

## Knowledge And Practice Of Women With Lower Genital Tract Infections

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### Abstract:

**Background:** Reproductive tract infections (RTIs) are recognized as a major public health problem and rank second - after maternal morbidity and mortality - as the cause of healthy lifeloss among sexually- active women of reproductive age in developing countries. **The aim: the study:** The study aimed to assess to assess knowledge & practice of women regarding lower of reproductive tract infection. **Setting:** The study was conducted at the patient gynecological clinic at Makkah Hospital. **Design:** Descriptive study design. **Sampling:** A purposive sample included 300 women were recruited in the current study. **Tools:** Three tools were used to collect data, Tool I- Interviewing questionnaire to collect data include Part 1:- sociodemographic characteristics data, Part 2:- Reproductive history Part 3:- Related to characteristics of vaginal discharge Part 4:- Related to personal hygiene habits Tool II: - women's knowledge and Tool III- An observation check list: used to assess practice of studied sample of reproductive tract infections. **Results:** The present study revealed that most common of the studied group are mean age  $25.67 \pm 2.09$  married, house wife, and are living in urban area. There is highly statistically significant differences women's total knowledge score and their marital status, age at marriage, and years of marriage. The total practice score in relation to their personnel characteristics, it reveals that there was a statistical significant difference between women total practice score and their residence, age at marriage, and years of marriage. **Conclusion:** There is highly statistically significant differences women's total knowledge score. And the total practice score in relation to their personnel characteristics, it reveals that there was a statistical significant difference between women total practice score and their residence, age at marriage, and years of marriage in addition to highly positive significant correlation that clarifies that increase knowledge will subsequently increase practice of women regarding lower reproductive tract infection. **Recommendations:** Periodic educational program for women to increase their knowledge and to improve their practice. Counseling women about the importance of periodic follow up.

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**Key words:** *Lower reproductive tract infection, knowledge, practice.*

### **Introduction**

Infections of the lower reproductive tract are common quite simply due to the nature of the female reproductive anatomy. The vagina naturally has a variety of bacteria and yeast that can be disrupted and displaced due to various factors including antibiotic use, pregnancy, and sexual intercourse and decreased immune response (**Nugent et al., 2012**).

There are three types of RTIs. These are endogenous infections, iatrogenic infections and sexually transmitted infections (STIs). Each type of infection has its own specific causes and symptoms. The symptoms can range from itching, burning and pain to abnormal discharge and odor (**Sihavong et al., 2011**).

Reproductive tract infections (RTIs) refer to three different types of infection which affect the reproductive tract: Endogenous infections are probably the most common RTIs worldwide. They result from an overgrowth of organisms normally present in the vagina. Endogenous infections include bacterial vaginosis and candidiasis. These infections can be easily treated and cured. Iatrogenic infections occur when the cause of infection (a bacterium or other micro-organism) is introduced into the reproductive tract through a medical procedure such as menstrual regulation, induced abortion, and the insertion of an IUD or during childbirth. This can happen if surgical instruments used during the procedure have not been properly sterilized, or if an infection that was already present in the lower reproductive tract is pushed through the cervix into the upper reproductive tract (**Gulati et al., 2009**).

RTIs are caused by a bacterium, virus, fungus or other organism. Some are easily treatable with antibiotics and curable. Some are more difficult to treat and others, such as AIDS and herpes, are non-curable. (**Sihavong et al., 2011**).

The nurse's role is important for prevention, and education to limit recurrences of these infections and prevention of subsequent complications. The nurse should perform careful assessment of women for common signs, symptoms, and presence of risk factors such as improper use of douches, antibiotics, multiple sexual partners, immunosuppressive condition, appearance and color of vaginal discharge (**Rabiu et al., 2010**). Also education is another important role; the nurse has to deliver important health educational topics to the patients as diet, personal hygiene, increasing immunity, and administration of way of medication (**Rahman et al., 2013**).

Natural Barriers against genital infections:

**Aziz and Hussein (2010)** reported that natural barriers against genital infections include the following:

- 1) The vaginal acidity: In the childbearing period estrogen helps glycogen deposition in the vaginal cells. Doderlien's bacilli "lactobacilli" split the glycogen into lactic acid and the pH of the vagina is 4.5.
- 2) The stratified squamous epithelium of the vagina: Stratification of the vaginal epithelium is stimulated by estrogen.
- 3) The cervical mucus: It closes the cervical canal, preventing ascent of micro-organisms.

