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ASSESSING THE RELATIONSHIP AMONG MENSTRUAL SYMPTOMS, PERSONALITY TYPE AND ACADEMIC PERFORMANCE OF SCIENCE STUDENTS IN HIGH SCHOOL

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Abstract: *The study assessed the relationship among menstrual symptoms, personality type and academic performance of science students in high school. In the light of this, four specific objectives and research questions which were enumerated were achieved and answered respectively. Purposive sampling technique was used to select one-hundred and fifty-five (155) female respondents among the target population. Three instruments comprised questionnaire tagged Menstrual Symptoms and Academic Performance Questionnaire (MSAPQ), Cognitive Type Inventory as well as secondary data on the raw scores of the sampled respondents in Biology from Unified Promotion Examination (UPE) during 2018/2019 academic calendar were used to elicit information. The data obtained were analysed with the aid of both descriptive and inferential statistics. The empirical findings revealed that abdominal cramp, sleep disturbance, pelvic pain, tiredness, backache, forgetfulness, loss of appetite, mood swings, breast tenderness, diarrhea, dizziness, nervousness and hostility were some of the prevalent menstrual symptoms among students, negative but weak and insignificant association existed between menstrual symptoms and personality type components (Extroversion, Sensing, Thinking and Judging), positive and strong correlation was established between sensing and thinking on academic performance in Biology, and negative but insignificant weak linear relationship was found between menstrual symptoms and students' academic performance in Biology. Based on the findings of the study, recommendations comprised provision of relief facilities within the school environment for the benefit of menstruating students, application of varieties of teaching methods, embracement of the in loco parentis role by the teachers through keeping watchful eyes on their students among others.*

Key Words: *Menstrual Symptoms, Personality Type, Academic Performance, Science Students.*

1. INTRODUCTION:

It may not be an overstatement to say that properly and adequately educated girls are the future of any nation. This is because the quality of girls that make up a country will actually determine the type of women such country would have, the quality of women a country has will surely dictate the type of mothers such country would contain, the quality of mothers a country contains will influence the type of children (female and male) such country would give rise to, the quality of children that characterize a country will on the long run determine the future of such country. Therefore, a nation that aims at having a secure and prosperous future for her generation will admire all it entails to give quality attention to all factors that could make the raising of properly and adequately educated girls a mirage. Thus, access to quality education for girls should be paramount and factors that may deny them of such access be addressed.

According to UNICEF (2004) educating girls means more than just learning to read, write and count, it means empowering girls and women and investing in our next generation to improve living conditions and break the vicious cycle of poverty. In view of this, improving academic performance of girls should be a priority to all stakeholders of education. Academic performance is a measurable and observable behaviours of a student within a specific period (Onifade and Bello, 2010). Also, Martha (2009) emphasized that academic performance of students is defined by a student's performance in an examination, tests and in a course of work. Examining the definitions of academic performance given above, one can refer to academic performance as the extent of success a student is able to make after being exposed to a course of instruction or study. A student that is successful in her academic carrier is likely going to succeed in other future endeavours.

A lot of factors have been considered as impediments to high academic performance of girls especially at secondary school level. For instance, Asoka, Ali and Azim (2018) said that many factors such as lack of facilities in schools, lack of teachers, indiscipline, unfavourable home environment, absenteeism and repetition do cause poor academic performance. Aremu (2002 found that factors which are home, school and community based continue to

restrict development in female education. However, other factors which may have relationship with academic performance of female may be nature based. These nature based factors are menstrual symptoms and personality type. Mensuration may be referred to as a natural call which adolescent girls start to obey at a particular period of their life which often coincide with their secondary school age. It is a period when girls attain sexual maturity. Mensuration, also known as a period, is the regular discharge of blood and mucosal tissue (known as menses) from the inner lining of the uterus through the vagina (Kerri, 2011). He explained that the first period usually begins between twelve and fifteen years of age, a point in time known as menarche. Periods may occasionally start as young as eight years old and still be considered normal (Diaz, Loufer and Breech, 2006). Mensuration is associated with some painful physical symptoms like breast tenderness, diarrhea, back pain, vomiting and fluid retention (Suman and Mrundini, 2013).

