

Knowledge, Attitude and Practice of Intimate Care and Its Association with Vaginal Discharge among Female Students in International Islamic University Malaysia (IIUM) Kuantan, Pahang, Malaysia

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ABSTRACT

Background: Prioritizing cleanliness, especially in intimate areas, is crucial for personal health. Globally, around 10% of women suffer from genital infections, and 75% of them have experienced these infections before and the rate of occurrence is increasing in many developing countries. Many women intend to get screened for vaginal discharge problems, but due to taboos and other factors, they often do not follow through with the process. This cross-sectional study aimed to assess the level of knowledge, attitude and practice (KAP) towards intimate hygiene and the association between knowledge, attitude, and practices on intimate care and vaginal discharge among female students at International Islamic University Malaysia Kuantan (IIUMK).

Methods: Two hundred and sixty respondents from different Kulliyah were given a self-administered questionnaire. The data were analysed using SPSS software.

Results: The finding showed that most of the respondents had good knowledge (87.5%) and practice (68.8%), and moderate attitude (53.6%) towards intimate care and its association with vaginal discharge.

Conclusion: These findings of the study underscore the importance of targeted health education and awareness programs to further enhance intimate care practices and knowledge, particularly among younger women, married women, and those who are sexually active.

Keywords: Female students; Intimate care; Vaginal discharge; Knowledge; Attitude; Practices

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INTRODUCTION

Hygiene care is essential for sustaining health and well-being, both individually and communally. It prevents diseases, fosters personal well-being, and carries social, economic, and global significance. Hygiene involves the conditions and behaviours that help maintain health and prevent disease transmission (1). Effective hygiene practices help avoid diseases, improve self-perception, enhance social interactions, boost community well-being, and increase productivity (2). Additionally, hygiene care is crucial for the health of children and families and plays a vital role in global health security (3). Encouraging good hygiene practices is a collective responsibility for healthier societies. Prioritizing cleanliness, especially in intimate areas, is crucial for personal health (2).

Approximately 10% of women worldwide suffer from genital infections, with 75% having had such infections before, and the incidence is growing in many developing countries (4). Annually, about 357 million new cases of treatable Reproductive Tract Infections (RTIs) or sexually transmitted infections (STIs) occur in adults, including syphilis, gonorrhoea, chlamydia, and trichomoniasis (5). Bacterial vaginosis is the most common cause, followed by trichomoniasis and vulvovaginal candidiasis. Non-infectious causes include atrophic, irritating, allergic, and inflammatory vaginitis (6). Early detection and treatment are crucial as untreated genital infections can lead to chronic pain, pelvic inflammatory disorders, infertility, premature birth, and an increased risk of HIV infection (7). However, in Malaysia there is lack of comprehensive study on genital infection rates within low-risk or general population groups. Instead, most studies have targeted high-risk subpopulations, such as sex workers and drug users, who are more susceptible to contracting and spreading STDs (8).

Vaginal discharge infections significantly impact young adults, including university students (3). Neglecting intimate care in students raises the risk of genital infections and impacts academics and relationships (9). Many female students are unaware of proper intimate care practices, leading to infections from inadequate menstrual hygiene, using reusable cloths, unhygienic practices, and tight, non-absorbent underwear (10).

Vaginal discharge is normal and common in women of reproductive age, typically beginning during puberty (11). Its production is influenced

by hormonal fluctuations throughout the menstrual cycle. The amount, consistency, and colour of vaginal discharge can vary among individuals and may be influenced by factors such as hormonal changes, menstrual cycle phase, and overall health (11). Normal discharge is clear or milky, while changes may indicate underlying issues, highlighting the importance of evaluating these characteristics for reproductive health (12).

Failure to maintain proper hygiene in intimate areas can lead to urinary problems, emotional issues, diminished self-esteem, lower confidence, and difficulties in relationships (13). Creating and sticking to appropriate hygiene routines is critical for preventing these outcomes and ensuring overall well-being (10). Meanwhile, compared to married women, unmarried women are at a higher risk of developing bacterial vaginosis (BV). BV can occur in sexually inactive females as well, demonstrating that sexual activity is not a prerequisite. Changes in lifestyle and improper perineal hygiene may increase the risk of BV among unmarried women. Seeking professional medical advice for persistent issues helps in receiving accurate diagnosis and treatment (14). In addition, ignoring intimate hygiene may result in increased medical expenses, reinforcing the need for preventative care to ensure overall wellness (3,15). Thus, assessing their level of knowledge, attitude and practice toward intimate care is essential in designing and developing effective strategies such as reproductive health education and supportive environment to guide self-care, promoting health, and preventing disease (16,17).

