

ANALYSIS OF THE SPATIAL PATTERN OF AWARENESS AND DISTRIBUTION OF REUSABLE SANITARY PAD AMONG SOME SCHOOLS IN THE FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

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Abstract

Awareness of menstrual hygiene and utilization of reusable sanitary pads aids in preparing girls with the right information about menstruation and reusable pads. Having access to menstrual materials enables girls to become confident in themselves thereby protecting them from contracting infectious diseases due to unhygienic practices. This research analyzed the awareness of reusable sanitary pad in some selected schools in the Federal Capital Territory, Abuja. Nearest Neighbor Analysis was used to determine the pattern of distribution of the selected schools, and a questionnaire was used to collect data on the level of awareness of reusable pads. From the result of the awareness of reusable pad, majority (50.8%) of school girls did not have any knowledge of reusable sanitary pad. About 26.8% of the respondents provided sanitary pads for themselves, while, 25.3% got it from relatives, about 24.5% from teachers and 23.4% from mothers and 30.6% missed school due to lack of sanitary pad, 30.1% hold on to traditional belief. The study showed that the nearest neighbour ratio for the spatial distribution of selected schools in Federal Capital Territory (F.C.T.) is 0.75654 with p-value of 0.002861 and from the emerging result, the overall nearest neighbor ratio of 0.002861 indicates a clustered distribution for the selected schools. The study advocates that due to the lack of knowledge about reusable pad, a well-informed continuous school education program such as personal hygiene, sanitary education and with information on safe hygiene and menstrual practices should be included in the school curriculum by Universal Basic Education Board (UBEB), and or State Universal Basic Education Board (SUBEB). Also, menstrual products should not only be made affordable but free and accessible to girls of reproductive age because menstruation is not a choice

Keywords: Geographic Information System (GIS), awareness, Reusable pad, knowledge, menstruation, Distribution.

Background of the Study

Menstruation is a phenomenon that is exceptional to the females of reproductive age (WHO, 2003). It is a normal vaginal bleeding which occurs monthly among women of reproductive age and may last from 2-7 days; its management differs among various cultures and traditions (Hennegan et al., 2016a). Sanitary pad is a thick piece of soft or absorbent material which can either be napkin or towel used by females of reproductive age to manage menstruation. Reusable pads are made from normal fabric; it is affordable, environmentally friendly and sustainable as well as renewable resource as it permits

females to wash and reuse instead of buying disposable pads every month (Humanitarian Healing International, 2011). Clean clothing materials, toilet tissues, sanitary napkins, pads, tampons have been identified as other alternative materials used to manage menstruation (Moronkola and Uzuegbu, 2006). It is advisable to change pad at least 3 - 4 hours, irrespective of the amount of stain in order to prevent odour and infections. However, poor menstrual practices have health implications which expose girls and women to several health problems from rashes, itching in the private part area and increased vulnerability to Reproductive Tract Infection (RTI) and Urinary Tract Infection (UTI) (Daspugpta and Sarkar, 2008). The consequences of inadequate menstrual management include negative effect on health, psychosocial wellbeing and participation in society (Mason et al., 2013; Howard et al., 2015). Thus, it is very important to educate young adolescent school girls on the knowledge, use and management of sanitary pads during menstruation for their health and wellbeing (Adika et al., 2011).

Aniebue (2009) noted that in Nigeria, mothers hardly educate their daughters about the onset of menstruation, its duration, or healthy practices, thereby preventing required and sufficient information from reaching girls and women (Onyegegbu, 2014). Hence, girls often look for menstrual information from people who give false and incorrect information which leads to unfair situation of fear and anxiety among them (Aluko, 2014). Young girls often seek information from their peers, friends, or siblings who relay superstitions and incorrect information which lead to fear and anxiety in them. Aluko (2014) described the consequences attached to this biological phenomenon as unfair and unjust.

A study on include a cross-sectional evaluation of school girls' experience on reusable sanitary pads at rural Uganda was conducted by Hennegan et al., (2016a). Similarly, there are studies on the review and assessment of different reusable and disposable menstrual products used by school girls in some parts of the world (Wilson et al., 2014). Thus, analysis of awareness and distribution of a reusable sanitary pad is needed to provide information to the government, NGOs, individuals, stakeholders and policy makers with reliable data, interventions and prevent the duplication of efforts and to give other schools the opportunity to benefit as well.

There is a limited availability of commercial sanitary pads and those that exist are financially out of reach for most women and girls living in rural areas (Adika et al., 2011). High cost of disposable pads makes them unaffordable and inaccessible to a lot of women and girls living in rural areas. Because of the high cost of disposable pads, it is common for women and girls to use both sanitary pads with other homemade alternatives to manage their periods (Mahon., et al., 2011). Thus, it is unfortunate that issues of menstruation have not been taken seriously most especially homemade reusable sanitary pad to manage menstruation (Joshi et al., 2015). The reusable sanitary pad is cheap, easy to use and makes menstrual material handy for the girls living in the outskirts of FCT which is also considered as rural areas and for those that cannot afford the disposable sanitary pad.

