

Self-Care Practice & Awareness regarding Vaginal Candidiasis among Female Nursing Students at King AbdulAziz University

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Abstract: Vaginal candidiasis is a very common condition that affects about 75% of females at least once in their lifetime, among whom approximately 40-50% will experience further episodes (1). **Aim:** The aim of this study was assess self-care practice & awareness regarding vaginal candidiasis among female nursing students at King AbdulAziz University. **Study Design:** Descriptive design was conducted on female nursing students. **Setting:** The study was carried out in the female nursing students at faculty of nursing at King Abdul-Aziz University. **Sample:** A convenient sample of nursing students .The inclusion criteria for this study will include all students enrolled in the faculty of nursing “214 nursing students” will selected during a period of one month. **Tools:** A self-administered questionnaire sheet was developed by the researcher to collect data including socio-demographic characteristics of student, students' total knowledge about vaginal candidiasis and students' stated health practices regarding prevention of vaginal candidiasis **Result:** Based on the present study results, the mean ages of students were 20.1 ± 0.5 years. In addition, more than two thirds (66.8%) of the students have poor knowledge regarding the prevention of vaginal candidiasis, and more than one quarter (29.9%) of them have good knowledge. **Conclusion:** There is a significant association between the students' age, grade, mother's education and family monthly income and the numbers of change sanitary pad during menses per day and their daily hygienic practices of genitalia, drying of under wear and their number of times. **Recommendation:** This study recommended that organized and implemented a health education program by specialized academic nursing staff to educate student nurses as regards all updates of reproductive tract infections and its preventive measures.

Keywords: Vaginal Candidiasis, Self-care practice, Prevention, Hygienic care.

1. INTRODUCTION

Vaginal infection is very common among adolescents and pubertal girls, although asymptomatic in most cases (2). Vulvovaginal candidiasis (VVC) is the 2nd most common vaginal infection that affects females of reproductive age, predominantly damaging the vulva & vagina. It is estimated that about 70 -75% of females of childbearing age will have at least one incident of VVC throughout their lifetime & 40-50% will suffer from a recurrence (3)(4).

Vulvovaginal candidiasis (VVC) is a fungal or yeast infection produced by *Candida* spp affected lower genital tract, vulva, and vagina of the female (3)(4). *Candida* species in their lower genital tract are asymptomatic in about 20-50 percent of healthy women (5)(6)(7).

A number of factors have been recognized for increased frequency of vaginal colonization by candida, including pregnancy, prolonged use of wide-spectrum antibiotics and poor personal hygiene (5)(8). Other risk factors identified to increase VVC include vaginal douching, increase sexual activities, use of oral contraceptive, tight clothing, synthetic underwear (9)(10). Most women silently tolerate problems without seeking instruction and drugs. Gynecological complaints affect woman's reproductive capacity, mental health & ability to work and to make routine physical activities (11).

Females with abnormal vaginal secretions do not seek treatment; the reason is being an embarrassment and not feels comfortable and very shame to see a male medical doctor. Teenagers are supposed to be not very friendly to health providers and privacy is lacking. Girls prefer traditional healers or pharmacists to be more welcoming and polite and to observe confidentiality and privacy (12). *Candida albicans* was highly associated with women age, menstrual status and marital status (13). In addition, the females experience shame and frustration over their repeating signs and experience that they are inhibited in each their private life and their work life. The foul smelling secretion causes them to sense socially isolated (Adolfsson , Hagander, Mahjoubipour ,& Larsson2017).

Pelvic inflammatory diseases, infertility, ectopic pregnancy, pelvic abscess, menstrual disorder, spontaneous abortion, and premature labor are a complication of vaginal candidiasis. It has now been well established that the presence of infectious vaginal discharge critically helps sexual partners to transmit and achieve HIV (14).

Female university students are at high risk of making unhealthy lifestyle choices that might affect their health and wellbeing. This is the result and influence of a variety of prevalent cultures in this age group, and the typical peer pressure that has been encountered over these years. Unaware, university and college students could formulate inaccurate and inadequate ideas on health, lifestyle, physical activity, and fitness (15).

Self-care practices refer to activities and attitudes that add to maintain prosperity and personal wellbeing and advancing human enhancement. In terms of health care, self-care is any action as a person expected to improve or restore wellbeing or treats or anticipates disease. Self-care themes associated with vaginal infection include: personal hygiene, vaginal hygiene, sexual hygiene, menstrual hygiene, and hygienic practices in the toilet. Self-care is viewed as a halfway response to the cost of medicinal services placed on governments worldwide (16).