Since menstruation is associated with some painful symptoms as identified above, thus menstruation may likely have influence on the type of behaviours which menstruating girls may like to put up in the classroom or outside the classroom. Besides, it may also affect the way they feel, the way they think, and the way they interact with both human and non-human resources during teaching-learning situation. Emeke (2012) described personality as the patterns of thought, feelings and behaviours that make a person unique. According to Bernstein, Penner and Roy (2008) personality is defined as the characteristic set of behaviours, cognitions, and emotional patterns that evolve from biological and environmental factors. Personality type is referred to as the characteristic ways in which an individual approaches life's experience (Jung, 1970). Also, John (2006) viewed personality types as a comfort zone where thinking occurs with less efforts and with the greatest trust. Since personality type can be described as the exhibition of some characteristic thoughts, feelings and behaviours by an individual in interacting with his/her environment therefore menstrual symptoms which said to be painful may have influence on the personality type of menstruating girls.

For instance, some researchers have established relationship between menstrual symptoms and personality trait while other did not. Taylor, Fordyce and Alexander (1999) indicated that neuroticism, agreeableness were positively related to premenstrual symptoms. While extroversion, conscientiousness and openness were not. Also, Gaion ans Vieira (2011) demonstrated that individuals with premenstrual symptoms displayed introversion and low desire for change. Some of the personality models that have been developed to measure personality types and traits are; The Big Five Factor Personality Model, Cattell's 16 PF Model, Belbin team role model and Myers-Briggs Personality Model which is used in this study. Myers-Briggs Personality Model was developed in the early 1950's by Isabel Briggs Myers and Katherine Cooks Briggs. In the Myers-Briggs Personality Model, it is proposed that an individual's personality profile can be factored into four dimensions. These dimensions include: Orientation to life (Extroversion/introversion personality) perception (sensory/intuition), decision making (Thinking/Feeling) and attitude to outside world (Judging/Perception). With these dimension, an individual personality can be explained by two major personality types: Personality type-ESTJ (Extroversion, Sensing, Thinking, and Judging) and Personality types-INFP (Introversion, iNtuition, Feeling and Perception).

The focus of this study is personality type—ESTJ. According to Kendra reviewed by Amy (2019), individual with personality type-ESTJ are hardworking, eager to take charge in organising projects and people. They are orderly, rule abiding and conscientious. ESTJs like to get things done and tend to go about project in a systematic and methodical way. They went further to say that ESTJs rely on logic to make decisions rather than personal feelings. They are skilled at making objective, impersonal decisions. The characteristics which ESTJs tend to exhibit in approaching life's experience may make it relevant to the study of science especially biology.

Considering the influence of menstrual symptoms on academic performance of girls, Omu, Al-Marzouk and Delles (2014) said that the duration of menstrual cycle which usually occurs every 28 days varies from 4-10 days with an average of 6 days. This indicates that menstruating girls would have to undergo this painful biological process for about 6 days every month irrespective of the situation they may find themselves. Since menses can occur in adolescent girls at any time of the day or in any situation even during teaching-learning, hence menstrual symptoms could put girls at a disadvantages in an attempt to compete keenly with their male counterparts in the classroom. According to Suguna (2017), menstrual symptoms may play a major role in the academic performance of some adolescent female students. He further stressed that the academic performance of girls varies during their menstrual cycle in a way that the mental status is decreased during and several days before the period. In a study carried out by Jahromi and Gaan (2008) on well academically qualified women, it was established that these women were less likely to be negatively affected by menses. A lot of findings had been reported by researchers on the relationship between personality type and academic performance. Manisha and Dharmesh (2015) established that conscientiousness is statistically and positively correlated to academic success. Mso, Byong, David and Umah (2014) found a significant difference between the achievement of students with high level of conscientiousness and agreeableness and those with low levels of the traits. Anna, Marietta and Andra (2014) reported that among Business Administration and Management students, INTJ, ESTJ and ESFJ students outperform the others. The various researchers cited in this study had revealed mixed findings on the correlation among menstrual symptoms, personality type and academic performance. Apart from this, many of them concentrated

on the use of Big five personality to measure personality model, whereas very few of them used Myers Bigg personality Model. Most of the previous works did not centre on adolescent girls only.

