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THE PREVALENCE AND CHARACTERISTICS OF FLUOR ALBUS AT DERMATOLOGY AND VENEREOLOGY POLYCLINIC OF PROF. DR. I.G.N.G. NGOERAH GENERAL HOSPITAL, DENPASAR, 2021-2023

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ABSTRACT

Fluor albus, also known as leukorrhea, is defined as the appearance of abnormal vaginal discharge, assessed based on the amount, odor, color, and whether it is accompanied by complaints such as lower abdominal pain. Based on its type, leukorrhea consists of physiological and pathological leukorrhea. The causes of pathological vaginal discharge can be transmitted with or without sexual contact. Pathological vaginal discharge transmitted through sexual contact is referred to as a sexually transmitted infection (STI). Sexually transmitted infections remain a significant issue in both developing and developed countries. This study was conducted to determine the prevalence rate and characteristics of *fluor albus* cases, particularly at the Dermatology and Venereology Polyclinic of Prof. Dr. I.G.N.G. Ngoerah General Hospital, Denpasar, from 2021 to 2023. This study is a retrospective descriptive research with a cross-sectional design. The sample for this study consists of 85 individuals, obtained using a total sampling method. The prevalence of *fluor albus* at the Dermatology and Venereology Polyclinic of Prof. dr. I.G.N.G. Ngoerah General Hospital, Denpasar, from 2021 to 2023 was found to be 32.06%. Physiological vaginal discharge was found in 7.1%, while pathological discharge accounted for 92.9%, with the most common cause being bacterial vaginosis. The incidence of *fluor albus* based on the sample characteristics predominantly occurred in the reproductive age group (94.1%), with students accounting for 21.2%, those with a high school education level making up 30.6%, and unmarried individuals constituting 35.3%.

Keywords : *fluor albus*, leucorrhea, bacterial vaginosis

INTRODUCTION

Fluor albus, or vaginal discharge, is defined as the appearance of abnormal fluid from the vagina, assessed by quantity, odor, color, and whether it is accompanied by lower abdominal pain or other symptoms.[1] Vaginal discharge may occur as a result of various risk factors, including age, marital status, parity, occupation, and educational level.[2,3]

Vaginal discharge may be categorized as either physiological (normal) or pathological.[2] Physiological vaginal discharge has several characteristics, such as being colorless to white, non-irritating, and odorless.[4] In contrast, pathological vaginal discharge is marked by a color change from white to yellow, green, brown, or red, along with changes in consistency, volume, and odor, as well as associated symptoms such as itching, pain, dysuria, and pelvic pain.[4,5]

The causes of pathological vaginal discharge can be divided into two categories: infectious and non-infectious.[5] Pathological discharge due to infection may be caused by bacteria, viruses, fungi, or parasites that infect the vagina or cervix. Non-infectious pathological discharge can be caused by atopic vaginitis, contact dermatitis due to an allergen or irritant, vaginitis from foreign objects such as tampons or condoms, cervical polyps, fistulas, or tumors.[5]

Pathogens that cause pathological vaginal discharge can be transmitted either with or without sexual contact.[5] Discharge resulting from the transmission of pathogens through sexual contact is typically referred to as a sexually transmitted infection or sexually transmitted disease.[6] These infectious diseases are a concern and burden for healthcare services in both developed and developing countries.

In 2020, the World Health Organization (WHO) estimated the global number of sexually transmitted infections to be around 374 million cases, with details as follows: chlamydia (129 million cases), gonorrhea (82 million cases), syphilis (7.1 million cases), and trichomoniasis (156 million cases). In Indonesia, recorded cases of sexually transmitted infections include both HIV and non-HIV cases. From April to June 2022, there were 11,100 HIV cases in Indonesia 31% of those affected were women.[7]

Additionally, during the same period, non-HIV cases in Indonesia included 4,360 cases of syphilis, 3,146 cases of cervicitis-proctitis, 1,663 cases of gonorrhea, 1,520 cases of non-gonorrheal urethritis, 1,186 cases of gonorrheal urethritis, 301 cases of trichomoniasis, and 194 cases of genital herpes.[7]

A study conducted at the Dermatology and Venereology Polyclinic of Sanglah General Hospital found that the percentage of sexually transmitted infection cases in 2009 was 2.5%, which increased to 2.8% in 2010 and 3.8% in 2011. The study revealed that gonorrhea was the third most common infection, accounting for 20.5%, followed by candidiasis (8.3%) and bacterial vaginosis (4.1%).[8]