The Forum of Africa Women Educationalist, Uganda (FAWEU, 2004) states that buying sanitary protection (pads) means a monthly spending equivalent of four radio batteries or enough paraffin to last a family one month; sanitary protection may cost around a tenth of a family monthly income (Adika, et al., 2011). In addition, there are myths associated with religion, for example women's excretions are unclean and polluting during menstruation and child birth among the Muslims in Nigeria (Kumar, et. al, 2011). Women are not permitted to collect water from public ponds, and are also not allowed to perform certain religious rites during their menstruation (UNICEF, GHARF Report, 2008).

Most girls when they attain menarche oftentimes were taken unexpectedly (Hennegan et al., 2017) and the fear of staining school uniforms is a serious reason for discomfort, lack of concentration,

school absenteeism, restrained physical activity as well as self-consciousness, although menstrual pain could as well be a reason for post pubescent girl child school attendance (University of Oxford, 2009). In Kenya, a 14 year old girl who started menstruating in school committed suicide after her teacher embarrassed her for soiling her clothes in class which according to the news, she had nothing to use as pad (Uhondo newspaper, 2019).

Lack of clean and reliable menstrual absorbents has received much attention with interventions focused on provision of these products to improve poor menstrual hygiene and associated consequences (Hennegan et al., 2016b). Some Non-Governmental Organizations (NGOs) have been providing girls with menstrual absorbents, oftentimes reusable or disposable pads (Ameade et al., 2015) and it is important for other NGOs to be aware of those schools that benefit in order to avoid repetition of similar interventions program in the same schools and to give other schools the opportunity to benefit as well. The reusable pad comprises of a pad and pad holder which has two pockets at both ends where the pad is inserted and with a clip at the back to hold the pad and the pant together which is a good and important alternative for school girls living in low income and rural areas, but the usage continues to be limited. The reusable sanitary pad is mostly distributed by NGOs in schools. Hennegan et al., (2016a) provided a review on provision of sanitary product in rural Uganda, in order to assess a different reusable and disposable menstrual product.

is a constituent of knowledge and material resources (such as sanitary pad and facilities) which are essential to manage menstruation effectively. On the other hand awareness influences access and utilization of material resources. Furthermore, it should be noted that girls' capacity to manage their menstrual period is affected by lack of access to affordable hygienic sanitary materials and disposal options for used materials, adequate water supply, clean toilets, hand washing facilities and access to changing rooms. If these facilities are not always available in school, it exposes many girls to great discomfort and in unhygienic conditions during menstruation. (Olukanni, 2013). According to Bill and Melinda Gates Foundation, and Hennegan et al., (2016), in rural Kenya, many girls and young women aged 13–29 using sanitary pads said they got them from sexual partners. When girls have multiple sexual partners to meet MHM needs, it places them at high risk of HIV or unwanted pregnancy.

The use of unhygienic menstrual materials like corn husk, dirty rags, leaves and foam by some women, has health implication in terms of vulnerability to infection which may lead to severe consequences if left untreated (Rajanbir, 2018). Another problem is lack of information on proper management of menstrual period among young girls. In a recent study in Katsina State of Northwestern Nigeria, it was reported that most girls that have attained menarche are absent from school while some have dropped out of school due to fear of staining their uniforms, discomfort, lack of concentration, restrained physical activity and for the simple reason that they are ripe for marriage (Rajanbir, 2018). There is high recognition that in low-income settings, women struggle to manage menstruation in effective and hygienic ways and this has been linked to negative impacts on health, education and wellbeing (Winkler et al., 2015).

Geographical Information System (GIS) technology through the use of maps and creation of database to store important information will provide organizations and researchers with the locations and distributions of schools that have been reached with Menstrual Hygiene Management (MHM) intervention programme and give them the opportunity to reach more young adolescent girls with menstrual materials, and with the right information about menstruation and its management. According to Jovanović 2008, GIS database operations such as query with good visualization helps in geographical analysis.

The use of spatial statistics in GIS afforded better illustrations and descriptions of spatial distribution which makes work easy for spatial analysis (Wolman, 2004). Individuals, government agencies, and

NGOs who want to embark on intervention program and distribution of reusable/disposable pads will require Information and visual representation about the schools that have been reached to avoid duplication of effort and give other schools the opportunity to be selected and benefit as well. The present study therefore seeks to explore the use of GIS in the aspect of menstrual health management that is focused on reusable pads which has received little attention in Nigeria, hence the need to analyze the knowledge and distribution of reusable sanitary pads among some selected public secondary schools in the Federal Capital Territory, Abuja.

Materials and Methods

Study Area

Abuja is the capital city of Nigeria situated at the central part of the country located between Latitudes 8° 27' - 9° 16'N and Longitudes 6° 49' - 7° 44'E (Figure 1) with a landmass of 1,769km². It is bordered by states, to the northwest by Niger, to the northeast by Kaduna, to the northeast and south by Nasarawa, and to the southwest by Kogi states. It has a tropical climate with two seasons, dry and wet with 60% of annual rainfall occurring between July to September (Federal Capital Development Authority, 2000). The mix effect of low temperature and high humidity causes heat. The dry season is between November to April, the temperature is usually high during dry season while the relative humidity is usually low (Binbol et al., 2008). The use of reusable pad is reliable during the dry season as the girls get to dry them under the sun which will help kill germs on clothes. During the wet/raining season, the sun is not always available which may slow drying of washed reusable pad. In this situation ironing the pad with pressing stone will help kill the germs on the clothes and makes it dry faster.