There are norms and concepts treating the vagina among females utilizing pharmaceutical or non-pharmaceutical products depend on sexuality & the body, gender role, age, education, geographical area, material status, culture, and customs. Some of the practices are cleaning vagina, wiping internal vagina, and inserting material inner vagina. The reason for that is due to hygiene, sexual purposes, vagina protection from infection or while pregnancy and menstruation (17).

Nurses play a critical role in recognizing female complaints of abnormal vaginal discharges, help in preventing gynecologic infections and make sure that women comply with the suggesting clinical examinations and treatments and in discovering bad hygiene habits and determining the right practices. Nurses carry responsibility for the reproductive health of the adolescence within the scope of preventive medicine as a part of their educational and guiding positions (18).

The nurse has an important role in improving awareness of females concerning the reproductive tract infection; causes, complications, signs of infection, & prophylactic measures. Also nurse should educate the woman how to differentiate between the normal & abnormal vaginal discharge and healthy behaviors and ask the woman to avoid the unhealthy behavior as using perfumes, using vaginal douche or any unhealthy herbal treatment (19). Limited attention has been given to female reproductive wellbeing, behavioral factors, and personal hygiene as a risk element for vulvovaginal candidiasis (20).

Significance of the study:

We elected our research topic because we want to illuminate self-care practices and awareness regarding prevention of vaginal candidiasis among female nursing students. There is limited research found to test these knowledge and self-care practices in Saudi Arabia. Arab young females in general usually seek medical advice for reproductive health problems at the later stages of illness when the symptoms are aggravating, particularly those who are unmarried. Females with self-reported symptoms of reproductive morbidity do not seek treatment due to present taboos and embarrassments regarding reproductive health. Untreated infections can not only lead to health consequences, but women may experience social consequences in terms of emotional distress related to gynecological morbidity. Females with abnormal vaginal discharges Shamed from exposure of genital area and thought that vaginal secretions were simple thing that will be solved spontaneously without medical intervention and didn't need going to physician were the common reasons for not consulting doctor unless it affecting women's quality of life. Therefore, this research was emphasis on filling the gap of knowledge in the previous studies and to cover all aspects of self-practice. The current study aimed to assess the level of female students' knowledge and reported self-care practice regarding vaginal candidiasis to address the need for educational activities regarding its prevention.

Research Question:

What is self-care practice & awareness regarding vaginal candidiasis among female nursing students at King Abdul-Aziz University?

Objectives of the study:

1. Identifying female university students' awareness regarding vaginal candidiasis and its prevention
2. Finding out stated self-care practice regarding prevention of vaginal candidiasis.
3. Identify the relationship between female nursing students' knowledge about vaginal candidiasis and its prevention with selected socio demographic variables.

Operational definitions

Self-care practice: care of the self without medical or other specialized consultation such as Self-care themes associated with vaginal infection include: personal hygiene, vaginal hygiene, sexual hygiene, menstrual hygiene, and hygienic practices in the toilet.

Awareness: In this study, it refers to the level of understanding of women regarding vaginal candidiasis and its prevention.

Vaginal candidiasis: Vaginal thrush is a yeast infection of the vagina caused by *Candida Albicans* and characteristic by itching, redness, burning, and a cottage cheese-like discharge whitish cheesy curd-like discharge.

2. METHODOLOGY

Research Approach and Design

A descriptive research design was utilized to conduct this study.

Setting:

This study was carried out in in the female nursing students at faculty of nursing at King Abdul-Aziz University.

Study Sample and Size:

Sampling type: A convenience sampling technique was used to achieve study aims.

Sample size: All female nursing students at faculty of nursing at King Abdul-Aziz University comprised the study sample under the following criteria: Female nursing students who enrolled in second, third, fourth and first and second bridging academic years, age range between 18-30 years and single or newly married for not more than three years.

Validity and reliability of instrument

Conducted review according to 3 experts from Obstracts Nursing field testing how reliable, valid, and efficient for such instrument lead to tool modification in order to be valid, and confirmed its reliability by a test for 10 adolescent girls during pilot study by using Cronbach's α (alpha).