Monthly shedding of the superficial layer of the endometrium: Shedding prevents persistence of infection.

It is important for the nurse to be aware that reproductive tract infection is the most common complaint during child bearing period, affecting millions of women worldwide, so it is important to improve the quality of care and health education given to those women. The nurse can play a crucial role in primary prevention and education to control the predisposing factors, limit recurrences of these infections and prevent complications by teaching them to take the precautions highlighted (Ricci & Kyle, 2009).

According to the estimates of the (WHO), reproductive health problems accounted for 18 percent of the total global burden of diseases in 2001. Representing 32 percent of the health burden among women in the childbearing age group worldwide (IDSK, 2011). In developing countries incidence and prevalence of RTIs are very high, they rank second as the cause of morbidities among women of reproductive age, next to maternal morbidity and mortality (Rabiu et al., 2010).

#### **subjects and methods Research Design:**

A descriptive research design was utilized in the present study.

#### **Setting:**

This study was applied at the patient gynecological clinic at Makkah Hospital

#### **I- Subjects:**

**Sampling:** 300 women who were attended patient gynecological clinic at Makkah Hospital. This sample size was calculated based on the flow rate of women at studied setting for a year (2020-2021), the flow rate was 3000 client. The sample size was 10% from the total women attended to previous mentioned setting. **Certain criteria:** A convenience sample of married women will be recruited for the study according to the following criteria:

Having abnormal vaginal discharge, Recruited during the childbearing period. And agree to engage in the study.

#### **Tools of data collection:**

##### **It consists of three tools:**

**Tool1: Interviewing questionnaire:** The sheet was Arabic language and consisted four parts:-

- **Part 1:** Sociodemographic characteristics data as, age, educational level, occupation, and as well as husband's biographic data include 2 items, (educational level, occupation)
- **Part 2:** Reproductive history includes 9 items (age of menarche, regularity and duration of menstruation.....etc). and reproductive history includes 9 items (age of menarche, regularity and duration of menstruation.....etc). And medical history include 2 items (medical and type of disorders)
- **Part 3:** Related to characteristics of vaginal discharge. Include 8 items (discharge, odor, color, and frequency.....etc).
- **Part 4:** Related to personal hygiene habits include 6 items (Type of toilet, Shower in weeks, Type of material used to rinse vaginal....etc).

**Tool II: women's knowledge included 12 items:**

Meaning of lower reproductive tract infection, Signs and symptoms, Causes, Types....etc.

❖ **scoring system**

All knowledge variables were weighted according to the items included in the answer of each question. The data collected from the knowledge test was computed and the test received a grade out of 12 questions, the scores were allocated as follows: complete (2), incomplete (1), wrong (0).

**Tool III-An observation check list:** Used to assess practice of studied sample of reproductive tract infections through routine hand washing, perinatal care.

**II- Methods**

**Operation of the study:**

The study was executed according to the following steps:-

**1- Approval**

An official letter was taken.

**2- Tools for data collection:-**

The tools for data collection were developed after reviewing of related literature and were for content validity and reliability.

**3- Validity and Reliability:**

Content validity was tested by three experts in nursing field. The questionnaire was modified according to the expertise comments and recommendations.

**4- Pilot study**

It was carried out on 30 women (10% of total sample) to evaluate reliability of study sample and clarity of the study tool. To modification was done according to Pilot study. Pilot study participants were excluded from the study sample size.

**5- The purpose of pilot study were to:**

- Test the feasibility of the study and the applicability of the tool.
- Find out the possible obstacles and problems that might face the researcher and interfere with data collection. any problems peculiar to the statements as sequence of questions a clarity.
- Estimate the time needed for data collection

**6- pilot study**

After conducting the pilot study it was found that the sentences of the tools were clear and relevant but few words have been modified according to pilot study results, simple modifications were done rephrasing question or revoke some questions.

Ethical consideration:

- The aim of the study was explained to each woman before applying the tools to gain woman's confidence and trust.
- An oral consent was obtained from each woman to participate in the study and she can freely withdraw at any time.
- The data was collected and treated confidentially.
- Each woman was informed about time throughout the study.