The soil is generally shallow and sandy in nature and the high sand content makes the soil highly erodible. It is noteworthy to state that reusable pad decomposes easily in the soil and mostly women use clothes, rags and reusable. This makes it environmental friendly. Abuja is considered one of the fastest growing city in the world with the recent population of about 3,095,118 with growth rate of about 6.11% (World Population Review, 2019) which was projected by United Nations World Urbanization Prospects. The growth of the population of Abuja has led to an increase in the population of school girls in need of reusable pad. Abuja is made up of people of various tribes, such as Hausa, Afo, Gbagyi, Koro, Bassa Gade, Egbura, Gwandara, and Gana-gana.etc, and there are also foreign nationals like Americans, Britons, Indians, Koreans, Israelis and so on with English as their official language (Binbol et al., 2007).

Methods

Data Types and Sources

The list of public secondary schools in the study area was obtained from Universal Basic Education Board, Abuja (UBEB), which shows that there are about 2,000 government owned secondary schools located within the six area councils of FCT with over 600,000 girls and more than half of the schools are located in the outskirt of Abuja. Based on this study, only 41 schools received the reusable pads with a total of 41,000 girls that benefited. Geographic coordinates of the selected schools were captured through a comprehensive field survey using a handheld Garmin eTrex 20 GPS to see their distribution and to give the locations on the earth surface creating a map showing the distribution of schools reached. The administrative map of the FCT, Abuja was acquired from the Department of Planning in Land and Survey, FCT, Abuja.

Study population

Public secondary schools (forty one) were selected from the six area councils of FCT (AMAC, Kuje, Gwagalada, Abaji, Kwali and Bwari) which constitute the population. It is believed that public secondary schools are meant for low-income families. Such families comprises of parents that may not afford to pay school fees for their children and may not have the means to provide sanitary pad for their daughters. In addition most of the selected schools were from the outskirts of FCT. The target population for the study are the less privileged, vulnerable, house helps and villagers residing in the outskirts of Abuja and its surrounding

