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**ASSESSMENT OF FEMALE STUDENTS' KNOWLEDGE, ATTITUDES AND PRACTICES (KAP)
REGARDING MENSTRUAL HYGIENE MANAGEMENT**

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ABSTRACT:

Hygienic practices during menstruation are of great importance. The lack of which increases emotional distress, anxiety, low self-esteem, feeling unclean and discrimination as well as the susceptibility of an individual to reproductive tract infections. This prospective study was an assessment of female students' perception (knowledge, attitude and practices) regarding menstrual hygiene management (MHM) at the School of Medicine and Health Science (SMHS), University of Papua New Guinea (UPNG). Pretested questionnaire was distributed to 80 female students using a quantitative approach for data collection after obtaining ethical clearance. The responses were recorded in Excel Spread sheets. The data was statistically analysed using Microsoft Excel 2013. All the participants learned through education that menstruation is a natural process in all females after puberty. Majority (90%) of the participants agreed with the proposed concept of free-distribution of sanitary pads to all female students by the SMHS student services. Further research on menstrual management options that are practical, sustainable and culturally acceptable must be conducted to inform future programs and policies that aim to empower young girls as they transition into womanhood.

Keywords: Menstruation hygiene management, Sanitary pads, Female students, Perception

INTRODUCTION:

Menstruation, a unique event in the life of a developing girl child, is one of the milestones of puberty [1]. Menstruation is the periodic discharge of blood, tissue fluid, mucus, and epithelial cells that usually lasts for about five days and affected about 1.9 billion females aged 15 to 49 in 2020 [1, 2]. Though menstruation is a natural process, women and girls in Papua New Guinea (PNG), Solomon Island (SI) and Fiji

were categorized as 'unclean' and 'dirty' because of the cultural and religious beliefs [3]. While different countries may consider menstruation as a taboo topic, the importance of menstrual health is increasingly recognised globally [2].

Menstrual Hygiene Management (MHM):

Menstrual Hygiene Management (MHM) refers to management of hygiene associated with the menstrual process [5]. The Joint Monitoring

Programme (JMP) of World Health Organization (WHO) and United Nations Children's Fund (UNICEF) has defined MHM in terms of availability of clean water, sanitation, and hygiene [5]. MHM is basically about women and adolescent girls using a clean menstrual management material to absorb or collect menstrual blood, changed in privacy as often as necessary for the duration of a menstrual period, using soap and water for washing the body as required, and have access to safe and convenient facilities to dispose of used menstrual management materials [5]. In order to manage menstruation effectively and hygienically, girls and women need access to information about the menstrual cycle and how to manage it [4].

However, for many women and girls; especially those in low- and middle-income countries (LMICs), menstruation present numerous challenges [3,6]. These include: discriminatory attitudes; inadequate social support; ongoing gender inequality; beliefs, social norms and taboos relating to menstruation; lack of access to affordable and effective menstrual hygiene materials; and lack of access to appropriate water, sanitation and hygiene (WASH) facilities [3 - 6, 7]. Globally, attitudes, beliefs and social norms relating to menstruation vary widely, and these variations impact on practices during menstruation [3]. For example, multiple evidence documented among young adolescent school girls' experiences in some African

countries [7-11] reported on the lack of information about menstruation, the reasons for that lack, sexual ideologies surrounding menstruation, impact of their culture, traditions, and myths, impact of poverty, and lack of access to WASH facilities affecting MHM practices. Similar evidence on menstruation-related beliefs contributing to restrictive practices were reported in PNG, SI and Fiji [3]. It is however important to note that providing increasing knowledge on menstruation through education [1] and intervention of MHM practices such as free-distribution of sanitary pads in schools will have a positive impact on young adolescent girls' wellbeing and reduce absenteeism in schools [12-13].