The specific causes of *fluor albus* or vaginal discharge can be identified using laboratory examinations. Commonly used laboratory tests include wet mount microscopy, Gram stain of the cervix, pH testing, and the amine or whiff test.[9] Bacterial vaginosis diagnosis can be made using Amsel's criteria, which evaluates color, pH, odor, and the presence of clue cells in the discharge. Additionally, a diagnosis of trichomoniasis can be established if the parasite *Trichomonas vaginalis* and the motile trophozoites of *Trichomonas vaginalis* are found in microscopic examination.[10,11] Vulvovaginal candidiasis can be diagnosed by combining Polyclinical manifestations with wet mount microscopy using potassium hydroxide (KOH).[12]

Sexually transmitted infections (STIs) can lead to both health and social complications, such as stigmatization, pelvic inflammation that causes infertility and ectopic pregnancy, pregnancy complications, cancer risk from Human Papilloma Virus (HPV) infection, and HIV/AIDS.[13,14]

Based on the background presented above, given the high number of sexually transmitted infection cases, it is crucial to conduct research to assess the prevalence of sexually transmitted diseases in various regions of Indonesia, including Bali. Therefore, this study aims to determine the prevalence and characteristics of fluor albus, particularly at the Dermatology and Venereology Polyclinic of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar for the years 2021-2023.

MATERIALS AND METHODS

This study was conducted at the Dermatology and Venereology Polyclinic and the Medical Records Department of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar. The research received approval from the Ethics Committee of the Faculty of Medicine, Udayana University, with letter number 0319/UN14.2.2.VII.14/LT/2024. This article is a summary of the researcher's obligation as part of a thesis previously completed. The study employed a descriptive method with a cross-sectional approach. The data collected consisted of secondary data obtained from patient medical records. The data collection technique used was total sampling, and the research data were analyzed using univariate analysis.

RESULTS

Based on research conducted at the Dermatology and Venereology Polyclinic and the Medical Records Department of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar from March 13 to April 24, 2024, using the total sampling method, results were obtained in the form of data on the prevalence of *fluor albus* as follows:

Table 1. Details of the number of cases in the Dermatology and Venereology Polyclinic of Prof. Dr. I.G.N.G Ngoerah General Hospital Denpasar in 2021-2023

Year	Population count	Number of new and existing cases
2021	309	32
2022	299	63
2023	263	93

Based on Table 1, it was found at the Dermatology and Venereology Polyclinic, there were 93 cases of new and existing leucorrhea recorded in 2021-2023 with an average population of the IMS Division from 2021 to 2023 of 290 patients. The prevalence of *fluor albus* cases at the Dermatology and Venereology Polyclinic of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar from 2021 to 2023 was 32.06%. In 2021, the number of new and existing cases of vaginal discharge was 32 out of 309 patients (10.35%); in 2022, it was 63 out of 299 patients (21.07%); and in 2023, it was 93 out of 263 patients (35.36%).

Table 2. Distribution of types of *fluor albus* in female patients at the Dermatology and Venereology Polyclinic of Prof. Dr. I.G.N.G Ngoerah General Hospital Denpasar in 2021-2023

Type of *fluor albus*	n (%)
Physiological	6 (7.1)
Pathological	79 (92.9)
Total	85

Based on Table 2, the number of patients experiencing physiological *fluor albus* was found to be 6 patients,while 79 patients experienced pathological *fluor albus*. The proportion of physiological leukorrhea in this study was 7.1%, while pathological leukorrhea was 92.9%.

Table 3. Distribution of *fluor albus* based on causes in female patients at the Dermatology and Venereology Polyclinic of RSUP Prof. dr. I G N G Ngoerah Denpasar in 2021-2023

Causes of pathological *fluor albus*	n (%)
Bacterial vaginosis	39 (36.1)
Vulvovaginal candidiasis	36 (33.3)
Gonococcal cervicitis	7 (6.5)
Nonspecific cervicitis	26 (24.1)
Total	108

