Prevalence and Knowledge of Vaginal Candidiasis among Female Students of the University Of Benin

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Abstract

Vulvo-vaginal candidiasis (VVC) is a prevalent fungal infection affecting women worldwide, characterized by symptoms such as itching, burning, and abnormal discharge. In developing countries like Nigeria, challenges such as healthcare workforce shortages and limited access to affordable diagnostics contribute to the burden of VVC. Lifestyle factors, including tight clothing and improper menstrual hygiene practices, further exacerbate its prevalence among female students. Despite its impact, there is a scarcity of information regarding the prevalence rates of vaginal candidiasis among this demographic. Existing studies primarily focus on patients treated within hospital settings, offering limited insights into prevalence rates specifically among seemingly healthy females. Therefore, there is a critical need for comprehensive research to address this gap in knowledge and understanding. This study aims to comprehensively investigate vaginal candidiasis among female students at the University of Benin, Nigeria. The study examine the prevalent self-care practices, over-the-counter treatments, or healthcare-seeking behaviors among female students when faced with vaginal candidiasis.. The study draws upon the Health Belief Model and Social Constructionist Theory to understand individual perceptions and socio-cultural influences on vaginal candidiasis. By integrating these theories, we aim to inform targeted interventions and health promotion efforts among female students at the University of Benin. This study adopts a descriptive and

survey research design to examine the prevalence, knowledge, and prevention mechanisms of vaginal candidiasis among female students at the University of Benin. A sample size of 200 female students was selected using a multi-stage sampling technique, including cluster, random, and convenience sampling methods. Data was collected using a structured questionnaire consisting of two sections: socio-demographic characteristics and core study objectives. Data were collected electronically, descriptive statistics was used for analysis, including frequency, percentage, graphs, charts, and Pearson chi-square tests where necessary. This comprehensive research methodology aims to generate reliable insights to inform healthcare interventions and educational programs targeted at improving the management and prevention of vaginal candidiasis among female students at the University of Benin. In conclusion, this study holds the potential to contribute valuable knowledge to the field, enhancing our understanding of vaginal candidiasis and paving the way for effective interventions to address this important public health issue.

Keywords
Vulvo-vaginal candidiasis, Vaginal Candidiasis, Candida Albican, fungal infection

Introduction

The most prevalent fungal infection, vulvovaginal candidiasis, affects 75% of sexually active women and women of reproductive age and is associated with high morbidity, medical costs, sexual dysfunction, pain, and discomfort. (Subhalaxmi, Indrani, Banojini, Satyadarsi, 2018). Vaginal candidiasis has been reported globally as a condition afflicting women. However, there is a clear need for more comprehensive research into the prevalence, understanding levels, and coping strategies related to vaginal candidiasis among specific demographic groups, particularly female students within academic institutions like the University of Benin, Nigeria.

Vaginal candidiasis is the most common infection in women, adolescents, and pregnant women in particular. Vulvovaginitis is another name for vaginal candidiasis, It is characterized as a yeast infection of the tissues surrounding the vaginal entrance. The fungus Candida is the cause of vaginal candidiasis, this

Candida resides in the mouth, throat, gut, and vagina of humans, this fungus begins to grow in the human body once the right conditions or habitat are present.(Dr.Suresh, Komal, Sonupriya, Siddhi, Parshuram, Lokendra, 2022).

Candida albicans is characterized by intense vulval and vaginal irritation (itching) which often gives rise to inflammation, soreness, redness and white spots in and around the genital tract. Thick, cheesy white, curd-like vaginal discharge generally adherent as white patches to the vaginal wall, cervix and Labia minora is observed. Also, painful urination and painful intercourse are associated with the infecton.The infection could be acute, recurrent or chronic.(Akpan, Ekpeyong,Ibu & Ibu, 2011). It is interesting to note that, most, if not all, women carry Candida in the vagina as normal flora at some points in their lives, yet without symptoms or signs of vaginitis and usually with a low concentration of yeast organism. (Heidrich, Berg, German, 1984).

Knowledge of preventing vaginal Candidiasis has the potential to spare many women from frequent office visits and uncomfortable vaginal infections, as well as ward off complications. Existing theories propose specific measures that could be helpful, including maintaining cleanliness and dryness in the vaginal area and steering clear of excessive consumption of refined carbohydrates. (Goudia, Eswi, Hamid, Hasaan, 2019). Vaginal candidiasis is a widespread issue worldwide. In Nigeria, there is limited available data on the prevalence, particularly among seemingly healthy females. The majority of documented studies focus on patients treated in hospital settings. (Mbim, Mboto, George, Umego, Edet, Orajiaka, 2017).