Data collection method: A self-administered questionnaire sheet was be developed and used by the researchers in order to collect the necessary information from students after reviewing the literatures. This tool includes four parts:

Part I: Students' personal data:

Socio-demographic characteristics: as age, grade, marital status, mother's education and occupation, father's education and occupation, monthly income.

Part II: knowledge of student related vaginal candidiasis: This Part was developed to deals with the items related to assessment of knowledge regarding vaginal candidiasis and its prevention, it includes questions on definition of vaginal candidiasis, causes, risk factors, signs and symptoms, types, complications, effect of vaginal candidiasis on sexual relation and pregnancy.

Part III: -: Hygienic self-practice to overcome vaginal candidiasis: This part included three sections

Section 1: Perineal hygiene: includes questions concerning cleaning perineal area, methods of cleaning, direction of cleaning, dryness of perineal area, using antiseptic solution or talcum powder, removal of pubic hair.

Section 2: Menstrual hygiene: This Part was developed to assess of students ' self-care practices during menstruation such as bathing, route of shower, cleaning perineal area during menstruation, type of towels used during menstruation, changing of towels, using perfumed materials, washing hands, type of underwear, changing underwear, and ways of cleaning underwear, exercise during menstruation, misconception related to drinking or eating hot/cold food during menstruation, pain management and restrictions during menstruation.

Section 3: Student health seeking behaviors: It includes sources of health assistance when having symptoms of vaginal candidiasis.

Scoring key for the knowledge regarding prevention of vaginal candidiasis

| Grade | Percentage |
|--------------------|------------|
| Poor knowledge | 0-50% |
| Adequate knowledge | 51 – 75% |
| Good knowledge | 76-100% |

Pilot Study:

10 students were subject to conduct a pilot test in order to check the instrument if it is valid and reliable or not as per result analysis. Changes on the instrument were made.

Fieldwork:

- Tools were analyzed and checked by experts from nursing field.
- Official letters from the Faculty of Nursing at king Abdul-Aziz University
- Each student was interviewed after clarifying the purpose of the study and data collection methods to obtain her consent to participate in the study. Students was assure about confidentiality of data collected which will be used only for the purpose of the study and their benefits.
- A pilot study was conducted on 10% of students to test clarity and applicability of the tools.
- Accordingly, appropriate modifications on the tools will be done prior to data collection for the actual study.
- The researcher was collect data by using Google Docs Forms and then invites others to respond. All responses are assembled automatically into a Google Docs spreadsheet,
- Each questioner was taking approximately 10-15 minutes to complete filling in the study tool depending on the understanding and reactions of each student.
- Immediately after the approval of conducting the study is obtained, the sample was collected and completed during one-month duration. Each student was administering questionnaire after written consent is obtained.

Check analysis:

SPSS windows 22 compute percentages and frequencies while necessary tables were prepared Chi square (X²) in order to calculate varies significance whenever P-value was less than 0.05, otherwise P-value is high when it is less than or equal to 0.01.

Ethical Considerations

The research proposal for this study was approved by the Ethical Committee of the Faculty of Nursing at King Abdul-Aziz University (KAU) in Jeddah & collect the necessary data with full respect for the privacy of participant's records and information to ensure confidentiality.

In addition for safeguarding and protecting the participants' rights, the researcher developed an informed consent sheet which described to participants all necessary information, purpose and methods of the study so as to enable participants to decide freely to participate or not in this study

Indeed the researcher was obtained written informed consent at the beginning of data collection and ensured that participants had a clear understanding of the study before they volunteered to participate in the study; the researcher was explained to all participated students they have the right to withdraw and discontinue participation at any time. Furthermore, participants were informed that there were no clinical trials or risks involved in the study

3. RESULTS

Table (1): Shows that more than two fifth (45, 9%) of the students age ranged from 20 -22 years old, and more than one quarter (29.9%, 27.6%) of them were 2nd & 4th degree level followed by 23.8% were 3rd degree level and the rest of them (18.7%) were 2nd degree level bridging. Concerning the father educational level, it was found that 77.6% of them had secondary education and above and 4.7 % of them were illiterate. While more than two thirds (68.2%) of mother educational level were secondary education and above and 7% of them were illiterate. Regarding mother occupation, about two thirds (62.6%) of them were house wife .It was found (63.1%) of father occupation nongovernmental. Regarding the types of home (60.7%) of student live in a flat. The monthly family income for more than half of the students (59.8%) had family monthly income more than 10,000SR. Only (7%) had family monthly income of less than 4000 Saudi Riyals.