Based on Table 3, from a total of 85 patients experiencing abnormal vaginal discharge, a total of 108 diagnoses were recorded. This occurred because each patient may have more than one diagnosis. Among the 108 diagnoses identified, bacterial vaginosis accounted for 39 diagnoses (36.1%), vulvovaginal candidiasis for 36 diagnoses (33.3%), gonococcal cervicitis for 7 diagnoses (6.5%), and non-specific cervicitis for 26 diagnoses (24.1%)

Table 4. The characteristics of patients at the Dermatology and Venereology Polyclinic of RSUP Prof. dr. I G N G Ngoerah Denpasar in 2021-2023

Characteristic	n (%) (n=85)
Age	
<15 years	4 (4,7)
15-45 years	80 (94,1)
>45 years	1 (1,2)
Occupation	
Housewife	6 (7,1)
Private employee	13 (15,3)
Student	18 (21,2)
Entrepreneur	5 (5,9)
Not working	3 (3,5)
Others/unknown	40 (47,1)
Marital status	
Married	17 (20)
Not married	30 (35,3)
Others/unknown	38 (44,7)
Education	
Not attending school	1 (1,2)
Elementary	4 (4,7)
Junior high school	7 (8,2)
Senior high school	26 (30,6)
College	9 (10,6)
Others/unkown	38 (44,7)

Based on Table 4, *fluor albus* was predominantly observed in the reproductive age group (15-45 years), with 80 out of 85 patients (94,1%), menarche age group (<15 years) 4 patients (4.7%), while in the menopausal age group (>45 years) only 1 patient (1,2%). Based on occupational characteristics, the occurrence of vaginal discharge among students comprising 18 patients (21,2%), private employees with 13 patients (15,3%), 6 patients (7,1%) were housewife, 5 patients (5,9%) were entrepreneurs, and 3 patients (3,5%) were unemployed. The study sample included 2 patients in other occupational categories, while 38 patients (47,1%) had unknown occupations. Vaginal discharge was found to occur in unmarried women, with 30 samples (35,3%), in married women with 17 samples (20%), and in women with unknown or another marital status, with 38 samples (44,7%). Based on education level, vaginal discharge occurred in women with a high school education with 26 patients (30,6%), in women who did not attend school 1 patient (1,2%), in those with elementary education 4 patients (4,7%), in those with junior high school education 7 patients (8,2%), and in those with higher education 9 patients (10,6%). Other education levels or unknown education status accounted for 38 patients (44,7%).

DISCUSSION

The prevalence of *fluor albus* cases at the Dermatology and Venereology Polyclinic of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar from 2021 to 2023 was 32.06%. Previous research conducted at the Dermatology and Venereology Polyclinic of Sanglah General Hospital during the 2009–2011 period recorded a total of 640 cases of sexually transmitted infections marked by the appearance of discharge, out of 20.994 patients (0.03%).[8] The significant difference in prevalence rates may be attributed to the fact that services related to vaginal discharge complaints are now handled by a specialized subdivision, namely the Sexually Transmitted Infections Division.

The prevalence of *fluor albus* at the Dermatology and Venereology Polyclinic of Prof. dr. I.G.N.G. Ngoerah General Hospital in Denpasar was 10,35% in 2021, 21.07% in 2022, and 35.36% in 2023. In comparison with previous research, in 2009 the prevalence of sexually transmitted infections marked by the presence of discharge was 2.5%, which then increased to 2.8% in 2010 and 3.8% in 2011.[8] The increase in cases of vaginal discharge can occur due to a lack of knowledge about personal hygiene, the possibility of sexually transmitted infections, particularly among vulnerable individuals such as adolescents, commercial sex workers, and both domestic and international tourists.[8]

Based on the type of *fluor albus*, the dominant form of discharge found in this study was pathological discharge (92.9%) compared to physiological discharge (7.1%). Several previous studies have differing results with physiological discharge being more dominant than pathological discharge.[15,16] Physiological discharge can occur due to the menstrual cycle, which is influenced by changes in hormone levels.[5]

In this study, bacterial vaginosis (36.1%) was the most common diagnosis identified as the cause of vaginal discharge or *fluor albus*. Previous research at the Dermatology and Venereology Polyclinic of Sanglah General Hospital from 2009 to 2011 found that gonorrhea was the third most common diagnosis, accounting for 131 of 640 cases (20%), followed by vulvovaginal candidiasis with 53 of 640 cases (8%), and bacterial vaginosis with 26 of 640 cases (4%).[8] In addition, another study found that vaginal discharge was predominantly caused by vulvovaginal candidiasis, accounting for 75 of 200 cases (37.5%).[4] The study explained that discharge caused by bacterial vaginosis was influenced by sociodemographic status, sexual behavior, reproductive health, and genital hygiene.[4]