However, this study is aimed at determining the prevalence of vulvovaginal candidiasis, level of knowledge, coping mechanism, contributing to our understanding of the natural history, and risk factors among female students of the University of Benin, Nigeria, the results of the study will highlight the necessity for a consistently maintained health education and awareness program aimed at women of reproductive age, emphasizing the importance of routine and periodic diagnosis for Candida species. Additionally, the findings will underscore the traditional approach of physicians, emphasizing the fundamental and obligatory need for empirical laboratory diagnosis as the gold standard for managing vulvovaginal candidiasis.

Vulvo-vaginal candidiasis remains a prevalent issue globally, affecting diverse segments of society. This is particularly pronounced in developing countries due to various healthcare delivery challenges like workforce shortages, regulatory inadequacies and unaffordable especially for students. The absence of rapid, simple, and affordable diagnostic tests contributes to issues such as over-diagnosis, under diagnosis, or misdiagnosis, leading to inappropriate treatment. (Mohamadi, Havasian, Panahi, Pakzad, 2015).

VVC is common among girls because of lifestyle patterns such as wearing tight Pants/jeans; using one napkin for a prolonged time during menstruation. Using scented Sanitary, products hi-fi deodorant chemicals; using unclean mugs and buckets for perineal wash can irritate the vagina, and douching can upset the healthy balance of bacteria in the vagina. Other predisposing factors include diabetes mellitus, oral steroid use, broad-spectrum antibiotics, immunosuppressant diseases, diet especially for Carbohydrates "yeast's favorite food" and foods that contain hydrogenated and partially Hydrogenated oils stimulate Candida growth and caffeine as well as obesity or Excessive weight, In addition, ; heat and moisture might make yeast infections more likely because yeast can thrive in this type of environment, and some women probably have a mild Candida antigen specific immunologic deficiency. (Goudia, Eswi, Hamid, Hassan, 2019). Therefore, there is need to examine the prevalent self-care practices, over-the-counter treatments, or healthcare-seeking behaviors among female students when faced with vaginal candidiasis.

2.2 Theoretical Framework

The study adopted social constructionist theory, over the past five decades, there has been significant research in the field of medical sociology focusing on the social construction of illness, which has greatly enhanced our comprehension of the social aspects associated with illness. (Conrad, Barker). Social constructionism is a theoretical framework that underscores the cultural and historical elements of phenomena often perceived as purely natural. It emphasizes that the meanings associated with these phenomena do not originate from the phenomena themselves but rather evolve through social interactions within a particular context. Social constructionism explores how individuals and groups play a role in shaping perceived social reality and knowledge, as highlighted by Berger and

Luckman (1966). When applied to illness, a social constructionist perspective is based on the established conceptual differentiation between disease (the biological aspect) and illness (the social interpretation of the condition), as outlined by Eisenberg (1977).

The intellectual foundations of a social constructionist perspective on illness have diverse origins. While some foundational concepts can be found in the works of early sociological thinkers like Emile Durkheim, Karl Mannheim, and W. I. Thomas, we will focus on the direct predecessors and early proponents of the social construction of illness starting from the 1960s.

These scholars emphasized the intentional use of these categories for social control, influencing expectations regarding acceptable behavior. This framework has been applied to the study of illness, with medical sociologists highlighting the contingent processes by which certain behaviors and experiences are labeled as medical conditions and how these definitions can serve as a form of social regulation (Conrad and Schneider, 1992; Zola, 1972).

Eliot Freidson's influential book, "Profession of Medicine," published in 1970, played a significant role in shaping the social construction of illness approach. In the latter part of the book, in a section titled "The Social Construction of Illness," Freidson (1970) discusses how illnesses can have repercussions that go beyond biological effects.

Freidson (1970) not only recognized the concrete social ramifications of labeling an illness but also encouraged sociologists to investigate the initial process of diagnosing signs or symptoms as an illness. By asserting that illness and disease, like deviance, are socially constructed categories based on societal notions of acceptability or desirability, Freidson foreshadowed the subsequent sociological examination of medical classifications and knowledge. This underscores the significant role of diagnosis in the social construction of illness, highlighting the necessity for a sociology of diagnosis.

Sociologists examines the influence of other cultural interpretations embedded within illness. It's crucial to recognize that not all illnesses are perceived equally;

some carry social stigma, while others do not; some are subject to dispute, while others are not; and some are regarded as disabilities, while others are not. What's significant about these distinctions is that they stem from social factors rather than purely biological ones. Beyond being merely of sociological interest, these cultural interpretations impact how individuals experience illness, how it is portrayed and the societal response to it.