## 7- Field work

- Data were collected from the beginning of October, 2021 till the end of March, 2022 covering six months.
- The researcher was greeted the client warmly.
- The researcher was utilized suitable method of communication and she was explained the aim of the study and the questionnaire to each woman individually. The sheet was filled by the researcher through an interview ranged from 15 to 20 minutes with each woman, which 5-6 sheets were filled each day until the predetermined number was obtained.

Statistical analysis:

After data collection, each sheet was scored, and data were organized, categorized, results were presented in tables and were analyzed by using the statistical package for social sciences (SPSS) program, version (14). Numerical qualitative data were expressed as frequencies and percentages. As well, means, standard deviation (SD), and probability of errors (p-value) test were used to examine the relation between qualitative variables.

## Results:

**Table (1):** shows the socio-demographic data of the studied women, the mean age was  $25.67 \pm 2.09$  years, 39.3% of women had secondary level of education and 64.7% of them were housewives. In addition 56.3% live in urban areas, 73.0% of them are married, 56.0% married at 18 to 25 years old, and 50.3% of have from one to five years duration of marriage.

| Demographic characteristics      | No.                              | %    |
|----------------------------------|----------------------------------|------|
| <b>Age in years</b>              |                                  |      |
| 20-                              | 131                              | 43.7 |
| 25-                              | 101                              | 33.7 |
| 30-                              | 68                               | 22.7 |
| <b>Mean <math>\pm</math>SD</b>   | <b>25.67<math>\pm</math>2.09</b> |      |
| <b>Educational qualification</b> |                                  |      |
| Illiterate                       | 59                               | 19.7 |
| Read and write                   | 81                               | 27.0 |
| Secondary                        | 118                              | 39.3 |
| University education             | 42                               | 14.0 |
| <b>Marital Status</b>            |                                  |      |

|                                |                                  |      |
|--------------------------------|----------------------------------|------|
| Married                        | 219                              | 73.0 |
| Widow                          | 36                               | 12.0 |
| Divorced                       | 45                               | 15.0 |
| <b>Residence</b>               |                                  |      |
| Urban                          | 169                              | 56.3 |
| Rural                          | 131                              | 43.7 |
| <b>Occupation</b>              |                                  |      |
| Working                        | 106                              | 35.3 |
| House wife                     | 194                              | 64.7 |
| <b>Age at marriage</b>         |                                  |      |
| 18-25                          | 168                              | 56.0 |
| 26-30                          | 132                              | 44.0 |
| <b>Mean <math>\pm</math>SD</b> | <b>27.58<math>\pm</math>3.37</b> |      |
| <b>Years of marriage</b>       |                                  |      |
| 1-5                            | 151                              | 50.3 |
| 6-10                           | 74                               | 24.7 |
| 11-15                          | 75                               | 25.0 |
| <b>Mean <math>\pm</math>SD</b> | <b>8.89<math>\pm</math>3.75</b>  |      |

**Table (2):** show that 53.7% of studied had menarche at 10-14 years, 57.0% of them had irregular menstruation and 77.0% of them use contraception.

|  |                                  |          |
|--|----------------------------------|----------|
| <b>Reproductive history</b>                | <b>No.</b>                       | <b>%</b> |
| <b>Age of menarche(years)</b>              |                                  |          |
| 10-13                                      | 161                              | 53.7     |
| 14-16                                      | 139                              | 46.3     |
| <b>Mean <math>\pm</math>SD</b>             | <b>14.03<math>\pm</math>2.09</b> |          |
| <b>Regularity of menstruation</b>          |                                  |          |
| Irregular                                  | 171                              | 57.0     |
| Regular                                    | 129                              | 43.0     |
| <b>Duration of menstruation</b>            |                                  |          |
| 3-6  | 81                               | 27.0     |
| 7-10                                       | 219                              | 73.0     |
| <b>Gravidity</b>                           |                                  |          |
| 1-   | 105                              | 35.0     |
| 3-   | 129                              | 43.0     |
| 5-   | 66                               | 22.0     |
| <b>Parity</b>                              |                                  |          |
| 1-   | 105                              | 35.0     |
| 3-   | 129                              | 43.0     |
| 5-   | 66                               | 22.0     |
| <b>Complications in previous pregnancy</b> |                                  |          |
| No   | 204                              | 68.0     |

|  |     |      |
|--|-----|------|
| Yes  | 96  | 32.0 |
| <b>Contraceptive use</b>                     |     |      |
| No   | 69  | 23.0 |
| Yes  | 231 | 77.0 |
| <b>Type of contraceptive method (n=231).</b> |     |      |
| COCP   | 108 | 36.0 |
| IUD  | 93  | 31.0 |
| Injectable                                   | 99  | 33.0 |
| <b>Duration of contraceptive use</b>         |     |      |
| 1-   | 189 | 63.0 |
| 5-   | 75  | 25.0 |
| 10-  | 36  | 12.0 |

**Table (3):** Shows that 69.7% of women had vaginal discharge, 62.7% of them had bad odor, vaginal discharge, and 72.2% had intermittent vaginal discharge.