Table (2) shows more than half (66.8%) of the students have poor knowledge regarding the prevention of vaginal candidiasis, and 64 (29.9%) of them have good knowledge regarding the prevention of vaginal candidiasis.

Table (3) Shows that more than two fifth (45.8%) of the students taking shower every two days during menses and the rest of them 6.1% were never take a bath during menses. More than half (51.4%) of them utilized disposable sanitary of pad during menstruation. Concerning number of changes sanitary pad during menses per day, it was found that more than two thirds (67.3%) of students were changed it as needed and the majority (93.9%) of them were cleaned genitalia during menstruation. While about three quarters (73.4%) of them cleaned genital area daily from front to back and the majority of students (94.4%) were washed hand after changing the pad. Regarding underwear drying (65.9%) of students was dry underwear inside home, most of them (84.1%) used cotton underwear. Regarding to hair removal, and the majority of them removed genital hair (97.2%) through utilized hair cutting machine (44.9%) and more than two fifths (42.9%) were removed pubic hair every month.

Table (3) A significant association among students' age and the numbers of change sanitary pad during menses per day and their daily hygienic practices of genitalia. On the other hand, there is no significant association between the students' age and the type of perineal pads which were used during menses and cleaning genitalia during menstruation.

Table (4): A significant association among students' age and the drying of under wear and their number of times they clean their pubic hair. On the other hand, there is no significant association between the students' age and the bathing during menses and washing their hand after changing the pad.

Table (5) no significant association among students' age and the methods of hair removal in genital area use vaginal wash, area of disposing pads, and the reasons for didn't seeking consultation doctor.

Table (6) significant association among students' grade and the type of perineal pads which were used during menses and daily hygienic practices of genitalia, while there is no significant association between the students' grade and the number of change sanitary pad during menses per day, and the cleaning of genitalia during menstruation.

Table (7) significant association among students' family monthly income and the numbers of change sanitary pad during menses per day. Also, there is a significant association between the students' family monthly income and cleaning

genitalia during menstruation, with increasing the level of monthly income, lead to increase the tendency to cleaning genitalia during menstruation. On the other hand, there is no significant association between the students' family monthly income and the type of perineal pads, which were used during menses, and the daily hygienic practices of genitalia.

Table (1). Distribution of nursing student socio-demographic characteristics (N=214)

| Demographic characteristics | Studied sample (N= 214) | |
|----------------------------------|-------------------------|-------|
| | No | % |
| Age (in years) | | |
| o Below 20 | 49 | 22.9% |
| o 20 - 22 years | 98 | 45.9% |
| o 23 – 25 years | 11 | 5.1% |
| o 26 – 30 years | 42 | 19.6% |
| o More than 30 | 14 | 6.5% |
| Mean age 20.1±0.5 years | | |
| Grade | | |
| o 2 nd level | 64 | 29.9% |
| o 3 rd level | 40 | 18.7% |
| o 4th level | 59 | 27.6% |
| o 2 nd level bridging | 51 | 23.8% |
| Mother Educational level | | |
| o Illiterate | 15 | 7.0% |
| o Read and write | 18 | 8.4% |
| o Basic education | 35 | 16.4% |
| o Secondary and above | 146 | 68.2% |
| Father Educational level | | |
| o Illiterate | 10 | 4.7 % |
| o Read and write | 14 | 6.5% |
| o Basic education | 24 | 11.2% |
| o Secondary and above | 166 | 77.6% |
| Mother Occupation | | |
| o Housewife | 134 | 62.6% |
| o Employee | 80 | 37.4% |
| Father Occupation | | |
| o Government | 79 | 36.9% |
| o Other | 135 | 63.1% |
| Family Monthly Income | | |
| o < 4,000 SR | 15 | 7% |
| o 4,000 - < 8,000 SR | 32 | 15% |
| o 8000- < 10,000 SR | 39 | 18.2% |
| o ≥10,000 SR | 128 | 59.8% |
| Type of Home | | |
| o Flat | 130 | 60.7% |
| o Villa | 84 | 39.3% |

Table (2) Distribution of nursing student Students' knowledge regarding the prevention of vaginal candidiasis (N=214)

| Knowledge | Studied sample (N= 214) | |
|--------------|-------------------------|---------------|
| | No | % |
| Adequate | 7 | 3.3% |
| Good | 64 | 29.9% |
| Poor | 143 | 66.8% |
| Total | 214 | 100.0% |