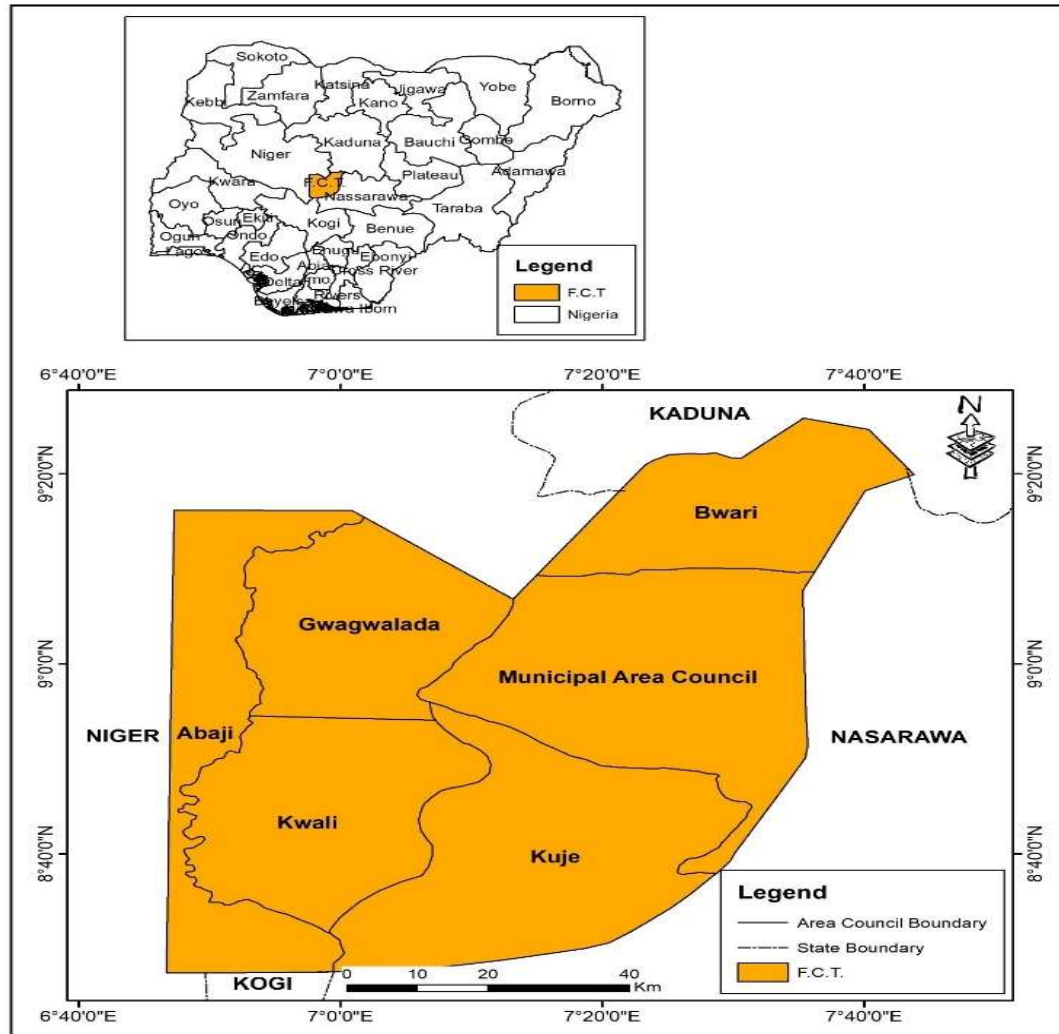


Figure. 1: Study Area

Source: Modified from the Administrative Map of FCT (2020)

Sample Size and Sampling Technique

Table 1: Sample Size

Abuja Area Councils	Selected Schools	2019 Pop. of Menstruating Girls	Sample Size
AMAC	15	4,807	191
Abaji	6	796	32
Bwari	7	1,779	71
Gwagwalada	5	917	36
Kuje	4	745	30
Kwali	4	604	24
Total	41	9,648	384

Source; Field Survey 2020

There were forty one public Secondary Schools in the study area. The secondary schools are stratified into Class levels, such as: JSS 1-3 and SS 1-3 and the total population of menstruating girls in both junior and senior classes in the schools were 9,648 which represents the sample size population (Table 1). A systemic sampling method was used where the second student out of every three students were picked which constitute the population of the respondents and menstruating girls who are willing to respond to the questionnaire were selected from each of the classes so that every class will have equal chance of being selected.

The sample size 384.07 approximately 384 was arrived at using the Yamane's formula below:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = sample size

N =Total Population 9,648

e = Level of Significance (0.05) ²

$$= \frac{9,648}{1 + 9,648 (0.05)^2}$$

$$= \frac{9,648}{1 + 24.12}$$

$$= \frac{9,648}{25.12}$$

= 384.07 approximately 384 (384.07~ 384)

384 = total copies of questionnaires will be administered

Table 2: Sampling technique

Class of Student	Yes		No		Total	%
	Frequency	%	Frequency	%		
JSS1	24	43.6	31	56.4	55	100
JSS2	36	46.2	42	53.8	78	100
JSS3	36	50	36	50	72	100
SSS1	30	50.8	29	49.2	59	100
SSS2	36	54.5	30	45.5	66	100
SSS3	27	50	27	50	54	100
Total	189	49.2	195	50.8	384	100

Source: Field Survey, 2020

Public secondary school were selected for the study using purposive sampling technique based on their location, size and type representing each area council. A total of 384 copies of questionnaire were administered to school girls in the selected schools to evaluate their knowledge of the reusable sanitary pads. The classes in secondary schools comprises of JS1-3 & SS1-3 and the respondents are menstruating girls who were willing to respond to the questionnaire and were selected from each of the classes so that every class will have an equal chance of being selected (Table 2).

An FGD session that was carried out revealed more information regarding the knowledge about menstruation amongst school girls. Six schools with one each from the six area councils from the selected schools were picked randomly for the FGD session with menstruating girls between the ages of 10-25 years and a total of six FGD session was carried out with girls representing each class in a group of ten (10).

Data Processing Techniques

Geodatabase Creation

The geographical coordinates of the selected secondary schools were captured (using a handheld Garmin eTrex 20 GPS) and organized in a database format using a table. The table consisting the selected secondary schools was associated with a set of attributes; names of the selected schools, addresses, latitudes and longitudes and the data in each table is formed as a set of rows with each row consisting of a list of values, one for each attribute. The database features were created using Microsoft excel spreadsheet and converted to CSV (Comma Separated Value) comma delimited format and exported to the ArcGIS 10.6 software. The database of intervention programmes in the selected schools was created to provide information of schools that are beneficiaries of the reusable pads. This is to prevent duplication of effort by other NGOs. This will allow for other schools to be reached and benefit as well from the intervention programme on Menstrual Hygiene Management.

Data Analysis Techniques

Locations of the Selected Secondary Schools

The point locations of the selected secondary schools were gotten using Global Positioning System (GPS) and the coordinates imported into GIS with their attributes. The locations were spotted on the earth surface creating a map showing the distribution of schools reached.

Spatial Pattern of Distribution of the Selected Schools

Point locations of the selected schools were imported into the ArcGIS 10.6 environment and overlaid on the georeferenced base map of the study area. This showed the distribution of the schools in the study area. Nearest Neighbor Analysis in ArcGIS 10.6 was carried out to determine the pattern of distribution of the selected schools in order to show the concentrated areas of the selected schools that received the pads. The z-score and the index (average nearest neighbor ratio) was measured and it shows that when the index is greater than 1 is dispersed and less than 1 is clustered (whether is dispersed, random or clustered in ArcGIS) and Geographic Information System (GIS) guided map was used for good symbology and visualization in order to show the distribution of schools. The formula is given as;

$$\text{Nearest Neighbor Index} = 2\bar{d}\sqrt{N}/A$$

Where:

$\bar{d}$ = mean distance

N = total number of Schools

A = area of the map

The mean distance was measured by the distance of each school in a straight line and its nearest neighbour. The sum of all distance was divided by the total number of schools and the total area of the map was calculated. The elements have been substituted in the nearest neighbour formula and calculated.