2. STATEMENT OF THE PROBLEM:

The problem of underperformance in various school subjects among secondary school students especially the females has been given stakeholders of education a lot of worry. This is because, over the years many scholars have reported that high academic performance in science subjects had always been in favour of males whereas, poor academic performance had made many girls (future mothers) to drop out of school. Many scholars found that the dropout rate in secondary school is somehow higher among females than their male counterparts. Several factors have been researched on in the past as to the cause of poor academic performance of adolescent girls, but there seem to be indications that some other factors may be responsible that need to be given quality attention by researchers with a view to unfolding them. For example, female students are subjected to a biological role which is gender specific. The biological role is menstruation which is associated with some painful symptom that may have negative influence on the type of feelings and behaviours menstruating girls may tend to exhibit during teaching-learning situation. It may also have correlation with the academic performance of female students only. As menstrual symptoms and personality types could contribute to girls' failure or success in schools, the aim of this study is to assess the relationship among menstrual symptoms, personality type and academic performance of science students in high school.

3. OBJECTIVE OF THE STUDY:

The study's broad objective is to assess the relationship among menstrual symptoms, personality type and academic performance of science students in high school in Irewole Local Government Area of Osun State. While, the specific objectives are to;

i. ascertain the prevalent menstrual symptoms among high schools science students in Irewole Local Government Area of Osun State;

ii. determine the relationship between menstrual symptoms and personality type-ESTJ of high school science students in Irewole Local Government Area of Osun State;

iii. assess the relationship between menstrual symptoms and academic performance of high school science students; and

iv. Assess the relationship between personality type-ESTJ and academic performance of high school science students.

3.1 Research Questions

The following research questions are raised and answered.

i. What are the prevalent menstrual symptoms among high school science students in Irewole Local Government Area of Osun State?
ii. What is the relationship between menstrual symptoms and personality type-ESTJ of high school science students in Irewole Local Government Area of Osun State?
iii. What is the relationship between menstrual symptoms and academic performance of high school science students in Irewole Local Government Area of Osun State?
iv. What is the relationship between personality type--ESTJ and academic performance of high school science students in Irewole Local Government Area of Osun State

4. METHODOLOGY:

Research Design

The study employed descriptive survey research design which is also known as ex post facto research design. The design was considered adequate for this research work due to its unique and in-built features such that the researcher can only report what has happened or what is happening without having substantive control over the variables used in the study. In this study, however, the researcher was not interested in controlling the symptoms attributable to students' menstrual cycle, personality type possessed by them and academic performance originated from participants under consideration. The researcher's intention was to ascertain relationship among these variables.

Target Population

All Grade XII (Senior Secondary School Three) science students in public high schools in Irewole Local Government Area of Osun State during 2018/2019 academic session were the target population scheduled for the study.

Sample and Sampling Technique

One-hundred and fifty five (155) female science students were sampled from two public high schools in Irewole Local Government Area of Osun State. These schools and respondents were purposively sampled due to attributes like oldest in year of establishment, sustenance of high standard in the area of teaching and learning as well as having large number of students' enrolment into science streams compared to other sister schools within the studied area.

Instrumentations

Three different instruments were used to obtain the relevant data from the respondents. The first adapted instrument from Janula and Suguna (2017) which was tagged Menstrual Symptoms and Academic Performance Questionnaire (MSAPQ) was used to elicit information on menstrual symptoms and academic performance. This instrument consisted of three sections. Section A focused on the respondents' baseline characteristics, section B entailed items on various prevalent menstrual symptoms, while section C comprised items on academic performance respectively.