Table (3) Distribution of nursing students regrading hygienic self-practices during menstruation (N=214)

| Hygienic self-practices during menstruation | Studied sample (N= 214) | |
|---|-------------------------|--------|
| | No | % |
| Bathing during menses | | |
| o Taking shower every day during menses | 48 | 22.4% |
| o Every 2 days | 98 | 45.8% |
| o Every 3 days | 55 | 25.7% |
| o Never take a bath during menses | 13 | 6.1% |
| Types of perineal pads which were used during menses | | |
| o Disposed sanitary of pad only | 110 | 51.4% |
| o Cotton pad | 61 | 28.5% |
| o Both | 43 | 20.1% |
| Number of changes sanitary pad during menses per day | | |
| o One | 11 | 5.1% |
| o Two | 17 | 8 % |
| o Three | 42 | 19 .6% |
| o As needed | 144 | 67.3% |
| Cleaning genitalia during menstruation | | |
| o Yes | 201 | 93.9% |
| o No | 13 | 6.1% |
| Daily hygienic practices of genitalia | | |
| o Front to back cleaning of genital area | 157 | 73.4% |
| o Back to front cleaning of genital area | 19 | 8.8% |
| o Tape bath | 25 | 11.7% |
| o Drying of genital area | 13 | 6.1% |
| Washing hand after changing the pad | | |
| o Yes | 202 | 94.4% |
| o No | 12 | 5.6% |
| Use cotton underwear | | |
| o Yes | 180 | 84.1% |
| o No | 34 | 15.9% |
| Under wear drying | | |
| o Exposure to the sunshine | 39 | 18.2% |
| o Dry inside home | 141 | 65.9% |
| o Ironing underwear before use | 34 | 15.9% |
| Remove the genital hair | | |
| o Yes | 208 | 97.2% |
| o No | 6 | 2.8% |
| Time interval for removing pubic hair (n=208) | | |
| o Daily | 59 | 27.6% |
| o Weekly | 33 | 15.4% |
| o Once a month | 92 | 42.9% |
| o More than one months | 24 | 11.2% |
| The way of hair removal | | |
| o Sweat | 44 | 20.5% |
| o Cream | 13 | 6.1% |
| o Hair cutting machine | 96 | 44.9% |
| o Others | 61 | 28.5% |

Table (4) Association between students' ages and their health practices to prevent vaginal candidiasis (N=214)

| Variables | | Studied sample (N= 214) | | | | | P value |
|--|--|-------------------------|-----------|-----------|-----------|-----------|---------|
| | | < 20 | 20-22 | 23-25 | 26-30 | > 30 | |
| Type of perineal pads which were used during menses | Disposable sanitary pad only | 27(55.1) | 56 (57.1) | 3 (27.3) | 16 (38.1) | 6 (42.9) | 0.092 |
| | Cotton pad | 17(34.7) | 26 (26.5) | 4 (36.4) | 13 (31.0) | 3 (21.4) | |
| | Both | 5 (10.2) | 16 (16.3) | 4 (36.4) | 13 (31.0) | 5 (35.7) | |
| Numbers of change sanitary pad during menses per day | One | 1 (2.0) | 7 (7.1) | 0 (0.0) | 3 (7.0) | 0 (0.0) | 0.002 |
| | Two | 4 (8.2) | 6 (6.1) | 5 (45.5) | 2 (4.8) | 0 (0.0) | |
| | Three | 7 (14.3) | 17(17.3) | 1 (9.1) | 11(26.2) | 5 (35.7) | |
| | As Needed | 37(75.5) | 68 (69.4) | 5 (45.5) | 26 (61.9) | 9 (64.3) | |
| Daily hygienic practices of genitalia | Front to back cleaning of genital area | 26 (53.1) | 73 (74.5) | 9 (81.8) | 36 (85.7) | 13 (92.9) | 0.000 |
| | Back to front cleaning of genital area | 4 (8.2) | 4 (14.3) | 0 (0.0) | 1 (2.4) | 0 (0.0) | |
| | Tape bath | 16 (32.7) | 5 (5.1) | 2 (18.2) | 2 (4.8) | 0 (0.0) | |
| | Drying of genital area | 3 (6.1) | 6 (6.1) | 0 (0.0) | 3 (7.1) | 1 (7.1) | |
| Cleaning genitalia during menstruation | Yes | 45 (91.8) | 92 (93.9) | 10 (90.9) | 40 (95.2) | 14 (100) | 0.812 |
| | No | 4 (8.2) | 6 (6.1) | 1 (9.1) | 2 (4.8) | 0 (0.0) | |

