Undergraduates

Introduction

Many women, especially those who are in their reproductive years, suffer from premenstrual syndrome (PMS). In the days before their period, it shows up as a range of physical and emotional symptoms. When a woman's menstruation starts and her body releases an egg from the ovary, a process known as ovulation, PMS happens. Usually, it occurs one to two weeks before the onset of menstruation, and the symptoms usually disappear once the period begins. Premenstrual syndrome can also have significant impact on daily life including academic performance and social interactions. The symptoms of PMS can lead to increased absenteeism from classes and decreased participation in extracurricular activities. Unfortunately, there is often a social stigma surrounding PMS, which makes it challenging for women to discuss their experiences openly. The exact cause of PMS is not fully known but it's thought to be related to the hormones in the body.

A considerable percentage of women who are of reproductive age suffer from premenstrual syndrome (PMS), a common and frequently incapacitating ailment. Women's quality of life can be significantly impacted by PMS, which is characterised by a combination of emotional, physical, and behavioural symptoms that arise during the luteal phase of the menstrual cycle. A pattern of symptoms that usually appear in the later half of the menstrual cycle and go away with the start of menstruation is known as premenstrual syndrome. Symptoms can include mood swings, irritability, anxiety, bloating, breast tenderness, and fatigue (Yonkers & Simoni, 2018). While mild symptoms are common among menstruating women, a subset of individuals experiences more severe manifestations, classified as Premenstrual Dysphoric Disorder (PMDD) (Hantsoo & Epperson, 2015; Harande et al., 2025).

Recurrent, moderate-to-severe emotional, physical, and behavioural symptoms that arise during the luteal menstrual cycle and go away a few days after menstruation are the hallmark of PMS. Premenstrual dysphoric disorder (PMDD) is a severe and disabling condition that can affect personal relationships and occupational activities. PMS occurs in 30-40% of reproductive-age females; PMDD affects 3-8% of this population. Although

the aetiology of PMS is unclear, several theories suggest increased sensitivity to normal hormonal changes and neurotransmitter abnormalities. The diagnostic method of PMS is the Daily Record of Severity of Problems, which women with PMS can use to self-report several symptoms and their severity. Although combined oral contraceptives and serotonergic antidepressants are effective drugs, each is a different option for treating PMS/PMDD. Serotonergic antidepressants are the drugs of choice for improving both physical and mood symptoms. Combined oral contraceptives appear to primarily improve physical symptoms. Clinicians should consider each patient's situation individually (Ryu & Kim, 2015). Other treatment options include lifestyle modification, cognitive behavioural therapy, and herbal medicine (e.g., chasteberry).

Premenstrual Syndrome has evolved from a historical acknowledgment of menstrual-related symptoms to a well-defined medical condition. Ancient references to menstrual discomfort can be found in the works of Hippocrates and traditional medical practices like Ayurveda (Wolkowitz, 2018). The term "Premenstrual Syndrome" was formalized in the mid-20th century, with significant advances in the understanding and classification of the condition emerging in the 1980s (Yonkers et al., 2015). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) recognised Premenstrual Dysphoric Disorder (PMDD) as a severe form of PMS, highlighting the need for distinct clinical criteria (American Psychiatric Association, 2013). Recent research has further elucidated the role of hormonal fluctuations, genetic factors, and lifestyle influences in PMS, leading to improved management strategies (Hantsoo & Epperson, 2015; Dixon 2022). A collection of physical, mental, and behavioural symptoms that arise during the luteal phase of the menstrual cycle and usually go away with the start of menstruation are the hallmarks of PMS (Hantsoo & Epperson, 2015). The hormonal changes linked to the menstrual cycle, specifically the variations in progesterone and oestrogen levels that take place in the days preceding menstruation, are directly linked to PMS (Strahler et al., 2020). These hormonal variations can lead to symptoms such as mood swings, irritability, fatigue, and physical discomfort, which significantly impact a woman's quality of life during this phase (Baker et al., 1995). Recent research continues to explore the intricate relationship between menstrual cycle dynamics and PMS symptoms, emphasizing the need for a comprehensive understanding of this condition (Dixon, 2022).