Impact of Cultural and Religious Beliefs on Menstruation:

In some cultural and religious beliefs, including that of the Pacific, menstrual taboos and norms direct girls and women to avoid cooking or eating certain foods, girls were expected to stay away from their peer group, avoid male community members, and not visit certain locations, such as churches, restricting women to touch raw or fresh food or take up some roles [3, 14-16]. These stigmas have built up causing unwillingness and discrimination; thus resulted in considerable psychosocial implications [3,14]. However, in some cases such restrictions are perceived as positive by women and girls; for example, providing welcome opportunities to

rest and spend time with other women [17]. Similar conducts have been practiced in some places in India where menarche signifies womanhood and thus doing celebrations [16].

Health Impacts Associated with Poor MHM Practices:

Poor MHM practices are associated with pain, discomfort [18] and other health impacts [14]. Several qualitative research conducted among adolescent school girls in Solomon Islands [19], Indonesia [20] and elsewhere [21] reported that using inappropriate MHM materials and prolonged wearing of MHM materials can lead to genital itching and discomfort, and may contribute to infections. Anecdotal reports from Bangladesh garment factories [22] also suggest that most women use cloth torn from old saris to absorb menstrual blood and that these reusable clothes are often not washed or dried properly, causing extreme discomfort and reportedly causing infections [18].

Many girls do not have the resources to manage menstrual pain [18], reflective of poor socio-economic background. A study in Indonesia [20] and several countries in Africa [7-11,21] found that many girls and women lack the information or other resources to access and use basic analgesics to manage menstrual pain, and that can negatively impact on participation and attendance at school and employment [20], which can affect health outcomes for the

individual woman and subsequently for her children [18,23].

Impact of Providing MHM Education and Provision of Sanitary Pads:

Education and knowledge of MHM is of paramount importance since women and young girls will feel safe and confident when using the appropriate provision of sanitary pads. A pilot intervention in Ghana found that after 5 months of free sanitary pad provision, girls missed significantly less school, and they reported an improved ability to concentrate in school, higher confidence levels and increased participation in a range of activities despite menstruating [12]. The provision of clean sanitary products (e.g., commercial sanitary pads), truly reduces discomfort, anxieties, associated stigma, ridicule, and embarrassment which deters women and girls from attending school or work [13,24]. In Ghana, Dolan and colleagues [25] reported that over three quarters of school girls were found to have confidence and participated effectively in organized activities. Further evidence in the pilot study in Ghana revealed that school attendance improved by 9% after 5 months with the provision of disposable sanitary pads [12]. It is important to note that combined interventions of education on MHM, WASH facilities and the provision of sanitary pads [5, 12, 13-14, 24-25] will have positive impacts on women and young girls' wellbeing, education and employment opportunities.

Aims and Objectives:

Back in 1960, the School of Medicine and Health Sciences (SMHS) was known as the Papuan Medical College (PMC) and was established as the first health training institute in the then Territory of Papua New Guinea (TPNG). The PMC was tasked to train doctors, pre-service nurses, medical assistants, medical and hospital orderlies, nurse aides, physiotherapist, and even pre-school teachers. The PMC then became the Faculty of Medicine of the University of Papua New Guinea (UPNG) in 1971 to 1972. In the early 1990s, the Faculty of Health Sciences was established. With the decline in government funding in the late 1990s, the Faculty of Medicine and Faculty of Health Sciences were amalgamated into the SMHS. The major divisions in the SMHS are: Clinical Sciences, Basic Medical Sciences, Pathology, Public Health, Dentistry, Nursing, Health Sciences – under the latter are disciplines including Pharmacy, Medical Laboratory Sciences and Medical Imaging Sciences [26-27]. SMHS is similar to other higher institutions within PNG and other LMICs where majority of the female students are not working and could not afford purchasing of sanitary pads every month [4,18].

Menstruating female students have missed classes due to insufficient sanitary pads, shying of going to the dining hall (mess), limiting social activities like playing sports, attending meetings

and church fellowships [3, 14,16]. Although there are no restrictions and regulations endorsed by the university for girls that are menstruating, they naturally feel discriminated and unclean because they have come from societies where restrictions have been placed by the forefathers that are still believed and practiced today [3, 18].