Table (5) Association between students' age and their health practices to prevent vaginal candidiasis (N=214) (Continued)

| Variables | | Studied sample (N= 214) | | | | | P value |
|-------------------------------------|--|-------------------------|-----------|----------|-----------|------------|---------|
| | | < 20 | 20-22 | 23-25 | 26-30 | > 30 | |
| Bathing during menses | I always having shower every day during menses | 9 (18.4) | 15 (15.3) | 4 (36.4) | 14 (33.3) | 5 (35.7) | 0.211 |
| | Every 2 days | 20 (40.8) | 53 (54.1) | 5 (45.5) | 15 (35.7) | 7 (50.0) | |
| | Every 3 days | 14 (28.6) | 25 (25.5) | 2 (18.2) | 11 (26.2) | 2 (14.3) | |
| | I never take a bath during menses | 6 (12.2) | 5 (5.1) | 0 (0.0) | 2 (4.8) | 0 (0.0) | |
| Under wear drying | Exposure to the sunshine | 7 (14.3) | 18 (18.4) | 1 (9.1) | 8 (19.0) | 5 (35.7) | 0.027 |
| | Dry inside home | 33 (67.3) | 65 (66.3) | 9 (81.8) | 31 (73.8) | 3 (21.4) | |
| | Ironing underwear before use | 9 (18.4) | 15 (15.3) | 1 (9.1) | 3 (7.1) | 6 (42.9) | |
| washing hand after changing the pad | Yes | 47 (95.9) | 92 (93.9) | 9 (81.8) | 40 (95.2) | 14 (100.0) | 0.350 |
| | No | 2 (4.1) | 6 (6.1) | 2 (18.2) | 2 (4.8) | 0 (0.0) | |
| Times of cleaning pubic hair | Daily | 8 (16.3) | 29 (29.6) | 2 (18.2) | 15 (35.7) | 5 (35.7) | 0.008 |
| | Weekly | 5 (10.2) | 15 (15.3) | 4 (36.4) | 12 (28.6) | 3 (21.4) | |
| | Once a month | 24 (49.0) | 42 (49.9) | 5 (45.5) | 15 (35.7) | 6 (42.9) | |
| | Once in 3- 4 months | 12 (24.5) | 12 (12.2) | 0 (0.0) | 0 (0.0) | 0 (0.0) | |

Table (6) Association between students' age and their health practices to prevent vaginal candidiasis (N=214) (continued)

| Variables | | Studied sample (N= 214) | | | | | P value |
|---|---|-------------------------|-----------|----------|-----------|-----------|---------|
| | | < 20 | 20-22 | 23-25 | 26-30 | > 30 | |
| Methods of hair removal in genital area | Sweet | 11(22.4) | 22 (22.4) | 4 (36.4) | 6 (14.3) | 1 (7.1) | 0.078 |
| | Cream | 5 (14.3) | 5 (5.1) | 1 (9.1) | 0 (0.0) | 1 (7.1) | |
| | Hair cutting machine | 23 (46.9) | 49 (50.0) | 2 (18.2) | 20 (47.6) | 4 (36.4) | |
| | Other | 10 (20.4) | 22 (22.4) | 4 (36.4) | 16 (38.1) | 8 (57.1) | |
| Use vaginal wash daily | Yes | 12 (24.5) | 33 (33.7) | 3 (27.3) | 16 (38.1) | 5 (35.7) | 0.681 |
| | No | 37 (75.5) | 65 (66.3) | 8 (72.7) | 26 (61.9) | 9 (64.3) | |
| Area of disposing pads | Wastebasket | 45 (91.8) | 74 (75.5) | 8 (72.7) | 31 (73.8) | 12 (85.7) | 0.295 |
| | Toilet | 4 (8.2) | 19 (19.4) | 3 (27.3) | 10 (23.8) | 2 (14.3) | |
| Reasons for didn't seeking consultation doctor | Is considered something embarrassing in the community | 9 (18.4) | 12 (12.2) | 4 (36.4) | 5 (11.9) | 0 (0.0) | 0.182 |
| | Simple thing and don't need going to physician. | 9 (18.4) | 16 (16.3) | 3 (27.3) | 12 (28.6) | 6 (42.9) | |
| | Lack of awareness about the abnormal vaginal discharge. | 8 (16.3) | 27 (27.6) | 2 (18.2) | 10 (23.8) | 4 (28.6) | |
| | Shamed from exposure of genital area | 20 (40.8) | 40 (40.8) | 1 (9.1) | 12 (28.6) | 4 (28.6) | |
| | Shamed from male physician | 3 (6.1) | 3 (3.1) | 1 (9.1) | 3 (7.1) | 0 (0.0) | |