METHODS

This was a cross-sectional study, conducted at IIUMK among female students. All female students at IIUMK were eligible to participate in this survey based on the inclusion and exclusion criteria. The inclusion criteria were female students who study at IIUMK Campus, Pahang, with the range of age 19 to 35 years old. Those who did not meet the inclusion criteria such as married women were excluded from this study.

Single proportion formula was used to calculate the sample size, which was 260, with the assumption that α (significance level)=0.05, Absolute precision (Δ)=5%, anticipated population proportion (p)=19%. To get accurate numbers of participants 10% dropout was added. Convenience sampling method was applied to get a possible number of female students.

The questionnaire was divided into of 6 parts which are Parts A) Socio-demographic status that consists of information of respondent which are age, gender, level of education, Kulliyah, year of study, marital status, sexual activity, religion, and current residence. Then, Parts (1) B) describes of general knowledge of intimate care while Parts (2) B describes the general knowledge of vaginal discharge. Next, Part C describes the attitude toward intimate care and its association with vaginal discharge. Besides that, Parts D which focuses on factors of intimate care that influence vaginal discharge. Experts validated the content of the questionnaire, and a pilot study was conducted for the face validity of the questionnaire an acceptable Cronbach's Alpha of 0.72.

The study was conducted by using a self-administered questionnaire either via online social media platforms like WhatsApp and Instagram, or by approaching the students face-to-face in any area of the campus. The respondents were asked to fill in the questionnaires during their leisure time. Anonymity and confidentiality had been ensured during the research process. Prior to data collection, ethical approval was obtained from the Kulliyah of Nursing Post Graduate Research Committee (KNPGRC) and ethical clearance was obtained from the IIUM Research Ethical Committee (IREC; Reference ID: IREC 2024-093).

The collected data were analysed using SPSS. For the first objective, descriptive statistic tests were used to assess the level of knowledge, attitude, and practice on intimate care and vaginal discharge among female students in IIUM Kuantan regarding vaginal discharge. The second objective used the Fisher exact test to determine the association between knowledge, attitude, and practices on intimate care and vaginal discharge among female students in IIUM Kuantan.

RESULTS

A total of 260 respondents were included in this study based on the inclusion and exclusion criteria. Descriptive statistic was used to describe the characteristics of respondents as presented in **Table 1**. The mean age of the respondents is 1.14 (± 0.368) and 86.9% were age around 19 to 20 years old. Among 260 respondents, all are Muslims, still single and undergraduate students.

There are 18.5% of the respondents are from Kulliyah of Medicine, 25% respondents are from Kulliyah of Nursing, 8.1% are from Kulliyah of

Pharmacy, 6.2% respondents are from Kulliyah of Dentistry, 20.4% respondents are from Kulliyah of Sciences, and 21.9% respondents are from Kulliyah of Allied Health Sciences. The mean total from the Kulliyah is 3.51 (± 3). For the year of study, 4.6% of respondents are from year 5, 26.9% from year 4, 26.2% from year 3, 23.1% from year 2 and 19.2% from year. The mean for the year of study is 2.75 (± 1.181). About 94.2% of our respondents are not sexually active with the mean around 1.94 (± 0.234). Around 68.8% of respondents stay in the urban area with a mean of 1.69 (± 0.464).

Table 2 shows that, majority of the respondent (87.5%) had good knowledge on intimate care where, most respondents (90.8%) understand that intimate care is essential for overall health. A significant portion (62.3%) recognize the importance of avoiding scented products. About 68.1% of respondents know the importance of using pH-balanced products for intimate care. Furthermore, 92.7% agree that choosing underwear is important for intimate care. These findings also indicate substantial knowledge about vaginal discharge, with 58.1% of respondents knowing the different types of vaginal discharge and 73.8% being aware of the normal colour of vaginal discharge. Additionally, 75.4% understand the normal consistency of vaginal discharge. More than half (68.8%) recognize the normal odour of vaginal discharge and 65.4% notice that the colour and consistency of vaginal discharge can change over a month. However, only 37.3% could identify the abnormal colour of vaginal discharge. Around 42.3% disagree that vaginal discharge is necessarily considered a genital infection. Meanwhile, 59.6% know the symptoms of vaginal discharge problems, and 43.5% agree that discharge from the vagina can be associated with signs and symptoms of poor intimate care. Lastly, 83.5% agree that all women who undergo puberty will experience vaginal discharge, and 33.1% agree that abnormal vaginal discharge carries a social stigma.