The second research instrument tagged Cognitive Type Inventory was an adapted instrument from Reinhold (2006). The instrument contained twenty four (24) items. The instrument measured the respondents' personality type-preferences (extroversion, sensing, thinking and judging). While, raw scores of these students on Biology was extracted from Unified Promotion Examination (UPE) results conducted by Osun State Ministry of Education during 2018/2019 academic calendar as a third instrument to proxy students' academic performance in Biology.

Validity and Reliability of the Instrument

Validity

In order to effectively ensure the validity of the instruments used for this study, the instruments were subjected to content validity measurement which involves face validity and predictive validity. On face and content validity, the items are presented in simple language for easy understanding by the respondents and are also logically and systematically arranged in line with the research questions enumerated. The researcher ensured the validity of the instruments by making sure that the contents of the instruments are consistent with both the objectives and research questions of the study.

Reliability

The instruments were still trial-tested among forty (40) science female students from other public high schools within the studied area. Cronbach Alpha was used to establish the reliability coefficient of both instruments. The estimated reliability of items on menstrual symptoms, academic performance and cognitive type inventory were 0.81, 0.71 and 0.62 respectively. The outcomes posit that the instruments were suitable, appropriate, adequate and reliable for the research work.

Procedure for Data Collection

Before the administration of the instrument, an initial visit was made to the sampled schools where the purpose of visitation was made known to the school management and permision was solicited from the principal of each of the selected high schools in Irewole Local Government Area of Osun State. After this, the researcher personally commenced the administration of the instrument the following week.

Method of Data Analysis

The quantitative data collected were analysed using both descriptive and inferential statistics. Descriptive statistics comprised simple percentage while inferential statistics entailed correlation analysis.

5. FINDINGS OF THE STUDY :

Research Question I: What are the prevalent menstrual symptoms among high school science students in Irewole Local Government Area of Osun State?

Table 1: Descriptive statistics showing the respondents' view towards the prevalent menstrual symptoms among high schools science students in Irewole Local Government Area of Osun State.

Items	Yes	No
Abdominal cramp	103 (66%)	52 (34%)

Anger	59 (38%)	96 (62%)
Sleep disturbance	99(64%)	56(34%)
Pelvic pain	122 (79%)	33(21%)
Tiredness	145((94%)	10(6%)
Backache	107(69%)	48(31%)
Headache	55(35%)	100(65%)
Forgetfulness	88 (57%)	67(43%)
General body ache	56(34%)	99(64%)
Loss of appetite	79(51%)	76(49%)
Vomiting	48(31%)	107(69%)
Mood swings	96 (62%)	59 (38%)
Breast tenderness	149(96%)	6(4%)
Constipation	67(43%)	88(57%)
Diarrhea	103 (66%)	52 (34%)
Dizziness	97((63%)	58(47%)
Nervousness	107(69%)	48(31%)
Hostility	88(57%)	67(43%)

Table 1 revealed that some of the prevalent menstrual symptoms among adolescent of secondary schools comprised abdominal cramp, sleep disturbance, pelvic pain, tiredness, backache, forgetfulness, mood swings, breast tenderness, diarrhea, dizziness, nervousness and hostility as reflected by the opinion of the majority of respondents. The empirical evidence indicated that one-hundred and three (103) participants which accounted for sixty-six per cent (66%) of the entire participants concurred that abdominal cramp was a menstrual symptom experienced by them during this time. While, fifty-two of them (52) which amounted to thirty-four per cent (34%) denied the present of this symptom during the time of their menstruation. Also, ninety (99), one-hundred and twenty two (122), one-hundred and forty five (145) and one-hundred and seven (107) which represented sixty four per cent (64%), seventy nine per cent (79%), ninety four per cent (94%) and sixty-nine per cent (69%) of the entire participants agreed that their menstrual period usually followed by symptoms like sleep disturbance, pelvic pain, tiredness and backache respectively. Moreover, majority of the respondents such as ninety six, 96(62%), one-hundred and forty nine 149(96%), one-hundred and three 103 (66%), ninety seven 97((63%), one-hundred and seven 107(69%) and eight-eight 88(57%) attributed the symptoms to mood swings, breast tenderness, diarrhea, dizziness, nervousness and hostility. While, exhibition of anger, headache, general body ache, vomiting and constipation were not so prevalent among the symptoms accomplishing menstruation as having 96 (62%), 100(65%), 99(64%), 107(69%) and 88(57%) which was majority of the respondents disagreed with the variables.