Another significant aspect of constructionism is the recognition that the experience of illness is socially constructed. This idea is rooted in the strong pragmatist foundations of symbolic interactionism and phenomenology, which suggest that reality is not simply a pre-existing entity waiting to be discovered, but rather is actively created by individuals through their interactions with the world. When applied to illness, individuals actively shape and give meaning to their experiences of illness.

In conclusion, adopting a constructionist approach underscores the significance of problem definition in shaping societal responses and influencing individuals' experiences. This perspective offers a counter to the deterministic logic often inherent in medicine, thereby expanding and enhancing policy discussions and decisions.

Research Methodology

This study adopted a cross-sectional research design which seeks to examine the prevalent self-care practices, over-the-counter treatments, or healthcare-seeking behaviors among female students of university of Benin. The population of the study comprises an estimated 38,500 female students enrolled at the University of Benin, Nigeria. This estimation is based on the assumption of an equal gender distribution within the total student population, which is recorded as 77,000 individuals.

Based on Krejcie and Morgan's formula, a sample size of approximately 384 would be recommended for a population size of 77,000 at a 95% confidence level and a 5% margin of error. However, considering resources the adopted a sample size of 200 for the study,

The study will adopt a multi-stage sampling technique which include cluster, random and convenience sampling technique that will aid the research student to get to the desired respondent and in obtaining a reliable and representative data. Cluster sampling involves dividing the university's female student population into clusters based on academic faculties. This allows us to account for potential variations in candidiasis prevalence across different disciplines, ensuring a comprehensive examination of the phenomenon. Within each cluster, random sampling is employed to select specific courses or departments, ensuring that every female student within the chosen clusters has an equal chance of participation. This enhances the representativeness and validity of our findings by minimizing selection bias. Convenience sampling involves selecting participants who are readily available and easily accessible. This method allows us to capitalize on opportunities for participant recruitment during breaks or after classes, optimizing sample diversity and facilitating efficient data collection.

The study adopted quantitative instrument in collecting data from the study location. This includes the use of structured questionnaire in eliciting the thrust of the study. The questionnaire consists of two sections: namely Section A: this covers the Socio-demographic characteristics of the respondent and section B covers the core of the study which is to examine the prevalent self-care practices, over-the-counter treatments, or healthcare-seeking behaviors among female students when faced with vaginal candidiasis.

The study adopted the descriptive statistics in analyzing data collected and quantitative data that was collected for the study was analysed using Statistical Package for Social Sciences (SPSS) software version 20.0.

Table 1.1
SOCIO DEMOGRAPHIC ANALYSIS

		Count	Column N %
Age	18-20	66	33.0%
	21-23	74	37.0%
	24-26	41	20.5%
	27 and above	19	9.5%
	Total	200	100%
Marital Status	Married	10	5.0%
	Single	190	95.0%
	Total	200	100%
Academic Level	100 level	50	25.0%
	200 level	45	22.5%
	300 level	44	22.0%
	400 level	61	30.5%
	Total	200	100%
Faculty	Arts	13	6.5%
	Education	22	11.0%
	Engineering	30	15.0%
	EMT	19	9.5%
	Law	12	6.0%
	Management Sciences	26	13.0%
	Basic Medical Sciences	15	7.5%
	Pharmacy	10	5.0%
	Life Science	53	26.5%

Total	200	100%

Table 1.1 presents the socio-demographic characteristics of the respondents. Regarding age distribution, the majority fall within the 21-23 age bracket (37.0%), followed by 18-20 (33.0%), 24-26 (20.5%), and 27 and above (9.5%). In terms of marital status, the vast majority are single (95.0%), with only a small percentage being married (5.0%). Academic level varies, with the highest representation in the 400 level (30.5%), followed by 100 level (25.0%), 300 level (22.0%), and 200 level (22.5%). Regarding faculty affiliation, Life Science has the highest representation (26.5%), followed by Engineering (15.0%), Management Sciences (13.0%), Education (11.0%), and Basic Medical Sciences (7.5%), among others.

Table 2.1:

Do you know what Vaginal Candidiasis is?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	49	24.5	24.5	24.5
	Yes	151	75.5	75.5	100.0
	Total	200	100.0	100.0	

Among the respondents in table 2.1, 75.5% are familiar with vaginal candidiasis, while 24.5% are not.

Table 2.2
Self-Rating of Knowledge on Vaginal Candidias

How would you rate your knowledge about Vaginal Candidiasis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	25	12.5	12.5	12.5
	Fair	65	32.5	32.5	45.0
	Good	74	37.0	37.0	82.0

	Poor	36	18.0	18.0	100.0
	Total	200	100.0	100.0	

Table 2.2 shows that among the participants, 12.5% rated their knowledge as excellent,while, 32.5% as fair, 37.0% as good, and 18.0% as poor.