Menstruation is the monthly process of shedding the uterine lining, occurring in females of reproductive age as part of the menstrual cycle, typically lasting about 28 days (Miller et al., 2024). This cycle involves complex hormonal fluctuations, primarily in oestrogen and progesterone, which prepare the uterus for potential pregnancy and subsequently lead to the menstrual flow if fertilization does not occur. These hormonal changes are strongly linked to premenstrual syndrome (PMS), which is characterised by a variety of symptoms that appear in the luteal phase of the menstrual cycle, before to menstruation, such as mood swings, irritability, and physical pain (Hantsoo & Epperson, 2015). The way these hormonal changes interact with PMS symptoms highlights how closely the disorder is linked to the menstrual cycle and its physiological functions (Dixon, 2022). Premenstrual syndrome is largely caused by hormonal changes. Progesterone and oestrogen are important hormones in the menstrual cycle, and PMS is strongly associated with their fluctuations. In the luteal phase of the menstrual cycle (the period after ovulation and before menstruation), oestrogen levels generally increase, while progesterone levels rise more dramatically. These hormonal changes can lead to various PMS symptoms. High levels of oestrogen can cause symptoms such as mood swings, irritability, and bloating. Oestrogen is known to influence neurotransmitters in the brain, including serotonin, which affects mood and emotional stability (Yonkers et al., 2015). Progesterone levels increase after ovulation and peak just before menstruation. Elevated progesterone can lead to symptoms such as breast tenderness, fatigue, and depression. Progesterone affects GABA receptors in the brain, which can influence mood and anxiety levels (Möller-Leimkühler, 2005).

Genetic factors contributing to PMS involve a complex interplay between hormonal regulation, neurotransmitter systems, and inflammatory pathways. Oestrogen plays a crucial role in PMS. Genetic variations in oestrogen receptor genes (such as ESR1 and ESR2) have been associated with susceptibility to PMS. Polymorphisms in these genes can affect receptor sensitivity and hormonal fluctuations (Jeon et al., 2010). Serotonin is involved in mood regulation, and its dysfunction is linked to PMS symptoms such as irritability and depression. Variants in the serotonin transporter gene (SLC6A4) have been studied for their role in PMS. The presence of specific polymorphisms, like the 5-HTTLPR, has been associated with increased PMS symptoms (Zhao et al., 2013).

Diet and nutrition also play a significant role in the manifestation of PMS. Recent studies have highlighted that poor dietary choices, such as high intake of refined carbohydrates and sugars, can exacerbate PMS symptoms by

causing fluctuations in blood glucose levels and increasing insulin resistance. Additionally, deficiencies in essential nutrients like magnesium, calcium, and vitamin B6 have been linked to more severe PMS symptoms, as these nutrients are crucial for maintaining hormonal balance and reducing inflammation. For instance, a 2021 study by Khademi and colleagues found that increasing dietary calcium and vitamin B6 intake could alleviate PMS symptoms, underscoring the impact of proper nutrition on managing the condition (Khademi et al., 2021). Emotional distress associated with PMS is characterized by significant psychological symptoms including mood swings, irritability, anxiety, and depressive moods, which can profoundly affect interpersonal relationships, daily functioning, and overall quality of life. Research highlights that these emotional symptoms often escalate in the luteal phase of the menstrual cycle and can lead to substantial impairments in social, occupational, and personal domains. For example, Hofmeister and Bodden (2016) found that PMS symptoms, particularly mood disturbances, can result in decreased productivity and increased absenteeism from work or school. Similarly, a review by Yonkers et al., (2015) underscores that emotional distress in PMS is not only disruptive but also exacerbates feelings of hopelessness and frustration, impacting mental health and well-being. Furthermore, Reiner et al. (2016) notes that emotional symptoms of PMS often overlap with clinical mood disorders, complicating diagnosis and treatment but highlighting the severity of emotional distress in affected individuals.