Managing menstruation effectively and with dignity is a challenge for girls and women in LMICs such as PNG. Multiple evidence documented among young adolescent school girls' experiences in some African countries [7-11] and elsewhere [15-17] reported on the lack of information about menstruation, the reasons for that lack, sexual ideologies surrounding menstruation, impact of their culture, traditions, and myths, impact of poverty, and lack of access to WASH facilities affecting MHM practices. Evidence from the Pacific Region [3,18] suggests similar challenges, and these may be a barrier to school participation and attendance, employment and income generation during menstruation.

MHM is genuinely of paramount importance in PNG and the Pacific Region but currently research is scanty. There are no published studies on MHM practices in a medical tertiary institution in PNG. The major objective of this study was to prospectively assess the female students' perception on MHM practices at the SMHS, UPNG.

METHODOLOGY:

This was a cross-sectional, descriptive study conducted at the SMHS, UPNG [27]. SMHS is one of the five schools in the UPNG. The UPNG also affiliates with the science faculty in the Pacific Adventist University (PAU) as well as other universities in the various countries in the Pacific. SMHS is located in Korobosea, a suburb of Port Moresby in the National Capital District (NCD). Geographically, it is located close to the sea and is few kilometres away from the UPNG main campus. The female students represent a cross-section of the PNG population and the Pacific Region.

Study design and sampling: The female students' perception (knowledge, attitude and practices) regarding MHM for the first time during the study period were eligible for enrolment in the study at the SMHS, UPNG. Since the number of female students present during the study period was very small, convenience sampling technique was used [28].
Sampling size: A total of 125 questionnaires were randomly distributed among female students aged 21-35. Of these, the final sample size was 80 female students that participated in the study.

Data collection: A pre-tested questionnaire comprising close-ended questions was randomly distributed to a group of female students using a quantitative approach for data collection [29-30]. The questionnaire contains

four sections. The demography of the participants; information collected included age, nationality, ethnicity, study programs and year level of study. In the other three sections variables collected included the students' participation and knowledge on menstruation through education, culture and religion; students' behaviour, attitude and practices during menstruation; and students' perception on source of income, menstrual absorbent material and the concept of free-distribution of sanitary pads to female students every month. The data were recorded in Microsoft (MS) Excel Spreadsheets.

Exclusion criteria: Participants excluded from the study were those from the nursing program. Data with irrelevant information such as residential status, repeated and unanswered questions were also excluded from the study.

Data analysis: The data was analysed statistically using the MS Excel Spreadsheet data pack version 2013. Ethical approval for this study was granted by the School of Medicine and Health Science Research and Ethics Committee (SMHS REC). Participation in the student survey was entirely voluntary.

RESULTS:

During the duration of the study in 2020, a total of 125 female students who were enrolled in various medical and health science programs offered at SMHS participated in the study.

However, because of the exclusion criteria in the present study only 80 (64%) students' responses with complete data were found suitable for analysis. Of the 80 participants included in the study, 35 (44%) were in the age range 21-23 years, followed by 25 (31%) in the age range 24-26 years, 16 (20%) in the age range of 18-20 years and 4 (5%) age range 27 years and above. Majority (97.5%, n=78) of the participants were from PNG and only 2 (2.5%) participants were from the Solomon Islands. Of the 78 participants from PNG more than half (53%, n=41) were from the Highlands region

followed by New Guinea Islands region with 22% (17) participants, Momase with 14% (11) and 11% (9) from the Southern region.

Table 1 shows the distribution of all the participants according to study programs and year level of study. Most of the participants were studying the MBBS program followed by BMIS, B. Pharm, BMLS and BOH/BDS programs, respectively. Table 1 also shows that majority (39%, n=31) of the participants were in the 2nd year followed by 3rd year, 4th year and 5th year level of study.