Research Question II: What is the relationship between menstrual symptoms and personality type-ESTJ of high schools science students?

Table 2: Correlation analysis showing the relationship between menstrual symptoms and personality type-ESTJ of science students.

Personality Type	**Extroversion r(p)**	**Sensing r(p)**	**Thinking r(p)**	**Judging r(p)**
Menstrual Symptoms	-0.034(0.302)	-0.059(0.217)	-0.040(0.105)	-0.021(0.511)

Source: Field Work (2020)

Table 2 contained correlation analysis results of the relationship between menstrual symptoms and personality type-ESTJ. The empirical outcomes indicated that there was negative but weak and insignificant association between menstrual symptoms and all components of personality type-Extroversion, Sensing, Thinking and Judging. This is because, the correlation coefficient of -0.034, -0.059, -0.040 and -0.021 for menstrual symptoms and extroversion, menstrual symptoms and sensing, menstrual symptoms and thinking as well as menstrual symptoms and judging with corresponding significant level of 0.302, 0.217, 0.105 and 0.511 respectively which were greater than the alpha value of 0.05.

Research Question III: What is the relationship between menstrual symptoms and academic performance of high schools science students?

Table 3: Correlation analysis showing the relationship between menstrual symptoms and science students' academic performance in high schools within the studied area.

Correlations

		Performance	Menstrual Symptoms
Performance	Pearson Correlation	1	**- .025**
	Sig. (2-tailed)		.531
	N	155	155
Menstrual Symptom	Pearson Correlation	**- .025**	1
	Sig. (2-tailed)	.531	
	N	155	155

Table 3 indicates a negative linear relationship between menstrual symptoms and students' academic performance but the level of association is not statistically significant. This is because the significant level of 0.531 is greater than the alpha value of 0.05. This means that the prevalent of some of the menstrual symptoms such as abdominal cramp, sleep disturbance, pelvic pain, tiredness, backache, forgetfulness to mention a few as shown in the descriptive analysis of respondents' view towards the effects of menstrual symptoms and classroom performance, would in turn manifest into lack of interest to go to school, lack of concentration during study hour, difficulty in remembering all that is studied and feeling hesitation to go for practical work.

Research Question IV: What is the relationship between personality type--ESTJ and academic performance of high school science students in Irewole Local Government Area of Osun State?

Table 4: Correlation analysis showing the relationship between personality type-ESTJ and students' academic performance in Biology in high schools within the studied area.

Personality Type-ESTJ	**Biology r(p)**
Extroversion	0.060(0.203)
Sensing	0.632(0.004)
Thinking	0.712(0.001)
Judging personality type	0.032(0.402)

At 5% level of significance

Table 4 contained the nature of relationship between students' personality type and academic achievement in Biology. The empirical findings revealed that there was positive and strong correlation between sensing and thinking on academic performance in Biology. The implication is that the more the students engage their sensory organ and thinking skills during teaching-learning process of Biology, the more they are likely to perform wonderfully well in this subjects during examinations. In the same vein, there was positive and insignificant correlation between extroversion and judging and academic performance in Biology.

6. DISCUSSION OF FINDINGS:

The empirical findings revealed that abdominal cramp, sleep disturbance, pelvic pain, tiredness, backache, forgetfulness, loss of appetite, mood swings, breast tenderness, diarrhea, dizziness, nervousness and hostility were

prevalent menstrual symptoms exhibited by the science students in high school. While, anger, headache, general body ache, vomiting and constipation were not. This corroborated the outcomes of the study conducted by Huda et al (2014) in which the majority of the students experienced symptoms during their menstrual period which comprised abdominal cramps, backache, tiredness, pelvic pain and bloating.