Table (7) Association between the level of income of the students' families and their health practices to prevent vaginal candidiasis (N=214)

| Variables | | Studied sample (N= 214) | | | | P value |
|---|--|-------------------------|-----------|------------|------------|---------|
| | | <6000 | 6000-8000 | 8001-10000 | > 10000 | |
| Type of perineal pads which were used during menses | Disposable sanitary pad only | 8 (33.3) | 7 (31.8) | 16 (41.0) | 77 (59.7) | 0.060 |
| | Cotton pad | 10 (41.7) | 8 (36.4) | 14 (35.9) | 31 (24.0) | |
| | Both | 6 (25.0) | 7 (31.8) | 9 (23.1) | 21 (16.3) | |
| Numbers of change sanitary pad during menses per day | One | 4 (16.7) | 0 (0.0) | 2 (5.1) | 5 (3.9) | 0.041 |
| | Two | 5 (20.8) | 3 (13.6) | 3 (7.7) | 6 (4.7) | |
| | Three | 4 (16.7) | 4 (18.2) | 7 (17.9) | 26 (20.2) | |
| | As Needed | 11 (45.8) | 15 (68.2) | 27 (69.2) | 92 (71.3) | |
| Daily hygienic practices of genitalia | Front to back cleaning of genital area | 15 (62.5) | 15 (68.2) | 30 (76.9) | 97 (75.2) | 0.057 |
| | Back to front cleaning of genital area | 6 (25.0) | 1 (4.5) | 2 (5.1) | 10 (7.8) | |
| | Tape bath | 1 (4.2) | 3 (13.6) | 3 (7.7) | 18 (14.0) | |
| | Drying of genital area | 2 (8.3) | 3 (13.6) | 4 (10.3) | 4 (3.1) | |
| Cleaning genitalia during menstruation | Yes | 19 (79.2) | 21 (95.5) | 37 (94.9) | 124 (96.1) | 0.015 |
| | No | 5 (20.8) | 1 (4.5) | 2 (5.1) | 5 (3.9) | |

4. DISCUSSION

The aim of this study was to assess the assess knowledge and practice to prevent vaginal candidiasis among female nursing students at king Abdul- Aziz University. It was achieved through answering the research questions. Regarding socio-demographic characteristics of the studied students, the results showed that, the mean ages of students were 20.1 ± 0.5 years, more than two fifths of them were between 20-22 years and more than two thirds of their mothers completed their secondary education and above education (Table 1). This result is in line with Huebner (21) who considered this age as a risk factor to infection; he stated that younger woman was susceptible to significantly high rates of infections, and infection problems. While Ibrahim (22) who reported that the majority of female students were single and between ages of 18-19 years. As regards, more than three quarters had secondary education and higher. Meanwhile, more than half of the participants' mothers had completed their secondary education and were housewives.

Regarding to the knowledge about how to prevent vaginal candidiasis, more than two thirds of the students had bad knowledge score about prevention of vaginal candidiasis, more than one quarter had good knowledge score and only three percent of them had adequate knowledge score level. This may be due to insufficient basic information gained from their academic study about this topic. Deficiency of knowledge might be due to the fact that mothers themselves suffer from lack of awareness about reproductive problems and may not feel comfortable in discussing such problems as reported by various studies (23). Usually in Egypt, adolescent teenagers were shielded from information about reproductive organs and their issues until the time of their marriage. The researcher point of view was supported by Mba (24) who illustrated that reproductive health education as part of the university curriculum will offer an effective means of improving awareness and decreasing reproductive health difficulties among teenage girls in developing countries.