Behavioural changes associated with PMS are marked by alterations in daily activities, social interactions, and personal habits, which are often observed in the luteal phase of the menstrual cycle. These changes include increased irritability, withdrawal from social activities, and alterations in productivity and motivation. Women with PMS may experience difficulties in maintaining routine activities, leading to a noticeable decrease in work performance, academic productivity, and participation in social events. For example, Abdulbaqi et al. (2025) and Hofmeister and Bodden (2016) identified that individuals with PMS often show significant declines in work efficiency and increased absenteeism due to heightened emotional symptoms and physical discomfort. Similarly, Yonkers et al., (2015) reported that behavioural manifestations of PMS include social withdrawal and changes in eating and sleeping patterns, which can exacerbate the overall impact on daily functioning. A study by Epperson et al., (2017) further highlighted that PMS can lead to increased impulsivity and risk-taking behaviours, contributing to difficulties in managing daily responsibilities and maintaining stable relationships. The physical effects of PMS can vary widely among females. Physical symptoms include mastalgia, bloating and fluid retention. Mastalgia is one of the most common physical symptoms of PMS. Studies have shown that hormonal fluctuations, particularly increased oestrogen and progesterone levels during the luteal phase, play a significant role in this symptom. Cyclic mastalgia is associated with increased levels of progesterone, which can lead to changes in breast tissue and increased sensitivity (Gao et al., 2021).

Statement of the Problem

In University of Ilorin, a significant proportion of female undergraduates' experience PMS symptoms, which can lead to absenteeism, decreased productivity, and reduced academic performance. However, the perceived causes and effects of PMS among these students are not well understood. This study is crucial to develop effective interventions to reduce the negative impact of PMS on these students. PMS is a complex condition with multiple perceived causes including hormonal fluctuations, dietary factors, lifestyle habits, and psychological factors (Newton et al., 2018). Furthermore, research has shown that PMS can have significant effects on the mental health, including anxiety, depression, and irritability (Steiner et al., 2000). Despite all these findings, there is limited research on the perceived causes and effects of PMS among female undergraduates in Nigeria. This study aims to address this knowledge gap by exploring the perceived causes and effects of PMS among female undergraduates in University of Ilorin.

The prevalence of PMS is estimated to affect up to 80% of menstruating women, with symptoms ranging from mild to severe. Common physical symptoms include bloating, breast tenderness and fatigue while emotional symptoms can include mood swings, irritability, anxiety and depression. For female undergraduates who are often navigating the complexities of academic responsibilities, social dynamics and personal development, the impact of PMS can be particularly profound. Their experiences have been characterized by fluctuating symptoms that interfere with their academic and social life. Many female undergraduates find themselves struggling to concentrate during lectures and completing assignments especially in the days leading up to their period. Witnessing these experiences among female undergraduates has highlighted the shared challenges faced by many

young women, yet there remains a lack of comprehensive understanding regarding the specific causes and effects of PMS within this demographic.

Despite the significant prevalence of PMS, there is limited qualitative research focused on female undergraduates' perception of its causes and effects. Existing studies primarily examine clinical perspectives or general population samples, often overlooking the unique experiences of young women in academic settings. This gap in understanding is critical, as the academic environment can exacerbate the symptoms of PMS, leading to detrimental outcomes in both academic achievement and mental well-being. Through this research, the researcher sought to explore the perceived causes of PMS among female undergraduates, which may include lifestyle factors such as stress from academic pressures, irregular sleep patterns, poor nutrition, and socio-cultural influences. Additionally, the effects of PMS on daily functioning, academic performance, social interactions and mental health were examined to provide a comprehensive understanding of how this syndrome impacts young women.

Objectives of the Study

The objectives of the study were to examine if;

1. hormonal fluctuation is perceived as a cause of premenstrual syndrome among female undergraduates at the University of Ilorin.
2. genetic factors is perceived as a cause of premenstrual syndrome among female undergraduates at the University of Ilorin.
3. emotional distress is perceived as an effect of premenstrual syndrome among female undergraduates at the University of Ilorin.