Knowledge of Reusable Sanitary Pads by Selected Secondary School Girls The questionnaire was designed to collect relevant basic demographic information of the respondents and data on the knowledge of reusable pad. A systemic sampling method was used, and the second person out of every three persons were picked which constituted the sampled respondents. They are government owned schools, and the total population of menstruating girls represented the sample size were selected from each of the classes from JS1-3 & SS1-3 of each school. A total of 384 questionnaire (as shown in table 1 and 2) were distributed and analyzed using Statistical Analysis Software (SAS) version 9.3. Descriptive statistics and results were presented as tables.

Results and Discussion

Distribution of the Selected Secondary Schools in study area

Table 3: Distribution of the Selected Secondary Schools

Area Council	Number of Schools	%
Abaji	6	14.6
AMAC	15	36.6
Bwari	8	19.5
Gwagwalada	5	12.2
Kuje	3	7.3
Kwali	4	9.8
Total	41	100

Source: Field Survey, 2020

Figure 2 shows the distribution of the selected secondary schools in six different area councils in FCT.

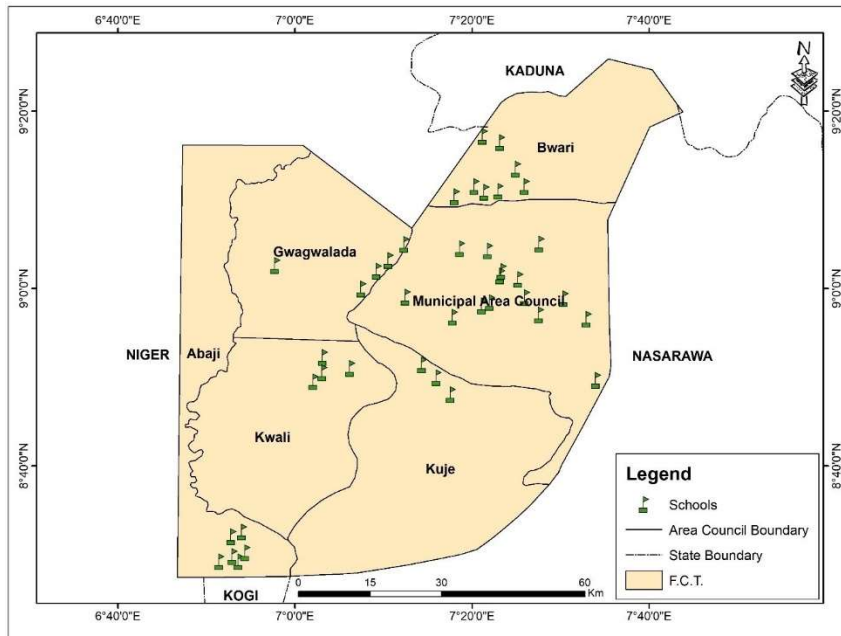


Figure 2: Distribution of the Secondary Schools

Source: Author's Analysis (2020)

Forty-one (41) schools in figure 2 were located in six different area councils in FCT of which the highest was obtained from Abuja Municipal Area Council (AMAC) with 36.6% (15 schools) and the least from Kuje area council with about 7.3% (3 schools). From the result, it is obvious that AMAC had the highest number of secondary schools visited and this could be attributed to the fact that the area council has the highest population, schools, government offices and big business organizations.

Figure 3 shows the spatial pattern of the distribution of selected schools while the average nearest neighbour statistics is further shown in Table 4. The NNA spatial analytical tool of the ArcGIS 10.4 software was used to examine the average nearest neighbour statistics.

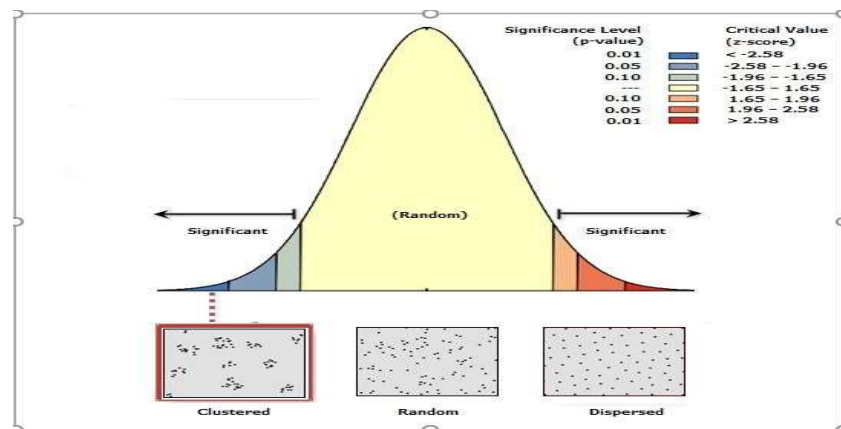


Figure 3: Pattern Distribution of the Selected Schools

Table 4: Summary of the Average Nearest Neighbour Statistics

Observed Mean Distance:	4218.0498 Meters
Expected Mean Distance:	5575.4395 Meters
Nearest Neighbour Ratio:	0.75654
z-score:	-2.98228
p-value:	0.002861

