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REVIEW ARTICLE

A systematic review of the effect of daily panty liner use on the vulvovaginal environment

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ABSTRACT

Background: Whether panty liners predispose to vulvovaginitis is unclear. **Objectives:** To clarify the effects of the use of panty liners on the female genital tract. **Search strategy:** Several electronic databases (including PubMed and Embase) were searched to identify studies published in English before May 3, 2012. **Selection criteria:** Case–control studies, randomized controlled trials, and cohort studies comparing young women who did and did not use panty liners in the intermenstrual period were included. **Data collection and analysis:** The quality of the studies was assessed using the Newcastle–Ottawa Scale or the Jadad Scale. Data from suitable studies were extracted for analysis. **Main results:** Five articles met the inclusion criteria. Four studies—all of which included only healthy women—found no significant clinical implications arising from the use of panty liners. The fifth study was of women with recurrent candidiasis and showed that use of panty liners was associated with new candidiasis episodes. **Conclusions:** The intermenstrual use of panty liners does not seem to have a negative effect on the vulvovaginal area.

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1. Introduction

The association between abnormal vaginal microbiota and the presence of symptomatic vaginal discharge is understood and well known [1]. Several factors interfere with the vaginal microbiota leading to increased instability of an ecosystem that is naturally dynamic and unstable. Pregnancy, diabetes, use of hormonal contraceptives, antibiotics, sexual practices, immunologic defects, type of clothing, and hygiene practices are important influences [2]. Changes in the composition and balance of the microflora could cause infection and inflammation by facilitating the colonization of the vagina with microorganisms that are not part of the normal flora or by allowing the overgrowth of organisms that are normally present in lower numbers [3]. The influence of practices of personal hygiene, especially genital hygiene, has not been widely investigated and much misinformation exists.

The presence of discharge or moisture in the genital area constitutes one of the main reasons for women to visit a gynecologist [4]. In a US study [5], up to 18% of women reported an episode of vaginal symptoms of any severity. Therefore, lack of cleanliness in the genital area is a great

concern among women, especially those with intense daily activity, because it may promote the development of discharge, unpleasant odors, and infections. Panty liners address these issues well because they are comfortable, discreet, and disposable. Daily panty liners are small and thin, and are mainly used at times other than menstruation to absorb female genital secretions, sweat, or urine [6]. It is estimated that approximately 50% of the female population in North America and Europe use panty liners, and 20%–30% use them daily between menstrual periods [7].

Although infectious causes are responsible for most cases of abnormal discharge, it may also be secondary to chemical irritation or allergy [8]. Several researchers [9,10] who have studied the use of panty liners argue that prolonged occlusion of the genital area can change the temperature, pH, and microflora of the vaginal epithelium and vulvar skin, possibly leading to a higher occurrence of vulvovaginitis and other infections. However, the vaginal ecosystem does not depend only on external physicochemical conditions; its balance is the result of a complex interaction between the vaginal flora, microbial metabolites, and the immune response of the vaginal epithelium.

Despite the frequent medical recommendation to restrict the use of panty liners, the relationship between their use and a predisposition to vulvovaginitis remains unknown. Thus, the advice to avoid this practice as a preventive measure is not grounded in science. Therefore, the aim of the present systematic review was to clarify the effects of the use of panty liners on the female genital tract.

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2. Materials and methods

The present systematic review was conducted in accordance with the PRISMA statement [11]. A high-sensitivity search strategy was used to search the following databases: PubMed, Embase, Literature in the Health Sciences in Latin America and the Caribbean (LILACS), OvidSP, Cochrane Central Register of Controlled Trials, Educational Resources Information Center database, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Other sources were: clinical trial protocols registered in the Cochrane Database of Systematic Reviews; manual search through references cited in the studies selected for review; and manual search in relevant journals.

The electronic databases were searched on May 3, 2012, using database-specific search terms and Medline descriptors: [(hygiene behavior) OR (hygiene behaviors) OR (hygiene behaviour) OR (personal hygiene) OR (personal hygiene behavior) OR (panty line) OR (panty liner) OR (panty liner use) OR (panty liners) OR (sanitary pads) OR (menstrual hygiene product) OR (menstrual hygiene) OR (menstrual hygiene products) OR (menstrual hygiene products/adverse effects) OR (menstrual hygiene products/microbiology) OR (menstrual hygiene products/use) AND (vaginal discharge) OR (vaginal discharges) OR (vaginal discharge/microbiology) OR (vaginal candidiasis) OR (vaginal candidosis) OR (vulvovaginal candidiasis) OR (vulvovaginal candidiasis episodes) OR (vulvovaginal colonization) OR (vulvovaginal candidosis) OR (bacterial vaginosis) OR (bacterial vaginosis infections) OR (vaginal microflora) OR (vaginal microorganisms) OR (genital infections) OR (vulvovaginal infections) OR (vulvovaginal inflammations) OR (vulvovaginal irritation) OR (lactobacillus)]. There were no restrictions in terms of the publication date. Only articles published in English were considered.