The key findings indicate that a significant majority (87.5%) of the participants exhibit a good level of knowledge about intimate care, reflecting effective dissemination of health information and education. Positive attitudes towards intimate care were observed in 53.6% of the respondents, highlighting the need for continued efforts to improve perceptions and beliefs surrounding intimate hygiene. Additionally, 68.8% of the participants demonstrated good practices, suggesting that a considerable portion of the

student population is engaging in proper intimate hygiene behaviors.

Besides that, the second objective is to determine

the association between knowledge, attitude, and practices on intimate care and vaginal discharge among female students in IIUMK.

Table 1: Sociodemographic backgrounds (N=260)

Characteristics	Variable	Frequency	Percentage (%)
Age	19-23	226	86.9
	24-28	32	12.3
	29-35	2	0.8
Gender	Female	260	100
Level of Education	Foundation	0	0
	Undergraduate	260	100
	Post-graduate	0	0
Kulliyah	KOM	48	18.5
	KON	65	25.0
	KOP	21	8.1
	KOD	16	6.2
	KOS	53	20.4
	KAHS	57	21.9
	Year of Study	Year 1	50
Year of Study	Year 2	60	23.1
	Year 3	68	26.2
	Year 4	70	26.9
	Year 5	12	4.6
	Marital status	Married	0
Single		260	100
Sexually active	Yes	15	5.8
	No	245	94.2
Religion	Muslim	260	100
Current residence	Urban	179	68.8
	Rural	81	31.2

Table 2: Level of knowledge, attitude and practice of intimate care and its association with vaginal discharge.

Level	Score	
	Good, n (%)	Poor, n (%)
Knowledge	227 (87.5)	33 (12.5)
Attitude	139 (53.6)	121 (46.4)
Practice	179 (68.8)	81 (31.2)

Table 3 presents the association between various demographic and behavioral factors with the knowledge, attitude, and practices regarding intimate care and vaginal discharge. The p-values indicate the statistical significance of these associations. A p-value less than 0.05 generally suggests a statistically significant difference. Most respondents are aged 19-23, with a consistent 86.9% across most variables. Significant differences are seen in the belief that vaginal discharge is normal for all women ($p=0.001$), suggesting that this belief could be related to gaps in knowledge or cultural beliefs regarding vaginal

discharge. Since vaginal discharge can vary in its implications, education on this topic might benefit to the participants.

Participants from different faculties show varying levels of intimate care practices and knowledge, with no significant differences in most variables except for the belief that vaginal discharge is normal for all women ($p=0.312$). Knowledge and practices vary slightly across years of study, with significant differences observed in the use of flow water to wash the genital area ($p=0.649$) and having high knowledge of intimate care ($p=0.668$).

A high percentage of single participants (98.1%) demonstrate good practices and knowledge, with significant differences in the belief that vaginal discharge is normal for all women ($p=0.001$). Significant differences are found in the use of flow water ($p=0.856$) and high knowledge of intimate care ($p=0.764$), indicating that sexually active participants tend to have better practices and knowledge. Participants residing in urban areas (68.8%) consistently show better practices and

knowledge across all variables, though no significant differences are found.

Overall, the table indicates that factors such as age, marital status, and sexual activity significantly influence intimate care practices and knowledge about vaginal discharge, while other factors like Kulliyah and year of study have less impact.

Table 3: The association between knowledge, attitude, and practices on intimate care and its association vaginal discharge

Variable	Avoiding wearing tight pants			Always keep a clean and hygienic genital area			Using flow water to wash genital area		
	<i>n</i>	%	<i>p</i> -value	<i>n</i>	%	<i>p</i> -value	<i>n</i>	%	<i>p</i> -value
Age									
19-23	226	86.9	0.627	226	86.9	0.859	226	86.9	0.943
24-28	32	12.3		32	12.3		32	12.3	
29-35	2	0.8		2	0.8		2	0.8	
Kulliyah									
KOM	48	18.5	0.343	48	18.5	0.671	48	18.5	0.495
KON	65	25		65	25		65	25	
KOP	21	8.1		21	8.1		21	8.1	
KOD	16	6.2		16	6.2		16	6.2	
KOS	53	20.4		53	20.4		53	20.4	
KAHS	57	21.9		57	21.9		57	21.9	
Year of study									
Year 1	50	19.2	0.320	50	19.2	0.718	50	19.2	0.649
Year 2	60	23.1		60	23.1		60	23.1	
Year 3	68	26.2		68	26.2		68	26.2	
Year 4	70	26.9		70	26.9		70	26.9	
Year 5	12	4.6		12	4.6		12	4.6	
Marital Status									
Single	255	98.1	0.646	255	98.1	0.842	255	98.1	0.951
Married	5	1.9		5	1.9		5	1.9	
Sexually active									
Yes	15	5.8	0.135	15	5.8	0.725	15	5.8	0.856
No	245	94.2		245	94.2		245	94.2	
Current Residence									
Rural	81	31.2	0.309	81	31.2	0.035*	81	31.2	0.572
Urban	179	68.8		179	68.8		179	68.8	