Concerning hygienic practices during menstruation, this result found that there is a significant association between the students' age and the numbers of change sanitary pad during menses per day and their daily hygienic practices of genitalia. On the other hand, there is no significant association between the students' age and the type of perineal pads which were used during menses and cleaning genitalia during menstruation. This was in agreement with El-Gilany (25) who conducted a descriptive study among urban and rural females in Mansoura, Egypt, to assess menstrual hygienic practices among school of adolescents female at Mansoura city, results revealed that two-thirds of the participants (66.8%) used disposable pads, while 28% of them used re-usable pads as (cloths or old pieces of cloth) which discarded after use.

The current study found that regarding underwear drying more than two thirds of students was dry underwear inside home, while the majority of them removed genital hair through utilized hair cutting machine and more than two fifths were removed pubic hair every month. There is a significant association between the students' age and the drying of under wear and their number of times they clean their pubic hair. On the other hand, there is no significant association between the students' age and the bathing during menses and washing their hand after changing the pad. The present study result was in contrast with Abd Elrahim (26) results as it reported that more than one quarters of the females were used (washed reusable clothes) which dried inside home. Moreover, the study findings were in agreement with Sobel (27) who assured that wearing cotton underwear might help decrease the probabilities of getting a yeast infection. This may be due to wearing cotton under wear is comfortable and the cotton material of the under wear absorb the sweating and offer drying to the genital area, while the nylon under wear not absorbent and prevent air run which increase the sweating and irritation of the genital area. In the present study most of students were used cotton underwear, this finding was not accordance with study done by Abd Elrahim (26) who recognized that about half (54%) of the participants used cotton under wear and 27% of them used both cotton and nylon ones.

The current study illustrated that there is a significant association between the students' grade and the type of perineal pads, which were used during menses, and daily hygienic practices of genitalia, while there is no significant association between the students' grade and the number of change sanitary pad during menses per day, and the cleaning of genitalia during menstruation. This may be due to students with 4th grade and 2nd grade bridging more aware and more knowledgeable than 2nd and 3rd grade level. Also bridging students had more experience than under graduated student.

According to the current study findings, there was a significant association between the students' family monthly income and the numbers of change sanitary pad during menses per day and cleaning genitalia during menstruation. This finding was due to increasing the level of monthly income; lead to increase the tendency to cleaning genitalia during

menstruation. On the other hand, there is no significant association between the students' family monthly income and the type of perineal pads which were used during menses, and the daily hygienic practices of genitalia, bathing during menses, drying of their under wear and the times of cleaning pubic hair. Also there is a significant association ($P < 0.001$) between the students' mother education and their daily hygienic practices of genitalia, the numbers of change sanitary pad during menses per day, washing hand after changing the pad and their methods of hair removal in genital area. In line with these findings by Amira (6) stated that more than two-fifths of the participant students preferred to consult their mothers, and less than one-third of them stated doctors and friends as sources of advice. This may be due to adolescent girls preferred to consult their mothers when having any genital symptoms indicating genital tract infection and increase level of mother education in this study were improve daily hygienic practice and lead to prevent vaginal candidiasis among female students.

5. CONCLUSION

Based on the present study results, the mean ages of students were 20.1 ± 0.5 years. In addition, more than two thirds (66.8%) of the students have poor knowledge regarding the prevention of vaginal candidiasis, and more than one quarter (29.9%) of them have good knowledge. In additional, there was no significant association between the mother educations, father education and level of income, and students' knowledge regarding the prevention of vaginal candidiasis.

Concerning students health practices to prevent vaginal candidiasis, this result found that there is a significant association between the students' age, grade, mothers education and family monthly income and the numbers of change sanitary pad during menses per day and their daily hygienic practices of genitalia, drying of under wear and their number of times they clean their pubic hair. On the other hand, there is no significant association between the students' age, grade, mothers education and family monthly income and the type of perineal pads which were used during menses, cleaning genitalia during menstruation bathing during menses, washing their hand after changing the pad and the reasons for didn't seeking consultation doctor.

6. RECOMMENDATION

Based on the results of the current study, the following suggestions are recommended:

Organized and implemented a health education program by specialized academic nursing staff to educate student nurses as regards all updates of reproductive tract infections and its preventive measures.

Further researches needed to:

- Investigate and develop strategies to improve factors facing adolescent students to use reproductive health services
- Assess the students who complain of abnormal vaginal discharge to determine the type and causes of abnormal vaginal discharge.

Limitation of the study:

There were some problems faced the researcher when she was collected the data .Some students were busy and had no time to fill in the sheet.

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