Research Hypotheses

The following research hypotheses were raised to guide the conduct of the study;

1. Hormonal fluctuation will not be significantly perceived as a cause of premenstrual syndrome among female undergraduates at the University of Ilorin.
2. Genetic factors will not be significantly perceived as a cause of premenstrual syndrome among female undergraduates at the University of Ilorin.
3. Emotional distress will not be significantly perceived as an effect of premenstrual syndrome among female undergraduates at the University of Ilorin.

Methodology

A descriptive survey research design was adopted for this study, as it allows for the systematic collection, analysis, and interpretation of data related to existing conditions. This design is appropriate because it facilitates the clear definition of the research problem, the gathering of relevant and sufficient data, and the accurate description of phenomena as they occur within the population. Furthermore, it enables the use of representative samples to draw valid conclusions about the broader population. The population of the study comprised all female undergraduates at the University of Ilorin. The total undergraduate population across the sixteen faculties is 49,587, out of which 25,663 are female undergraduates, who constitute the focus of this study.

Table 1: Population of the Study

S/N	Faculty	Female Population	Total of Undergraduate
1	Agriculture	2,975	4,586
2	Arts	3,121	5,381
3	BCS	765	1,170
4	Basic Medical Sciences	757	1,361
5	Clinical Sciences	823	1,300
6	Communication and Information Science	1,227	3,120
7	Education	6,015	10,344
8	Engineering	529	3,666
9	Environmental Sciences	209	891
10	Law	551	984
11	Life Sciences	2,621	4,270
12	Management Sciences	2,506	4,272
13	Pharmacy	318	572
14	Physical Sciences	1,086	3,429
15	Social Sciences	1,890	3,730
16	Veterinary Medicine	270	511
	TOTAL	25,663	49,587

A multi-stage sampling technique was employed in this research. In the first stage, random sampling technique was used to select six (6) faculties out of sixteen (16) faculties which has already been in strata. The six faculties were chosen through a balloting method by selecting six wrapped papers out of sixteen (16) rapped papers with the help of research assistants. The selected six (6) faculties are faculties of Art, communication and Information Science, Environmental Science, Law, Social Science and Clinical Science. In the second stage, a proportionate sampling technique was used to select 5% of the faculties. In the final stages, convenience sampling was used to select 391 respondents for the study. The sample size is adequate enough because the total population for this research work is more than 10,000 respondents. Research monitor/advisor (2006) claimed that for the population of more than 10,000, the sample size for the study should not be less than 380 at 95% level of confidence and 5% margin error. Since the total population for this study is 7,821 respondents, then this sample size is appropriate.

Table 2: Sample Size for the Study

Faculties	Population of Females	5% of Sample	Actual Sample
Art	3,121	156.05	156
Communication & Information Science	1,227	61.35	61
Environmental Science	209	10.45	10
Law	551	27.55	28
Social Sciences	1,890	94.5	95
Clinical Science	823	41.15	41
Total	7,821	391.05	391

The instrument used for this research is a researcher's structured questionnaire consisting of two sections, A and B. Section A contains the demographic data of the respondents, such as age range, level of study, religion, and gender, while Section B contains structured items on the causes and effects of premenstrual syndrome among female undergraduates in University of Ilorin. The response mode of the questionnaire was modified into four-point Likert-rating scale of Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2, Strongly Disagree (SD) =1. The instrument was validated by three experts in the field of Health Promotion and Environmental Health Education to ascertain its contents and face validity. In line with comments and suggestion of the three experts, the researchers prepared the final draft of the instrument. In order to determine the reliability of the instrument used in this study, the researchers' adopted split-half method by administering 20 questionnaires to the female undergraduates of Kwara State University, Malete, which is outside the area of study but share the same characteristics. The reliability coefficient of 0.81 was obtained using Cronbach Alpha Statistics, which show that the instrument was reliable enough for the study. The researchers sought for the consent of all those who participated in the study. The researchers were clear to respondents that they are free to decide on whatever information they wish to share with the researchers and that they are under no pressure or obligation to discuss matter they do not wish to carry out. The researchers made every effort with two other trained assistants to

administer the instrument and protect the confidentiality of the research participants; the copies of the instruments were collected back on the spot to ensure hundred percent (100%) retrieval rate. Inferential statistics of chi-square was used to analyse the stated hypotheses @ 0.05 level of significance.