Table 2.3
Awareness of Causes, Symptoms, and Risk Factors of Vaginal Candidiasis

Are you aware of the causes, symptoms and risk factors associated with Vaginal Candidiasis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	81	40.5	40.5	40.5
	Yes	119	59.5	59.5	100.0
	Total	200	100.0	100.0	

Table 2.3 illustrates respondents' awareness of the causes, symptoms, and risk factors associated with Vaginal Candidiasis. Out of 200 participants, 40.5% indicated they were not aware, while 59.5% reported being knowledgeable about these aspects. Johnson, Griffiths, Humberstone, (2010), supported by their findings, affirm that women within the age of 21-30 exhibit a high level of awareness and knowledge regarding VVC, with an impressive 97% demonstrating familiarity with the condition.

Table 2.4
Do you engage in preventive measures to avoid vaginal candidiasis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	60	30.0	30.0	30.0
	Yes	140	70.0	70.0	100.0
	Total	200	100.0	100.0	

Table 2.4 presents responses regarding engagement in preventive measures to avoid vaginal candidiasis. Of the 200 participants surveyed, 140 (70.0%) indicated

that they do engage in preventive measures, while 60 (30.0%) reported not engaging in any preventive measures.

Table 2.5
Preventive measures do you practice regularly?

Vaginal Candidiasis Preventive Measures:	Frequency
Good Personal Hygiene	91
Breathable Cotton Underwear	57
Avoid Excessive Antibiotics	55
Consuming Probiotics	31
Not Engaging in Douching	54
Other Preventive Measures	11
Total	299

Table 2.6 shows participants reported practicing various preventive measures regularly to avoid vaginal candidiasis. Among the listed preventive measures, "Good Personal Hygiene" was the most commonly practiced, with 91 participants. This was followed by "Breathable Cotton Underwear" (57), "Avoid Excessive Antibiotics" (55), "Not Engaging in Douching" (54), "Consuming Probiotics" (31), and "Other Preventive Measures" (11).

Table 2.7
How often do you practice these preventive measures?
How often do you practice these preventive measures?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	40	20.0	20.0	20.0
	Never	18	9.0	9.0	29.0
	Occasionally	63	31.5	31.5	60.5
	Often	57	28.5	28.5	89.0
	Rarely	22	11.0	11.0	100.0
	Total	200	100.0	100.0	

Participants reported varying frequencies of practicing preventive measures to avoid vaginal candidiasis. Among the respondents, 40 (20.0%) reported practicing these measures "Always," while 63 (31.5%) reported doing so "Occasionally." Additionally, 57 (28.5%) stated they practiced them "Often," and 22 (11.0%) reported doing so "Rarely." A smaller proportion of participants, 18 (9.0%), indicated that they "Never" practiced these preventive measures.

Table 2.8

Engage in Self-Care Practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	56	28.0	28.0	28.0
	Yes	144	72.0	72.0	100.0
	Total	200	100.0	100.0	

Regarding self-care practices, 144 participants (72.0%) reported engaging in such practices, while 56 participants (28.0%) stated that they did not.

Table 2.10:

Purchase of Over-The-Counter Treatments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	93	46.5	46.5	46.5
	Yes	107	53.5	53.5	100.0
	Total	200	100.0	100.0	

Table 2.10 presents data on the purchase of over-the-counter treatments for vaginal candidiasis. Of the 200 respondents, 107 (53.5%) reported purchasing over-the-counter treatments, while 93 (46.5%) did not. The findings of Ferris, Nyirjesy, Sobel, Soper, Pavletic, Litaker, Overton, (2002) highlighted the misuse of over-the-counter antifungal drugs for the treatment of vulvovaginal candidiasis, indicating significant healthcare-seeking behaviors related to self-diagnosis and self-treatment. The findings of the mentioned researchers align with the results of this study, where 53.5% of respondents reported purchasing over-the-counter treatments for vaginal candidiasis. Additionally, this study's analysis, using

Pearson chi-square tests revealed significant relationships between the use of specific over-the-counter treatments, such as antiseptic creams and antifungal oral medication (fluconazole), and the incidence of vaginal candidiasis. Therefore, the utilization of over-the-counter treatments observed in this study reflects real-world healthcare-seeking behaviors among female students facing vaginal candidiasis, corroborating the findings highlighted by Ferris, Nyirjesy, Sobel, Soper, Pavletic, Litaker, Overton, (2002).