Source: Author's Analysis (2020)

Table 4 shows the summary of the average nearest neighbour statistics. The observed mean distance from one school to another is 4218.0498 Meters which is higher than the expected mean distance of 5575.4395 Meters. The pattern of distribution of the schools selected is clustered. Given the z-score of -2.98228, there is a less than 1% likelihood that this clustered pattern could be the result of random chance. Table 4 also shows that the nearest neighbour ratio for the spatial distribution of selected schools in F.C.T. is 0.75654 with p-value of 0.002861. According to Clark and Evans (1954), if the index (average nearest neighbour ratio) is less than 1, the pattern exhibits clustering. If the index is greater than 1, the pattern is toward dispersion. From the emerging result it is shown that the overall nearest neighbour ratio of 0.002861 indicates a clustered distribution for the selected schools which are concentrated in one side in the study area as such other schools from different areas needs to be given the opportunity to be selected and benefit from the distribution of the reusable sanitary pad.

Knowledge of Reusable Sanitary Pads Among Secondary School Girls Within the Study Area.

Socio-economic Characteristics of Respondents

Table 5: Distribution of Respondents by Age

Table 5 shows the age categories of respondents who took part in the completion of the questionnaires.

Age	Frequency	%
10-15	137	35.7
16-20	125	32.6
21-25	122	31.8
Total	384	100

Field Survey, 2020

The result shows that 35.7% is the highest number of respondents which are between the age range of 10-15, while 31.8% constitutes the lowest number of the respondents between the ages of 21-25.

Table 6: Distribution of Respondent by Class

Class	Frequency	%
JSS1	55	14.1
JSS2	78	20.3
JSS3	72	18.8
SSS1	59	15.4
SSS2	66	17.2
SSS3	54	14.1
Total	384	100

Field Survey, 2020

The result shows the class which the respondents belongs and the highest (20.3) were from JSS 2 and the lowest number of respondents were in SS3 with 14.1%.

Table 7: Distribution of Respondents according to Parent's occupation and Educational Qualification Background

Father's Occupation	Frequency	%
Business	96	25
Civil servant	91	23.7
Farmer	110	28.6
Teacher	87	22.7
Total	384	100

Father's Educational Qualification

Primary	127	33.1
Secondary	144	37.5
Tertiary	113	29.4
Total	384	100

Mother's Occupation

Business woman	97	25.3
Civil Servant	92	24
House wife	101	26.3
Teacher	94	24.5
Total	384	100

Mother's Educational Status

informal	106	27.6
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Primary	101	26.3
Secondary	97	25.3
Tertiary	80	20.8
Total	384	100
Family type		
Monogamous	108	28.1
Polygamous	96	25
Single father	93	24.2
Single mother	87	22.7
Total	384	100

Field Survey, 2020

Table 7 reveals that 28.6% of the respondent father's occupation is farming, 25% are business men. Teachers and civil servants accounted for 22.7 and 23.7% respectively. The result also reveals that 26.3% of the respondents' mothers are housewives. Meanwhile, 25.3% are business women. Teacher and civil servants accounted for 24.5 and 24% respectively.

Table 7 shows that male parents have more educational qualifications than female parents across all the three categories of educational attainments (primary, secondary and tertiary). The level of educational qualification was higher among fathers as 33.1% had attained primary education compared to mothers who had 26.3%. At secondary level, fathers also had higher percentage with respect to secondary education (37.5%) compared to mothers (25.3%). Lastly, with respect to tertiary education, male parents had more tertiary education (29.4%) compared to female parents (20.8%). Therefore, it is safe to say that most female parents received informal education, while most male parents received secondary education. In terms of occupation, no significant difference was recorded. However, most male parents were farmers (28.6%), while most female parents were housewives (26.3%).

Table 8: Distribution of Respondents Based on Level of Knowledge of Reusable Sanitary Pads

Contact about sanitary product choice	Frequency	%
Father	60	15.6
Female friend	62	16.1
Mother	71	18.5
No one	53	13.8
Sisters	66	17.2
Teacher	72	18.8
Total	384	100

Knowledge of reusable sanitary pad		
No	195	50.8
Yes	189	49.2
Total	384	100
Source of information on reusable sanitary pad		
Question NA	195	50.8
Electronic/Print media	40	10.4
Friends	41	10.7
NGO	31	8.1
Parent	35	9.1
Teachers	42	10.9
Total	384	100
Considering the use of Reusable Sanitary Pads		
No	28	7.3
Yes	356	92.7
Total	384	100

Field Survey, 2020

Table 8 highlights the sources of information for respondents (their 'go-to' person) with respect to the choice of using sanitary products. It was revealed that 18.8% of respondents choose their teachers as their contact person. This was followed closely by mothers as the contact person (18.5% of respondents), then sisters (17.2%). However, it is a major concern that 13.8% (53 of respondents) reportedly have no contact person, which implies that they do not have anyone to go to for information regarding sanitary products and their use.