Table 1: Percent (n) distribution of all the participants according to study programs and year level of study

Study Programs (% , n)	Year Level of Study (% , n)
MBBS (29%, 23)	Year 2 (39%, 31)
BOH/BDS (15%, 12)	Year 3 (29%, 23)
BMLS (16%, 13)	Year 4 (25%, 20)
BMIS (21%, 17)	Year 5 (7%, 6)
B Pharm (19%, 15)	
Total (100%, 80)	Total (100%, 80)

Effect of education, culture and religion on the knowledge about menstruation:

In this section the participants were asked questions about their education, culture and religion on their knowledge about menstruation. When asked the first time that they heard about menstruation, half (50%, n=40) of the participants said through their teachers in the primary school, whilst the other half said from other sources. All the participants learnt through education that menstruation is a natural process in all females after puberty. When asked about

their cultural beliefs, 62.5% (n=50) of the participants learned from their cultural beliefs and agree that though menstruation is a natural process, certain rules, such as, restrictions in touching males' food, certain household items and food preparation must be followed, whilst 37.5% (n=30) disagree with this belief. In response to another question on cultural belief, 12.5% (n=10) of the participants agreed that based on their cultural and religious beliefs menstruating women are unclean; however, the majority (87.5%, n=70) disagreed. All the 80

participants were Christians and agreed that they attended and participated in church activities on Saturdays and Sundays. About half (51%, n=41) of the participants who attended church services said they heard sermons about menstruating women and the related taboos.

The behaviour, attitude and practices during menstruation:

In this section, the 80 participants were asked questions about their behaviour, attitude and practices during menstruation. Majority (70%, n=56) of the participants said that they restrained themselves from touching males' food during their menstruation period. In response to another question, more than half (56%, n=45) of the participants felt guilty whenever they touch or prepare food for the males. When asked about their attendance and participation in various events, majority (66%, n=53) of the participants said that they always go to the library, mess and classes during menstruation.

Perception on sources of income and concept of free-distribution of sanitary pads during menstruation:

The participants were asked questions about their perception on sources of income, menstrual absorbent material and the concept of free-distribution of sanitary pads during menstruation. In response to question about their sources of income, 72.5% (n=58) of the participants do not have any source of incomes.

When asked about the use of sanitary pads, majority (75%, n=60) of the participants were able to afford sanitary pads whenever they have money, a few (25%, n=20) of the participants used materials, such as, napkins and rags as absorbent materials. In response to the question about health risk of the long-term use of pads or absorbent materials, 75% (n=60) of the participants were aware of the long-term health implications associated with the use of the same absorbent materials and sanitary pads for a long time. The participants were also asked if they support the proposed concept of free-distribution of sanitary pads to all female students by the SMHS student services. Majority (90%, n=72) of the participants agreed with the concept.

DISCUSSION:

Of the one hundred and twenty-five (125) questionnaires distributed, only 80 were completed and found suitable for analysis. This gave a response rate of 64%. Most (80%) of the participants were in the age range 21-27 years, representing young adults [31]. Majority (98%) of the participants were from PNG. This is expected as the SMHS remains the only training institution in PNG producing medical and health professional graduates [27] and is located in the capital city, Port Moresby. Most (29%) of the participants were medical students doing the Bachelor in Medicine Bachelor in Surgery (MBBS) programme. The MBBS is the main

programme at the SMHS that admits students from Science Foundation Years (SFY) of the UPNG and PAU, students with a science degree, and students from the Pacific islands who have completed high school with high grades [27]. Majority (39%) of the participants were in the second year. One explanation is because the second year is the entry year into all the degree programmes at the SMHS.

All participants learned through education that menstruation is a natural process which every female will experience after attainment of puberty. This finding concurs with studies done elsewhere [1, 10, 32-33] reflecting accurate knowledge on menstruation through medical education curriculum. In the present study 50% of the participants first learnt about menstruation in primary school, 63% of all the participants agreed that menstruation is a natural process and that menstruating women must follow certain rules. These findings differ from those reported in some studies done in African countries [8-9] and elsewhere [7] on the limited or lack of knowledge of menstruation and related issues of reproductive health through primary and secondary schools. These differences could be attributed to the many restrictions imposed by religion and culture, including certain beliefs and taboos associated with menstruation [3, 5, 8, 15-18]. It is however important to note that the present study did not ask participants who first informed them about menstruation in primary school; whether their teachers, friends, relatives