Discussion of Findings

The study focuses the prevalent self-care practices, over-the-counter treatments, or healthcare-seeking behaviors among female students when faced with vaginal candidiasis.The findings revealed that various self-care practices were reported, including "Maintain Good Hygiene" by 91 respondents, "Wearing breathable cotton underwear" by 57 respondents, "Avoiding irritants like scented products" by 55 respondents, and "Not engaging in douching" by 31 respondents. Regarding over-the-counter treatments, 53.5% of the 200 respondents reported purchasing such treatments, while 46.5% did not. Further analysis using Pearson chi-square tests indicated significant relationships between the use of antiseptic creams (χ^2 = 9.872, df = 3, p = .020) and antifungal oral medication (fluconazole) (χ^2 = 8.114, df = 3, p = .044) with the incidence of vaginal candidiasis. However, no significant relationships were found between the use of antifungal creams (e.g., miconazole, clotrimazole) (χ^2 = 2.542, df = 3, p = .468) or antifungal suppositories (e.g., Boric Acid) (χ^2 = 1.096, df = 3, p = .778) and the incidence of vaginal candidiasis. These findings shed light on the varied self-care practices and treatment-seeking behaviors among female students facing vaginal candidiasis, highlighting the significance of certain over-the-counter treatments in managing the condition. In support of the findings, according to Ferris, Nyirjesy, Sobel, Soper, Pavletic, Litaker, Overton, (2002), their study highlighted the misuse of over-the-counter antifungal drugs for the treatment of vulvovaginal candidiasis, indicating significant healthcare-seeking behaviors related to self-diagnosis and self-treatment. The findings of the mentioned researchers align with the results of this study, where 53.5% of respondents reported purchasing over-the-counter treatments for vaginal candidiasis. Additionally, this study's analysis, using Pearson chi-square tests revealed significant relationships between the use of specific over-the-counter treatments, such as antiseptic creams and antifungal oral

medication (fluconazole), and the incidence of vaginal candidiasis. Therefore, the utilization of over-the-counter treatments observed in this study reflects real-world healthcare-seeking behaviors among female students facing vaginal candidiasis, corroborating the findings highlighted by Ferris, Nyirjesy, Sobel, Soper, Pavletic, Litaker, Overton, (2002).

Conclusion

In conclusion, this study has provided valuable insights into the prevalence, knowledge, , treatment-seeking behaviors faced by female students at the University of Benin regarding vaginal candidiasis. The findings of this study revealed that there was a notable reliance on over-the-counter treatments, indicating a need for improved access to professional medical assistance.

Furthermore, the study identified socio-cultural factors such as stigma, financial constraints, and inadequate information as barriers to accessing healthcare services and information. Despite these challenges, there was a notable interest among female students in participating in educational programs and workshops on women's health topics, highlighting the importance of targeted interventions in this regard.

Overall, this research contributes to the existing literature on vaginal candidiasis among female students, providing a foundation for future studies and interventions aimed at improving knowledge and management of the condition. It is hoped that the findings of this study will inform policy-makers, healthcare providers, and educational institutions in developing effective strategies to address the burden of vaginal candidiasis among female students at the University of Benin and beyond.

Recommendation

Develop educational programs or workshops on women's health topics, including vaginal candidiasis, to address knowledge gaps and promote preventive measures. These programs can provide comprehensive information about vaginal candidiasis, its causes, symptoms, preventive measures, and treatment options, ensuring accuracy and relevance.

Improve access to healthcare services by addressing financial constraints and increasing awareness of available services. Initiatives aimed at reducing healthcare costs or providing financial assistance can help alleviate this barrier. Raising awareness about available healthcare services and their accessibility can encourage female students to seek appropriate medical treatment when needed.

Enhance the reliability and accessibility of information on vaginal candidiasis through diverse channels, including internet sources and healthcare professionals. Utilizing diverse channels such as internet sources, informational pamphlets, and direct communication with healthcare professionals can ensure that accurate information about vaginal candidiasis is readily available to female students whenever they need it.

Conduct further research to explore the effectiveness of educational interventions in improving knowledge and health-seeking behaviors related to vaginal candidiasis among university students. Continuous research is essential for evaluating the impact of educational interventions on knowledge acquisition and health-seeking behaviors among university students. By conducting further studies, researchers can assess the effectiveness of different educational strategies and tailor interventions to better meet the needs of female students in preventing and managing vaginal candidiasis. By implementing these recommendations, policymakers, healthcare providers, and educational institutions can work together to promote the health and well-being of female students at the University of Benin and beyond.

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