Notes. Chi-square test, $p < 0.05$ as significant at 95% CI

DISCUSSION

Assessing Level of Knowledge, Attitude, and Practices Towards Intimate Care and Its Association with Vaginal Discharge

Among 260 respondents, 87.5% achieved a good level of knowledge and practices of intimate care and its association with vaginal discharge. The results also show positive signs of significance in intimate care and its association with vaginal discharge. This positive relationship can be interpreted as a high level of knowledge among

the respondents. Similar study found that increased awareness and education about intimate hygiene significantly improved knowledge and practices regarding vaginal health among women (16).

The finding of this study highlighted that women who received proper education on intimate care were more likely to adopt healthy practices and recognize symptoms related to vaginal discharge. Likewise, another study revealed that educational

programs effectively increased women's awareness of reproductive health, including the significance of maintaining proper intimate hygiene (13). These findings emphasize the critical role of education in promoting better intimate care practices and understanding their connection to vaginal discharge. Another study found that women with higher knowledge levels about

intimate care were better at identifying normal and abnormal vaginal discharge, leading to timely medical consultations and better overall reproductive health outcomes (4). In addition, that female students who have a background in medical sciences have higher knowledge in intimate care and its association with vaginal discharge (12).

Continued Table 3: The association between knowledge, attitude, and practices on intimate care and its association vaginal discharge

Variable	Easy to get access on intimate care information			Have high knowledge of intimate care and its association with vaginal discharge			Vaginal discharge is normal for all women		
	<i>n</i>	%	<i>p</i> -value	<i>n</i>	%	<i>p</i> -value	<i>n</i>	%	<i>p</i> -value
Age									
19-23	226	86.9	0.244	226	86.9	0.696	226	86.9	0.001*
24-28	32	12.3		32	12.3		32	12.3	
29-35	2	0.8		2	0.8		2	0.8	
Kulliyah									
KOM	48	18.5	0.825	48	18.5	0.220	48	18.5	0.812
KON	65	25		65	25		65	25	
KOP	21	8.1		21	8.1		21	8.1	
KOD	16	6.2		16	6.2		16	6.2	
KOS	53	20.4		53	20.4		53	20.4	
KAHS	57	21.9		57	21.9		57	21.9	
Year of study									
Year 1	50	19.2	0.392	50	19.2	0.668	50	19.2	0.358
Year 2	60	23.1		60	23.1		60	23.1	
Year 3	68	26.2		68	26.2		68	26.2	
Year 4	70	26.9		70	26.9		70	26.9	
Year 5	12	4.6		12	4.6		12	4.6	
Marital Status									
Single	255	98.1	0.885	255	98.1	0.893	255	98.1	0.001*
Married	5	1.9		5	1.9		5	1.9	
Sexually active									
Yes	15	5.8	0.105	15	5.8	0.764	15	5.8	0.001*
No	245	94.2		245	94.2		245	94.2	
Current Residence									
Rural	81	31.2	0.150	81	31.2	0.616	81	31.2	0.001*
Urban	179	68.8		179	68.8		179	68.8	

Notes. Chi-square test, *p* < 0.05 as significant at 95% CI

Research indicates that attitudes toward intimate care significantly influence women's practices and overall vaginal health. In this study, 53.6% of respondents demonstrated a good attitude towards intimate care and its association with vaginal discharge. This finding aligns with existing literature that underscores the importance of positive attitudes in adopting healthy hygiene practices. Women with a positive attitude towards intimate hygiene were more likely to engage in preventive health behaviors, such as regular cleaning and using appropriate products (18). This

study highlighted the role of attitude in shaping behaviors that promote vaginal health. Additionally, another study emphasized that educational program aimed at improving attitudes towards intimate care could lead to significant improvements in hygiene practices and a reduction in the incidence of vaginal infections (19). The study demonstrated that women who had a more informed and positive outlook on intimate care were better equipped to manage their vaginal health effectively.

