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Knowledge, Attitude and Practice Regarding Leucorrhoea: A Comprehensive Review

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A B S T R A C T

Objectives: This review looks at what adolescent girls and women of reproductive age know about leucorrhoea, how they view it and how they manage it. It also examines the factors linked to pathological discharge and the effect of health education.

Methods: Primary studies and reviews from India, Indonesia and Egypt published between 2014 and 2026, along with supporting studies cited in them, were reviewed and summarised.

Results: Pathological leucorrhoea was found in about 13% to 33% of young women. Good knowledge was uncommon in Indian samples (10–20%) and more common among Indonesian school girls (49–73%). Many women blamed the condition on weakness, body heat or diet. Attitudes towards hygiene were mostly positive, although almost half of women thought discharge was normal. Washing from back to front, douching and infrequent pad changes were common, and 94% of university students surveyed had never been diagnosed. Poor personal hygiene was the strongest predictor of pathological discharge, followed by stress and early adolescence. A structured teaching programme raised satisfactory knowledge from 27% to 87% and adequate practice from 17% to 87%.

Conclusion: Awareness of leucorrhoea does not always mean correct knowledge or safe practice. Education in schools, universities and pharmacies, less stigma and earlier diagnosis are needed to improve women's reproductive health.

Keywords: Leucorrhoea, Knowledge, Attitude, Practice, Personal hygiene, Health education

Introduction

Leucorrhoea: an overview

Leucorrhoea, also called fluor albus, refers to a whitish, non-bloody discharge from the vagina. It is the complaint women most often report about the urogenital system (Trilisnawati et al., 2021). Most women will have it at some point; about 75% experience vaginal discharge in their lifetime, and around 45% of them have it more than once (Rakhmilla et al., 2016). In Indonesian gynaecology clinics, more than a third of patients present with fluor albus, and over 80% of these cases turn out to be pathological (Kirana et al., 2022).

In India the symptom goes by several local names, among them *safed pani* (white water), *dhatu* and *swed pradar*. Women often connect it with general weakness, backache or a burning feeling in the hands and feet rather than with infection (Kaur & Kapoor, 2014; Varghese et al., 2017). Many do not talk about it at all. Gender inequality, cultural restrictions, limited autonomy and poor access to counselling mean that women tend to put up with the problem and seek care late, if they seek it at all (Choudhary, 2016; Kaur & Kapoor, 2014).

Classification of leucorrhoea

Discharge is usually described as either physiological or pathological (Asmara et al., 2023; Trilisnawati et al., 2021). Physiological discharge is controlled by hormones. It increases around ovulation, in the days before a period, during pregnancy and with sexual arousal. Pathological discharge points to inflammation of the vagina or cervix, and it differs in colour, smell and amount and often comes with other symptoms. Table 1 sets out the main differences.

Table 1 – Physiological and pathological leucorrhoea compared (Asmara et al., 2023; Trilisnawati et al., 2021)

Feature	Physiological	Pathological
Colour	Clear or white	Yellow, green, grey or curd-like white
Smell	None	Fishy or unpleasant
Amount	Small; keeps the vagina moist	Large; may be frothy, thick or lumpy
Other symptoms	None	Itching, redness, burning, pain on urination or intercourse
When it occurs	Mid-cycle, before menses, in pregnancy	Continuously; not linked to the cycle
Cause	Oestrogen	Bacterial vaginosis, candidiasis, trichomoniasis, gonorrhoea, chlamydia

Normal vaginal environment and etiology

A healthy vagina in a woman of reproductive age is dominated by *Lactobacillus* species. These bacteria produce lactic acid and hydrogen peroxide, which keep the pH between about 3.8 and 4.5 and make it hard for harmful organisms to grow (Trilisnawati et al., 2021). When this balance is upset, infection can take hold. Bacterial vaginosis is the most common cause of pathological discharge (27%), followed by trichomoniasis (25%) and vulvovaginal candidiasis (22%). Gonorrhoea and chlamydia mostly affect the cervix (Trilisnawati et al., 2021).

Day-to-day habits play a large part. Poor genital hygiene, wiping from back to front, douching, regular use of antiseptic washes, tight synthetic underwear and changing sanitary pads too rarely all raise the risk, as do stress and a hot, humid climate (Asmara et al., 2023; Kartal et al., 2020; Kirana et al., 2022).