Result

H0₁: Hormonal fluctuation will not significantly be perceived as a cause of premenstrual syndrome among female undergraduates in University of Ilorin.

Table 3: Chi-Square Analysis of Hormonal Fluctuations as a Perceived Cause of Premenstrual Syndrome

Variable	N	df	Cal. χ^2 value	P value	Remark
Hormonal Fluctuations as a Perceived Cause of Premenstrual Syndrome	391	9	153.184	0.000	H0 ₁ Rejected

Table 3 shows the calculated chi-square value of 153.184 with p-value of 0.00 which is lower than 0.05 alpha level. Since p-value is lower than 0.05 alpha level, the null hypothesis was rejected. This implies that hormonal fluctuation is a cause of premenstrual syndrome as perceived by female undergraduates in University of Ilorin.

H0₂: Genetic factor will not significantly be perceived as a cause of premenstrual syndrome among female undergraduates in University of Ilorin.

Table 4: Chi-Square Analysis of Genetic Factor as a Perceived Cause of Premenstrual Syndrome

Variable	N	df	Cal. χ^2 value	P value	Remark
Genetic Factor as a Perceived Cause of Premenstrual Syndrome	391	9	143.442	0.000	H0 ₂ Rejected

Table 4 shows the calculated chi-square value of 143.442 with p-value of 0.00 which is lower than 0.05 alpha level. Since p-value is lower than 0.05 alpha level, the null hypothesis was rejected. This implies that genetic factor is a cause of premenstrual syndrome as perceived by female undergraduates in University of Ilorin.

H0₃: Emotional distress will not significantly be perceived as an effect of premenstrual syndrome among female undergraduates in University of Ilorin.

Table 5: Chi-Square Analysis of Emotional Distress as a Perceived Effect of Premenstrual Syndrome

Variable	N	df	Cal. χ^2 value	P value	Remark
Emotional Distress as a Perceived Effect of Premenstrual Syndrome	391	9	159.013	0.000	H0 ₃ Rejected

Table 5 shows the calculated chi-square value of 159.013 with p-value of 0.00 which is lower than 0.05 alpha level. Since p-value is lower than 0.05 alpha level, the null hypothesis was rejected. This implies that emotional distress is an effect of premenstrual syndrome as perceived by female undergraduates in University of Ilorin.

Discussion of Findings

The study investigated the perceived causes and effects of premenstrual syndrome among female undergraduates, with findings indicating that hormonal fluctuation is significantly perceived as a major cause. This perception is not unexpected, given the widespread biomedical framing of premenstrual syndrome in both academic literature and public health discourse. While the respondents' views align with the position of Okonofua et al. (2022), who associated post-ovulatory progesterone decline with neurochemical changes affecting mood, it is important to emphasize that the present study reflects perception rather than clinical verification. The prominence of hormonal explanations among participants may therefore be influenced by exposure to health education materials, media narratives, and prior knowledge acquired in academic settings. This suggests that female undergraduates are internalizing dominant scientific explanations of premenstrual syndrome, even though individual experiences may vary.

Furthermore, the attribution of symptoms such as irritability, anxiety, and depression to serotonin imbalance demonstrates a biologically oriented understanding among respondents. However, this perception may also obscure the potential contribution of psychosocial factors, which are often underemphasized in biomedical explanations. While Adefolalu et al. (2019) linked oestrogen fluctuations to physical symptoms such as bloating and headaches, the current findings suggest that students tend to interpret these physiological processes as direct

causes, rather than as part of a complex interaction between biological and environmental influences. This highlights a need for more comprehensive health education that integrates both biological and psychosocial dimensions of premenstrual syndrome.