This study also found that 68.8% of respondents demonstrate good practices towards intimate care and its association with vaginal discharge is supported by a study indicating that effective educational program and awareness campaigns can significantly improve intimate hygiene practices. This level of adherence to good practices is crucial for maintaining vaginal health and preventing infections. A woman who was educated about intimate hygiene and its importance were more likely to adopt good practices such as regular washing, using appropriate products, and seeking medical advice when necessary (9). This study underscores the impact of knowledge on hygiene behaviors. Additionally, another study found that women who practiced good intimate hygiene had a lower incidence of vaginal infections and reported better overall reproductive health (20). This study also highlighted those good practices, including the use of pH-balanced products and proper menstrual hygiene, were strongly associated with reduced vaginal health issues.

Association Between Knowledge, Attitude, and Practices on Intimate Care and Its Association Vaginal Discharge

This study supports the observation that women residing in urban areas tend to have better knowledge and practices regarding intimate care. Urban residents generally had higher access to health information and services, contributing to better hygiene practices and knowledge about reproductive health. Urban women often benefit from better educational opportunities and more frequent health campaigns, which enhance their understanding and practices related to intimate care (17).

Younger women, particularly those in the 19-23 age group, tend to be more aware of and engage in proper intimate care practices due to greater exposure to health education through digital media and educational institutions (21). Another study found that sexually active women tend to have better knowledge and practices concerning intimate care. This group is more likely to seek information about sexual health and hygiene to prevent sexually transmitted infections and maintain reproductive health (13). The impact of academic faculty (Kulliyah) and year of study on intimate care practices and knowledge is less pronounced. This may be because health education related to intimate care is not uniformly integrated into all academic curricula. Unless specific health education programs are targeted towards all students irrespective of their field of study, variations in intimate care knowledge and practices

among different Kulliyah and academic years remain minimal.

CONCLUSION

The study provides comprehensive insights into the knowledge, attitudes, and practices (KAP) of intimate care and its association with vaginal discharge among female students at IIUM Kuantan. The findings revealed that participants residing in urban areas consistently show better practices and knowledge across all variables, though these differences were not statistically significant. Factors such as age, marital status, and sexual activity significantly influence intimate care practices and knowledge about vaginal discharge, while other factors like Kulliyah and year of study have less impact. These findings underscore the importance of targeted health education and awareness programs to further enhance intimate care practices and knowledge, particularly among younger women, married women, and those who are sexually active. Additionally, integrating comprehensive reproductive health education into academic curricula across all faculties can help bridge the knowledge gap and promote uniformity in intimate care practices among students.

Overall, the study highlights the critical role of education and awareness in promoting better intimate hygiene practices and reducing the prevalence of vaginal health issues. Continued efforts in this direction can lead to improved reproductive health outcomes and enhanced well-being for women.

LIMITATIONS AND RECOMMENDATIONS

The study faced significant time constraints because the researcher was a final-year student with other academic commitments, limiting data collection mostly to online methods with minimal face-to-face interaction. Another limitation was its focus mainly on IIUM Kuantan students, potentially excluding perspectives from students at other campuses or universities, thus limiting generalizability. Relying on self-administered questionnaires may have introduced response biases like social desirability bias, as respondents might have answered based on perceived correctness rather than personal knowledge or experience.

Conducting the study online due to time constraints might have reduced the depth of responses compared to face-to-face methods.

However, the potential of online surveys is significant and should not be overlooked, as they offer notable advantages over traditional paper-based surveys. These include rapid distribution, flexibility, and cost-effectiveness. Increasing response rates may be achieved by sending additional reminder emails, offering incentives for participation, and allowing a longer response window. While the cross-sectional design was efficient for gathering data at one point in time, it limits the ability to establish causal relationships or observe changes over time. Despite achieving a large sample size (260 respondents), the uneven distribution across different faculties (Kulliyyah) may not fully capture the diversity of the student body, potentially impacting the robustness of subgroup analyses.

Another limitation of the study as addressed by other cross-sectional studies is the use of questionnaire, which is a self-reported approach and could lead to underreporting and recall bias. Future research should consider expanding the sample to include students from other campuses or universities to enhance external validity and capture diverse perspectives.

CONFLICT OF INTEREST

The authors declare there is no conflict of interest.

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AUTHOR CONTRIBUTIONS

NIR: drafted the manuscript and contributes to the concept development and design of the article through data collection, analysis and data interpretation for the article.

SHMZ: revised the manuscript critically with intellectual contents and approved the final version of the manuscript.

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