Clinical features and complications

The three common infections look different on examination. In bacterial vaginosis the discharge is thin, greyish-white and smells fishy. Candidiasis causes a thick, white, curd-like discharge with intense itching. Trichomoniasis gives a frothy, yellow-green discharge, and small red spots on the cervix (the so-called strawberry cervix) may be seen (Trilisnawati et al., 2021). Left untreated, infection can travel up to the uterus and fallopian tubes. The result may be pelvic inflammatory disease, long-term pelvic pain, ectopic pregnancy or infertility. In pregnant women it has also been linked to miscarriage and preterm birth (Beura et al., 2026; Kirana et al., 2022; Rakhmilla et al., 2016).

Diagnosis and management

Diagnosis starts with a history and a speculum and bimanual examination. Vaginal pH, the whiff test and microscopy of wet-mount and Gram-stained samples help to identify the cause. In settings without laboratory support, a step-by-step syndromic approach is used instead (Fig. 1) (Trilisnawati et al., 2021).

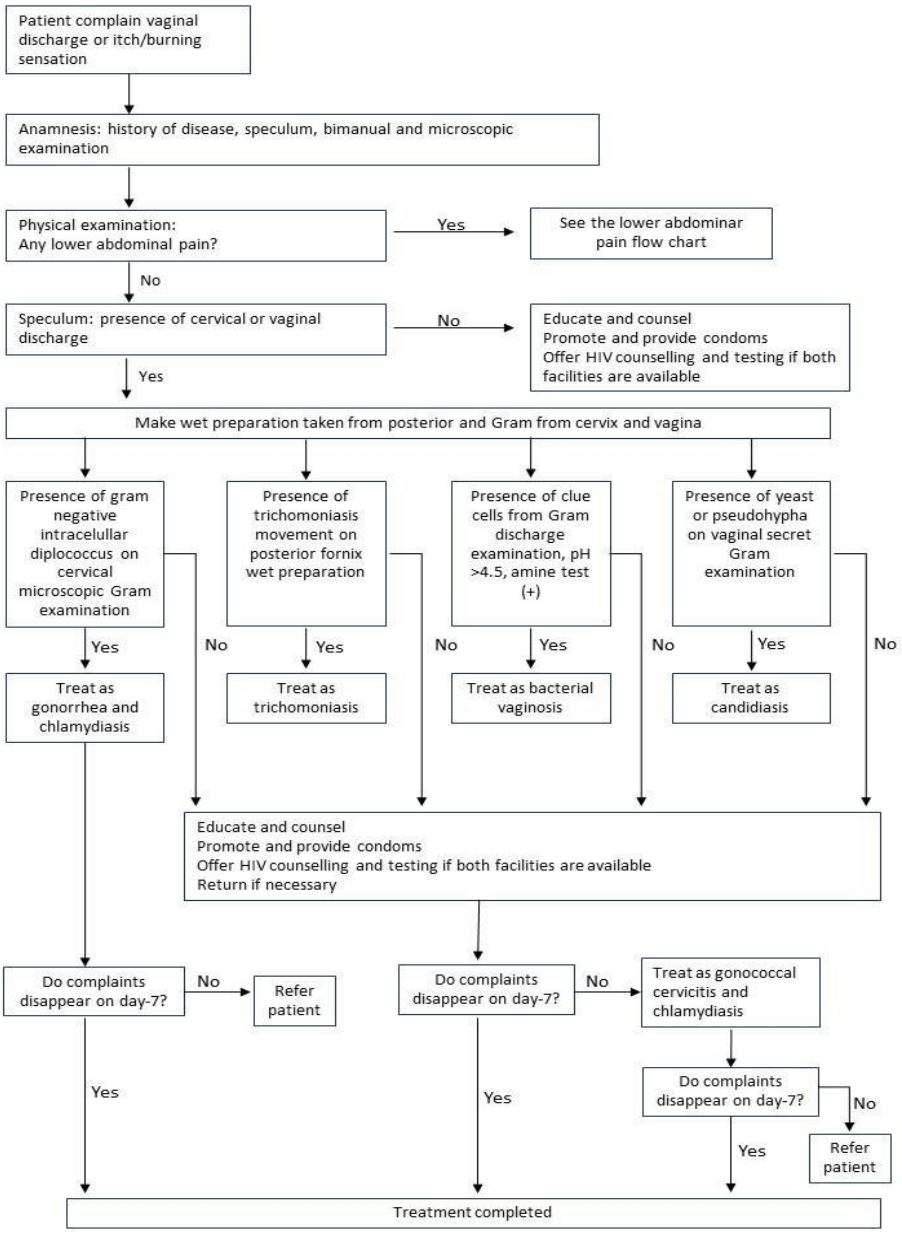


Fig. 1 – Diagnosis and management of vaginal discharge. Adapted from Trilisnawati et al. (2021)

Treatment depends on the organism. Metronidazole is used for bacterial vaginosis and trichomoniasis, azole antifungals for candidiasis and antibiotics for cervicitis; the partner should also be treated if a sexually transmitted infection is likely (Trilisnawati et al., 2021). Hygiene matters just as much. Women are advised to wash from front to back with running water, wear loose cotton underwear, change pads every four to six hours and avoid douching (Kirana et al., 2022; Rakhmilla et al., 2016; Tosson et al., 2022).

Knowledge, attitude and practice (KAP)

KAP studies look at three things: what women know about leucorrhoea, how they feel about preventing and treating it, and what they actually do (Asmara et al., 2023; Rakhmilla et al., 2016). Looking at all three shows where education is most needed. Pharmacists have a useful role here. Women often go to a pharmacy before seeing a doctor, so pharmacists can pick up warning signs, advise against douching and unnecessary antiseptics, explain basic hygiene and refer women for diagnosis (Beura et al., 2026; Tosson et al., 2022).