The result also shows that 50.8% of the respondents are not aware of reusable sanitary pad, although, 49.2% have knowledge of what reusable sanitary pad is. This implies that majority of the respondents are not aware of the reusable sanitary pad.

Table 8 further reveals the source of information of those with knowledge of reusable sanitary pad. From 49.2% of those that are aware of the reusable sanitary pads. Out of this category, 10.9% got to know from their teachers, 10.7% from friends, 10.4% from electronic/print media, 9.1% from parents and 8.1% from NGOs. This result contradicts the study of Paige (1993) who reported that mothers were the principal source of information and received some limited education about menses in school with frequent emphasis on hygienic aspects of menstruation

Conclusion and Recommendation

Menstrual Hygiene looks at body hygiene, taking care of surrounding environments when disposing of sanitary materials; it also addresses the inclusion of good nutrition and physical health, access to water, toilet facilities-latrines, handwashing with soap and disposal of biological and synthetic materials. One of the notable innovations to be created to address accessible and low cost sanitary

products among young girls is the reusable pad. Thus, the study analyzes the knowledge and distribution of re-usable sanitary pad among secondary school girls in the Federal Capital Territory (FCT), Abuja, Nigeria.

The findings of the study in table 7 and 8 shows that the students have little knowledge, various misconceptions and inadequate practices regarding menstruation as majority of the parents of the respondents (Father/mother) are farmers with secondary school certificates and housewives with informal education. Only 9.1% of the respondents got information about the choice and use of sanitary pads from their parents while others got the information from their friends, and very few from NGOs and teachers.

The distribution of reusable sanitary pads to secondary **schools** is not sufficient as all schools need to benefit in this exercise as there are over 2,000 schools in FCT with about 600,000 girls. The positive results of this study demonstrate the feasibility of implementing a health education programme on menstrual hygiene at schools especially age group of 10 to 25 years. The visitation of selected schools produced significant positive changes in knowledge of reusable sanitary and menstrual hygiene practices. This concludes that educational intervention can bring about many changes. It was recommended that a well-informed continuous school education programme should be delivered to students at early age.

The fact that over 50 respondents (13.8%) reported not having contact person concerning sanitary products and their use is a further threat to hygienic practices of using sanitary products. This set of respondents may not have access to adequate information concerning reusable sanitary pads and as such they become prone to health implications of these products. Kohli (2020) highlighted that reusable pads must be used appropriately which means that students should have a credible source of information regarding how to use reusable pads to avoid its health implications. Kohli (2020) further highlighted that if reusable pads are not well cleaned, they make the users prone to vaginal infections in that they are able to promote the growth of bacteria and fungi in the vaginal. Studies have also suggested that normal microflora resident in the vaginal could become pathogens when there is overgrowth (Larsen and Monif, 2001).

Taking into account the health implications and prevailing socio-cultural and economic factors, effective strategies should be implemented to persuade adolescent school girls to adopt healthy menstrual practices. Information on safe hygiene and sanitary practices should be included in the school curriculum; there should be better communication between female students and their teachers, and between daughters and mothers. Menstrual products should not only be made affordable but free and accessible to women and girls of reproductive age because menstruation is not a choice. The state government, **ministry of health**, UBEB, SUBEB, private sector, and NGO's should donate free reusable pads to girls who cannot afford the disposable pads in other parts of the study area especially those schools located at the outskirt of FCT.

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**DATABASE OF MENSTRUAL HYGIENE MANAGEMENT INTERVENTION PROGRAM OF THE
 SELECTED SECONDARY SCHOOLS IN THE SIX AREA COUNCIL OF FCT, ABUJA**

S/N	SCHOOL NAME	AREA COUNCIL	LOCATION	WARD	SCHOOL TYPE	NO. OF REUSABLE PADS & MH READER S DISTRIBUTED	LATITUDE	LONGITUDE	YEAR OF VISITATION AND DISTRIBUTION OF REUSABLE PADS
1	Junior Secondary School Apo Resettlement	AMAC	Apo Resettlement	Garki	Junior Sec. Sch.	100	7.506389	8.980833	2018
2	Junior Secondary School Iddo Sarki	AMAC	Iddo sarki	Gui	Junior Sec. Sch.	100	7.209167	8.984167	2018
3	Junior Secondary School Piwoyi	AMAC	Piwoyi	Gwarinpa	Junior Sec. Sch.	100	7.386831	9.023975	2019
4	Junior Secondary School Karmo Sabo	AMAC	Karmo	Jiwa	Junior Sec. Sch.	100	7.364014	9.070881	2016
5	Junior Secondary School Gbessa	AMAC	Gbessa	Gui	Junior Sec. Sch.	100	7.255786	9.931503	2017
6	Junior Secondary School Karshi	AMAC	Karshi	Karshi	Junior Sec. Sch.	100	7.567325	8.827819	2016
7	Junior Secondary School Pyakasa	AMAC	Pyakasa	Kabusa	Junior Sec. Sch.	100	7.352781	8.9676	2017
8	Junior Secondary School Galadima	AMAC	Galadima	Gwarinpa	Junior Sec. Sch.	100	7.433686	8.983228	2017
9	Junior Secondary School Gwagwa	AMAC	Gwagwa	Gwagwa	Junior Sec. Sch.	100	7.311147	9.075225	2019
10	Junior Secondary School Kuchigoro	AMAC	Kuchigoro	Gwarinpa	Junior Sec. Sch.	100	7.420944	9.016944	2019
11	Junior Secondary School Gosa	AMAC	Gosa	Gui	Junior Sec. Sch.	100	7.297808	8.946078	2016
12	Junior Secondary School Idu-koro	AMAC	Idu koro	Jiwa	Junior Sec. Sch.	100	7.389481	9.032486	2016
13	Junior Secondary School Kurudu	AMAC	Kurudu	Orozo	Junior Sec. Sch.	100	7.549892	8.942514	2017