Besides, the empirical outcomes from relationship between menstrual symptoms and personality type-ESTJ indicated that there was negative but weak and insignificant association between menstrual symptoms and all the personality type components--Extroversion, Sensing, Thinking and Judging used in the study. This implied that as the menstrual cycle exalt severe pain, science students with extroversion will not want to involve in academic exercise which embrace group interaction, unable to exhibit or demonstrate any skill being mastered, those with sensing preference may not be able to process practical and factual information as expected, learners with thinking preference may be able to notice work to be accomplished but unwilling to do so during menstrual cycle, while those with judging preference may be hindered from taking the control of academic and non-academic situations due to the presence of the menstrual symptoms.

Also, negative but insignificant weak linear relationship existed between menstrual symptoms and students' academic performance in science. This is to say that the prevalence of some of the menstrual symptoms such as abdominal cramp, sleep disturbance, pelvic pain, tiredness, backache, headache, forgetfulness among others would in turn manifest into lack of interest to go to school, lack of concentration during study hour, difficulty in remembering all that is studied, feeling hesitation to go for practical work, inability to complete the assignment in time and adequately prepare for examination among others which could be responsible for decline in academic performance in science subjects during this menstrual period. This was in tandem with the research findings reported by Janula and Suguna (2017) in which the majority of the respondents opined that menstrual symptoms usually prevent their interest of going to school, lead to decline in the level of concentration during study hours, hinder them to easily recall and remember what had been learnt in the school, as well as exhibiting the feeling of hesitation to go for practical classes. Similarly, in their recent findings, Mark, Theodoor, Moniek, Didi and Annemiek (2019) identified dysmenorrhea, psychological complaints and tiredness as some of the prominent menstrual symptoms. The outcomes from the quasi experimental research conducted by Sanni, (2019) indicated that the academic performance of female students in Biology before the commencement of the menstruation was slightly higher to the one observed during the menstrual cycle. Gregory (1997) also acknowledged that menstrual cycle variables play a small, but discernible role on academic learning outcomes, contributing both positively and negatively to performance.

The empirical findings revealed that there was positive and strong correlation between sensing and thinking personality types on academic performance in Biology. In the same vein, there was positive and insignificant correlation between extroversion and judging and academic performance in Biology. The implication is that the more the students engage their sensory organ and thinking skills during teaching-learning process of Biology, the more they are likely to perform wonderfully well in this subjects during examinations. This is consistent with the findings of Sanni and Emeke, (2018) who established that extroversion, thinking, and judging were predictor variables to achievement. This is in agreement with the submission made by Shazia (2014) in which positive relationship was found between type of personality and exam scores. Also concur with the conclusion made by Redhwan, Muhamed, Zaliha, Muhammad, and Manuel (2015) in which students' personality types were found to be positively associated with academic performance of health sciences students in Malaysia.

7. CONCLUSION AND RECOMMENDATIONS:

Conclusion

It can be concluded that correlation existed among menstrual symptoms, personality type and academic performance of science students in high school.

Recommendations

i. Relief facilities should be provided within the school to cushion the effect of menstrual symptoms on the menstruating girls.
ii. Teachers should keep watchful eyes on their students in order to note any strange behaviours or feelings which menstruating girls may like to exhibit during teaching-learning and employ various teaching methods that could accommodate such strange behaviours and feelings.
iii. Assessment procedures should be revisited to allocate certain percent of the total score in school examinations to menstruating girls to cushion the negative effect of menstrual symptoms on their academic performance.
iv. Since the occurrence of menstruation and its symptoms seems inevitable in the life of adolescent girls, it becomes imperative for them to learn to adapt to the stress of this personal variable to reduce the effects it could bring on their personality type and academic performance.

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