or their primary school curriculum [1, 9, 16, 18, 32]. In terms of culture and religion, majority (87.5%) of the participants in the present study did not support the notion that menstruating women are unclean. All of them participated in church activities during menstruation, but about half of them (51%) heard sermons on menstruating women in church. These findings differ from a recent study by Mohamed and colleagues [3] on the restrictive practices associated with the beliefs and attitudes where all the participants in their study perceived menstrual blood and menstruating women and girls as 'dirty' and 'unclean'. Other similar studies in some African countries [7-11] and elsewhere [15-18] reported on the impact of participants' culture, traditions, religious beliefs and myths associated with menstruation. The differences in perception with those studies and our study is that, our participants were all enrolled in various medical and health science programs in a medical school and are well aware of menstruation as a natural process in all females' after attainment of puberty. It is important to note that, in most cases, as female students move to higher levels in education, their knowledge on menstruation and their menstrual hygiene practice increases [1, 16, 32], thus reducing the negative impacts of cultural, stigma and religious beliefs associated with menstruation [16].

With regards to behaviour, attitude and practices during menstruation, majority (70%) of the participants in the present study avoided touching males' food; if and when they touched or prepared food, they admitted feeling guilty of what they have done. These findings are similar to the results obtained in a recent study on menstruation-related restrictive practices in Fiji, SI and PNG [3]. The same study reported that in rural and urban settings in PNG and SI, participants commonly believed that foods prepared or cooked by menstruating women are harmful to men and boys, causing them to age faster or making them sick [3]. Although our study participants are highly educated and have adequate knowledge on menstruation, they come from diverse cultural backgrounds interconnected with beliefs, taboos and fears about menstrual blood, which may influence their behaviour, attitudes and practices during menstruation. Interestingly, majority (66%) of them continue to attend library, mass or classes during menstruation. This finding confirms the evidence that increasing knowledge on menstruation has positive and significant effects on practice of good menstrual hygiene [1, 4, 10], thereby allowing women and young girls to participate effectively in their daily activities [25].

According to the results in the present study, majority (73%) of the participants do not have any source of income. This result is similar to those from other low-and-middle-income

countries (LMIC) [7-11] where majority of the female students are not working and could not afford purchasing sanitary pads every month [4, 18]. The present study also revealed that a quarter (25%) of the participants used materials such as napkins and rags as absorbent materials. Such practices are potential risk factors and sources of infection that can affect the health and wellbeing of those students. The provision of clean sanitary products, such as, commercial sanitary pads and clean re-usable menstrual pads are options that can truly reduce discomfort, anxieties, associated stigma, ridicule, and embarrassment which deters women and girls from attending school or work [5, 13, 24]. Majority (75%) of the participants were aware of the long-term health implications associated with the using of the same materials or sanitary pads for a long time. This finding supports the evidence that as female students move to higher levels in education, especially in medical schools, their knowledge on menstruation and their menstrual hygiene practice increases [1, 16, 32].

The result shows overwhelming support for the proposed concept of free-distribution of sanitary pads to all enrolled female students by the SMHS student services. This finding aligns with a recent policy memorandum on free provision of period products (e.g. sanitary pads and tampons) by the Scottish Government to tackle 'period poverty' [34] and studies done elsewhere [12-14, 24-25, 35] on the importance of

promoting access to affordable sanitary pads to women and young school girls. Although, the present study did not ask participants about the accessibility of WASH facilities at the SMHS, it is logical to assume that their responses to some of the questions, fully support the multiple evidence that combined interventions of education on MHM, WASH facilities and the provision of affordable sanitary pads [5, 12-14, 24-25, 34-41] will have positive impacts on women and young girls' wellbeing, education and employment opportunities.

Limitation of the study:

The present study did not ask participants how often they change their menstrual products after daily use, whether or how often they wash themselves during menstruation, and how they dispose of used sanitary products. These are important issues that will be included in further studies to be carried out among female students in the whole university of PNG.

CONCLUSION:

The results obtained in the present study support the multiple evidence that combined interventions of education on MHM, WASH facilities and the provision of affordable sanitary pads should have positive impacts on the health, academic performance and general wellbeing of female students in the SMHS UPNG.

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