In addition, the finding that genetic factors are significantly perceived as a cause of premenstrual syndrome reflects an emerging awareness of hereditary influences. This aligns with studies by Olamide et al. (2020) and Adewuya et al. (2009), which reported associations between family history and premenstrual syndrome experiences. However, the perception of genetic causation among respondents may be shaped more by general beliefs about heredity than by detailed understanding of genetic mechanisms. While studies such as Caruso (2019) have identified associations between estrogen receptor gene variations and premenstrual syndrome susceptibility, it is unlikely that participants possess in-depth knowledge of such molecular processes. Therefore, their responses may represent a generalized assumption that health conditions tend to run in families.

This finding raises important considerations regarding the interpretation of genetic explanations in perception-based studies. While participants' views are consistent with existing literature, the discussion should acknowledge that these perceptions may oversimplify complex gene-environment interactions. The tendency to attribute premenstrual syndrome to genetic factors could also influence coping behaviours, potentially leading individuals to perceive the condition as inevitable or less amenable to intervention. This has implications for health education, as it underscores the importance of promoting modifiable risk factors and management strategies alongside awareness of biological predispositions.

Finally, the study found that emotional distress is significantly perceived as an effect of premenstrual syndrome. This perception is strongly supported by existing literature, including Hofmeister and Bodden (2016), who reported high prevalence of mood-related symptoms among affected women. Similarly, Yonkers and Simoni (2018) emphasized the role of hormonal fluctuations in influencing neurotransmitter systems linked to mood regulation. However, within the context of this study, it is important to interpret these findings as perceived effects rather than clinically measured outcomes. The prominence of emotional distress in the responses suggests that female undergraduates experience or anticipate significant psychological impact during the premenstrual phase. This may reflect both lived experiences and socially shared narratives about premenstrual syndrome. Notably, the emphasis on mood swings and emotional instability indicates that the condition is perceived not only as a physiological issue but also as one with substantial psychosocial consequences. This aligns with broader research highlighting the interaction between hormonal changes and environmental stressors in shaping emotional responses.

Comparatively, while the present findings are consistent with prior studies, they also underscore the need to contextualize premenstrual syndrome within the lived realities of students. Academic pressures, social relationships, and lifestyle factors may interact with physiological processes to influence the perception and experience of symptoms. Therefore, interpreting emotional distress solely through a hormonal lens may provide an incomplete understanding. Essentially, the study contributes to existing knowledge by highlighting how female undergraduates conceptualize the causes and effects of premenstrual syndrome. The findings suggest a strong inclination toward biomedical explanations, with less explicit recognition of psychosocial influences. For health education practice, this indicates the need for more holistic interventions that address both biological understanding and coping strategies. Institutions should consider integrating menstrual health education into student support services, emphasizing accurate information, myth correction, and practical management approaches. Such efforts could enhance students' ability to interpret and manage premenstrual symptoms more effectively, thereby improving their overall well-being and academic functioning.

Conclusion

Based on the findings of the study, the following conclusions were drawn:

1. Hormonal fluctuation is perceived as a cause of premenstrual syndrome among female undergraduates in University of Ilorin.
2. Genetic factor is perceived as a cause of premenstrual syndrome among female undergraduates in University of Ilorin.

3. Emotional distress is perceived as an effect of premenstrual syndrome among female undergraduates in University of Ilorin.

Recommendations

Based on the findings, the following recommendations were drawn:

1. Female undergraduates should be educated on hormonal changes and provided with access to medical consultations for hormonal regulation. Universities should organize workshops on menstrual health management.
2. Educational campaigns should be implemented to raise student awareness about the genetic factors contributing to premenstrual syndrome (PMS), prompting individuals with a family history of severe symptoms to consult healthcare professionals.
3. Health educators should encourage students in the development of healthy coping strategies such as mindfulness, stress management techniques and regular physical activity to help students manage mood swings, irritability, and emotional sensitivity commonly associated with premenstrual syndrome.

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