Based on the age characteristic, the results of this study found that the occurrence of *fluor albus* or vaginal discharge was predominantly observed in individuals aged 15-45 years (reproductive age), with 80 out of 85 patients (94,1%) affected. These results are consistent with the findings of a study at Permata Serdang Mother and Child Hospital, where the highest incidence of vaginal discharge was observed in individuals aged 25-29 years.[2] This occurs because the optimal age for a woman to conceive is within the reproductive age range of 20-35 years.[2] During this period, women are more likely to engage in sexual

activity, which increases the risk of infection by pathogens that cause vaginal discharge, especially if personal hygiene is inadequate. However, it is not only reproductive age that affects the incidence of vaginal discharge in women. Many women who have given birth before the age of 20 still have low levels of knowledge, which also increases the risk of developing vaginal discharge.

Based on the occupation characteristic, the occurrence of vaginal discharge was predominantly found among students, with 18 respondents (21.2%) affected. Several other studies have shown different results. Research at Dr. Mohammad Hoesin Hospital, Palembang, found that *fluor albus* was predominantly observed among housewives, accounting for 62%.[17] Similar results were also found in a study conducted at RSPAL Dr. Ramelan Surabaya, which reported that vaginal discharge was most common among housewives, at 63%.[3] The high incidence of vaginal discharge among students is likely caused by a lack of knowledge, attitudes, and behaviors regarding vaginal hygiene.[18] Poor knowledge about vaginal hygiene may result from insufficient information, leading to a lack of understanding that vaginal discharge can be prevented with proper vaginal hygiene.

In this study, *fluor albus* was most commonly found in women who were not married, with 30 samples (35.3%) affected. The results found in this study differ from previous studies which found that vaginal discharge predominantly occurred in married women, with a percentage of 97.3%.[2] The predominant occurrence of vaginal discharge in unmarried women is likely due to non-sexually transmitted discharge, such as bacterial vaginosis and vulvovaginal candidiasis. This aligns with the highest diagnoses found in this study, which were bacterial vaginosis (36.1%) followed by vulvovaginal candidiasis (33.3%). Bacterial vaginosis can occur due to risk factors such as poor personal hygiene, which leads to an imbalance in the vaginal microbiome. This imbalance disrupts the acidic pH in the vagina, which serves as a defense against the growth of pathogenic microorganisms.[19] On the other hand, vulvovaginal candidiasis can occur due to risk factors such as a weakened immune system, particularly in patients with diabetes mellitus, HIV, those undergoing chemotherapy, or those who have received a transplant.[20,21]

Based on the education characteristic, *fluor albus* was most commonly found in women with a high school education as their highest level of education, with 26 respondents (30,6%) affected. The results of this study align with the research which found that vaginal discharge was predominantly observed in respondents with a high school education as their highest level of education, at 21% and 53%.[3,17] Vaginal discharge does not discriminate based on the level of education, culture, or socioeconomic status, although it is more frequently found in women with lower socioeconomic status and education. The level of education plays a role in increasing a person's knowledge and awareness in receiving information, especially regarding genital hygiene.

CONCLUSIONS AND SUGGESTIONS

The prevalence of *fluor albus* at the Dermatology and Venereology Clinic of RSUP Prof. Dr. I.G.N.G Ngoerah Denpasar from 2021 to 2023 was 32.06%. The prevalence in 2021 was 10.35%, increasing to 21.07% in 2022 and further rising to 35.36% in 2023. In this study, pathological vaginal discharge was more dominant than physiological discharge. Pathological discharge was most commonly caused by bacterial vaginosis. Based on its characteristics, vaginal discharge predominantly occurred in women of reproductive age (15-45 years), particularly among students, unmarried individuals, and those with a high school education as their highest educational level.

This study only provides a descriptive overview of the prevalence and characteristics of vaginal discharge. A recommendation for the continuation of this research is to conduct an analysis of the relationship between the characteristics that serve as risk factors and the occurrence of vaginal discharge, particularly among women at the Dermatology and Venereology Clinic of RSUP Prof. Dr. I.G.N.G Ngoerah Denpasar.

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