Result and Discussion

The studies in this review came from India, Indonesia and Egypt and included more than 2,000 participants aged 15 to 49 years (Table 2). In the more recent surveys, pathological leucorrhoea was found in 13.3% to 32.9% of young women (Asmara et al., 2023; Heriani, 2025; Kirana et al., 2022).

Table 2 – Studies included in the review

Author (Year)	Setting	Design	Sample	Key finding
Kaur & Kapoor (2014)	Delhi, India	Cross-sectional	391 women	97% aware; 33% affected
Choudhary (2016)	Ludhiana, India	Cross-sectional	250 women	20% had goods knowledge
Rakhmilla et al. (2016)	Jatinangor, Indonesia	Cross-sectional	164 girls	50.9% had low knowledge
Varghese et al. (2017)	Ludhiana, India	Prospective	150 women	49% thought discharge was normal
Armini & Lestari (2022)	Indonesia	Literature review	10 studies	Hygiene depends on knowledge, attitude and support
Kirana et al. (2022)	Surabaya, Indonesia	Cross-sectional	70 students	32.9% pathological
Tosson et al. (2022)	Beni-Suef, Egypt	Quasi-experimental	500 women	Knowledge rose from 27% to 87%
Wada et al. (2023)	Bekasi, Indonesia	Cross-sectional	130 girls	Attitude linked to prevention (OR = 16.65)
Asmara et al. (2023)	Bengkulu, Indonesia	Observational	90 students	Hygiene was the strongest predictor
Heriani (2025)	South Sumatra, Indonesia	Cross-sectional	56 girls	30.4% pathological
Beura et al. (2026)	Odisha, India	Online survey	356 students	10% aware; 94% never diagnosed

Knowledge regarding leucorrhoea

Kaur and Kapoor (2014) surveyed 391 married women in a Delhi slum. Nearly all of them (97%) had heard of leucorrhoea, but most blamed it on weakness (41.9%), mental tension (19.0%) or too much body heat (11.2%). Very few linked it to infection. In Ludhiana, Choudhary (2016) found that only 20% of 250 women had good knowledge. Women who had had leucorrhoea themselves knew significantly more ($p = 0.001$). The lowest figure came from Odisha, where only 10% of university students were aware of the condition (Beura et al., 2026).