14	Junior Secondary School Aleita	AMAC	Aleita	Kabusa	Junior Sec. Sch.	100	7.367356	8.973611	2019
15	Junior Secondary School Kpeyegi	AMAC	Kpeyegi	Orozo	Junior Sec. Sch.	100	7.460064	8.950439	2018
16	Government Secondary School Byazhin	Bwari	Byazhin	Byazhin	Gov. Sec. Sch.	100	7.354096	9.286092	2017
17	Government Secondary School Bwari	Bwari	Bwari	Bwari Central	Gov. Sec. Sch.	100	7.38689	9.27444	2018
18	Junior Secondary School Ushafa	Bwari	Ushafa	Ushafa	Junior Sec. Sch.	100	7.416422	9.224236	2019
19	Junior Secondary School Sagwari	Bwari	Dutsen Sagwari	Dutse Alhaji	Junior Sec. Sch.	100	7.348625	8.784178	2019
20	Junior Secondary School Jibi	Bwari	Jibi	Kubwa	Junior Sec. Sch.	100	7.375417	9.157808	2016
21	Junior Secondary School Kubwa	Bwari	Kubwa	Kubwa	Junior Sec. Sch.	100	7.339761	9.158844	2017
22	Junior Secondary School Dei-dei	Bwari	Dei-dei	Kubwa	Junior Sec. Sch.	100	7.259814	9.114233	2019
23	Junior Secondary School Peyi	Bwari	Peyi	Ushafa	Junior Sec. Sch.	100	7.374794	9.157808	2017
24	Junior Secondary School Giri	Gwagwal ada	Giri	Gwako	Junior Sec. Sch.	100	7.398575	9.076461	2018
25	Junior Secondary School Gwako	Gwagwal ada	Gwako	Gwako	Junior Sec. Sch.	100	7.125533	8.999158	2017
26	Junior Secondary School Zuba	Gwagwal ada	Zuba	Zuba	Junior Sec. Sch.	100	7.206361	9.083478	2018
27	Junior Secondary School Tungan maje	Gwagwal ada	Tungan maje	Tungan maje	Junior Sec. Sch.	100	7.189892	9.047196	2017
28	Junior Secondary School Anagada	Gwagwal ada	Anagada	Tungan maje	Junior Sec. Sch.	100	7.16991	9.026325	2019
29	Junior Secondary School Kwali	Kwali	Kwali	Kwali ward	Junior Sec. Sch.	100	7.052008	8.84215	2019

30	Junior Secondary School Yangoji	Kwali	Yangoji	Yangoji	Junior Sec. Sch.	100	7.035039	8.825161	2019
31	Junior Secondary School Bako	Kwali	Bako	Pai	Junior Sec. Sch.	100	7.051861	8.846028	2018
32	Junior Secondary School Sheeda	Kwali	Sheeda	Kilankwa	Junior Sec. Sch.	100	7.357172	8.995717	2019
33	Junior Secondary School Sabon Gari	Abaji	Sabon Gari Abaji	Nuku	Junior Sec. Sch.	100	6.950336	8.480878	2016
34	Junior Secondary School Naharati	Abaji	Naharati	Rimba Ebagi	Junior Sec. Sch.	100	6.937653	8.458589	2016
35	Junior Secondary School Kekeshi	Abaji	Kekeshi	Nuku	Junior Sec. Sch.	100	6.934103	8.484264	2018
36	Junior Secondary School Nuku	Abaji	Nuku	Nuku	Junior Sec. Sch.	100	6.931697	8.521236	2017
37	Junior Secondary School Abaji	Abaji	Abaji	Nuku	Junior Sec. Sch.	100	6.945028	8.474583	2016
38	Junior Secondary School Yaba	Abaji	Yaba	Pandagi Gawu Yaba	Junior Sec. Sch.	100	7.488639	9.038492	2016
39	Junior Secondary School Tukpechi	Kuje	Tukpechi	Kuje	Junior Sec. Sch.	100	7.239631	8.856639	2017
40	Junior Secondary School Dafara	Kuje	Dafara	Gaube	Junior Sec. Sch.	100	7.271422	8.872831	2016
41	Junior Secondary School Kuje	Kuje	Kuje	Kuje	Junior Sec. Sch.	100	7.243714	9.876347	2017