Case-control studies, randomized controlled trials, and cohort studies in which women aged 15–50 years who did and did not use panty liners on a daily basis in the intermenstrual period were compared were included in the present analysis. The outcome measure of interest was the incidence of vulvovaginitis/abnormal vaginal flora. Cross-sectional studies, editorials, commentaries, letters without original data, and case reports were excluded.

After the initial search, two researchers (A.C.P. and R.L.G.A.) independently selected articles that met the inclusion criteria. To resolve any disagreement between the researchers, a consensus meeting was carried out. Articles selected by both researchers were included in the qualitative assessment (Fig. 1), which was conducted using the Newcastle–Ottawa Scale for nonrandomized studies (Table 1) or the Jadad Scale for randomized trials (Table 2). Studies that received a score of 6 or more on the Newcastle–Ottawa Scale, or 2 or more on the Jadad Scale were included in the present review. RevMan 5 (Cochrane Collaboration, Oxford, UK) was used to analyze the data.

Approval by a research ethics committee was not required for the present review because the analysis included published data only.

3. Results

During the systematic search, 348 articles were found (Fig. 2). Of those, 334 were excluded after reading the title or abstract. The full text was obtained for the remaining 14 articles. After a detailed review, only five articles were found to meet the inclusion criteria and were selected for analysis (Table 3). Of the nine excluded articles, two had inappropriate study populations and the others were cross-sectional studies or had no relevance because other hygiene habits (including vaginal douches and sexual practices) were assessed.

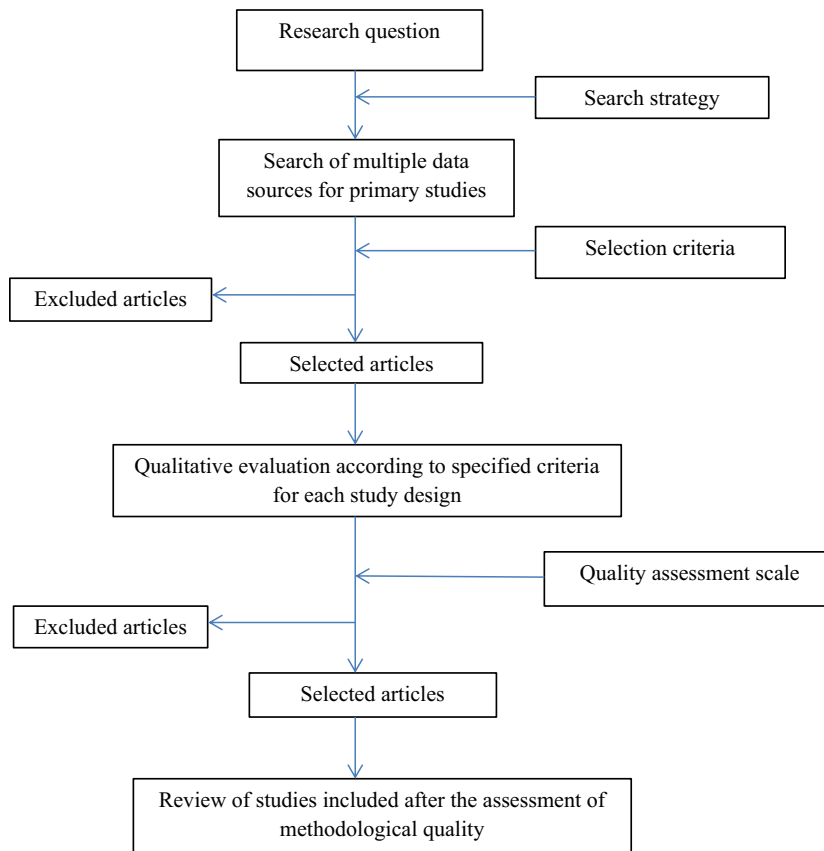


Fig. 1. Research methodology.

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