School girls in Indonesia did better. Good knowledge was reported in 49.1% of girls in Jatinangor (Rakhmilla et al., 2016), 71.4% in South Sumatra (Heriani, 2025) and 73.1% in Bekasi (Wada et al., 2023). Some gaps remained even there. Only 11.6% of the Jatinangor girls knew that leucorrhoea can lead to pelvic inflammatory disease, and many thought it could be caught from a toilet seat (Rakhmilla et al., 2016).

Attitude towards leucorrhoea

At a gynaecology clinic in Ludhiana, 49% of women thought vaginal discharge was simply normal for women. At the same time, 80% agreed that genital hygiene could prevent it and 76% believed it could be treated (Varghese et al., 2017). In Indonesia, 58.2% of school girls in Jatinangor had a good attitude (Rakhmilla et al., 2016), compared with 89.2% in Bekasi. In the Bekasi study, girls with a good attitude were far more likely to follow correct preventive practices ($OR = 16.65$; $p < 0.001$) (Wada et al., 2023). Armini and Lestari (2022) reached a similar conclusion in their review. Many adolescents do not see discharge as a problem, and whether they practise good hygiene depends on their knowledge, their attitude and the support they get at home and school.

Hygiene practices and health-seeking behaviour

Unsafe practices were common. In Jatinangor, 41.4% of girls washed from the anus towards the vagina, and only 46.3% wore cotton underwear (Rakhmilla et al., 2016). Among midwifery students, 31.3% douched (Kartal et al., 2020). In Odisha, 15% of students changed their menstrual product just once a day, and 94% had never been formally diagnosed (Beura et al., 2026). Knowing the facts did not always lead to better habits. In Ethiopia, for example, 72.5% of school girls had good knowledge of menstruation, but only 34.7% managed menstrual hygiene adequately. Girls who learned about menstruation from their mothers or teachers did better (Bulto, 2021).

Factors associated with pathological leucorrhoea

Kirana et al. (2022) studied 70 sports-science students. Physical activity, type of underwear, use of panty liners and vaginal soap were not related to pathological discharge, but the way students washed the vagina was ($p = 0.007$). In Bengkulu, Asmara et al. (2023) found that personal hygiene was the strongest predictor (Exp(B) = 9.09; $p = 0.019$), with stress next (Exp(B) = 3.50). Krisdayanti and Hasyim (2021) also found poor personal hygiene to be the main risk factor (PR = 3.305). Heriani (2025) reported that poor knowledge, early adolescence and poor hygiene were each significantly linked to pathological discharge.

Effect of educational interventions

Education clearly helped. Tosson et al. (2022) gave 500 Egyptian women five teaching sessions on leucorrhoea. Satisfactory knowledge rose from 27% to 87%, and adequate practice from 17% to 87% ($p < 0.001$). In Yogyakarta, adolescents who used a vaginal hygiene module for six months showed better attitudes and practices than those who did not (Sumarah & Widyasih, 2017).

Overall, the studies show that hearing about leucorrhoea is not the same as understanding it, and understanding it does not always change behaviour. The belief that discharge is normal, along with embarrassment and stigma, keeps many women from seeking help. Poor personal hygiene is the risk factor that comes up most often, and it is one that can be changed (Asmara et al., 2023; Krisdayanti & Hasyim, 2021; Varghese et al., 2017). Since education works, it makes sense to offer it widely through schools, colleges and community pharmacies (Sumarah & Widyasih, 2017; Tosson et al., 2022).

Conclusion

Leucorrhoea is common among adolescent girls and women, yet it is poorly understood. Accurate knowledge is limited, and traditional beliefs often fill the gap (Beura et al., 2026; Choudhary, 2016; Kaur & Kapoor, 2014). Most women have positive attitudes towards hygiene and treatment, but many still consider discharge normal and continue unsafe practices (Rakhmilla et al., 2016; Varghese et al., 2017). Poor personal hygiene is the main modifiable risk factor for pathological leucorrhoea, with stress and early adolescence also contributing (Asmara et al., 2023; Heriani, 2025; Krisdayanti & Hasyim, 2021). Structured education improves both knowledge and practice (Sumarah & Widyasih, 2017; Tosson et al., 2022). Awareness programmes in schools, universities and pharmacies, together with efforts to reduce stigma and encourage early diagnosis, could do much to improve women's reproductive health.

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