Moreover 58.4% of women had vaginal discharge for more than one month.

| <b>Vaginal discharge</b>                           | <b>No.</b> | <b>%</b> |
|--|------------|----------|
| <b>Vaginal discharge</b>                           |            |          |
| Yes  | 209        | 69.7     |
| No   | 91         | 30.3     |
| <b>Odor of Vaginal discharge (n=209).</b>          |            |          |
| Bad odor   | 131        | 62.7     |
| No odor  | 78         | 37.3     |
| <b>Color of Vaginal discharge (n=209).</b>         |            |          |
| White  | 117        | 56.0     |
| Yellow   | 92         | 44.0     |
| <b>Frequency of Vaginal discharge (n=209).</b>     |            |          |
| Continuous   | 58         | 27.8     |
| Intermittent                                       | 151        | 72.2     |
| <b>Viscosity of Vaginal discharge (n=209).</b>     |            |          |
| Liquid   | 117        | 56.0     |
| Viscous  | 92         | 44.0     |
| <b>Signs associated with discharge (n=209).</b>    |            |          |
| Purities   | 113        | 54.0     |
| Abdominal pain                                     | 66         | 31.6     |
| Redness  | 30         | 14.4     |
| <b>Onset of Vaginal discharge (n=209).</b>         |            |          |
| less 1month  | 87         | 41.6     |
| More 1month  | 122        | 58.4     |
| <b>taking treatment after medical consultation</b> |            |          |
| Yes  | 130        | 62.2     |
| No   | 79         | 37.8     |

**Table (4):** Illustrates that 71.7% of women had a shower less than three times per week, 45.7% of them apply perianal care only with water, and 50.3% sit in during bath in water. Finally 58.7% of them use sweet for removing pubic hair.

| Personal hygiene habits.                      | No. | %    |
|---|-----|------|
| <b>Type of toilet</b>                         |     |      |
| Balady  | 105 | 35.0 |
| Afrangy                                       | 195 | 65.0 |
| <b>Shower week</b>                            |     |      |
| 1-<3  | 215 | 71.7 |
| 3-<5  | 44  | 14.7 |
| 5-<8  | 41  | 13.6 |
| <b>Type of material used to rinse vaginal</b> |     |      |
| Water   | 137 | 45.7 |
| water soap                                    | 101 | 33.7 |
| wash by doctor                                | 62  | 20.7 |
| <b>The position during vaginal rinsing</b>    |     |      |
| Stopping                                      | 45  | 15.0 |
| sitting in toilet                             | 104 | 34.7 |
| sit in dish with water                        | 151 | 50.3 |
| <b>The direction of vaginal rinse</b>         |     |      |
| forward to back ward                          | 55  | 18.3 |
| backward to forward                           | 90  | 30.0 |
| no order                                      | 155 | 51.7 |
| <b>Removing pubic hair and perineum area</b>  |     |      |
| Sweet   | 176 | 58.7 |
| Shaving                                       | 92  | 30.7 |
| special machine                               | 32  | 10.7 |

**Table (5):** Illustrates that 73.0% of women don't know the meaning and signs of lower genital tract infection. 28.0% had incomplete knowledge regarding both complications and effect of lower genital infection on pregnancy. On the other hand 21.7% of them had a complete knowledge regarding treatment and causative agents of lower genital tract infection.

| Items                                    | Don't know |      | Incomplete |      | Complete |      | X <sup>2</sup> | P value |
|--|------------|------|------------|------|----------|------|----------------|---------|
|  | No         | %    | No         | %    | No       | %    |                |         |
| Meaning of lower genital tract infection | 219        | 73.0 | 58         | 19.3 | 23       | 7.7  | 215.54         | 0.000** |
| Signs and symptoms infection             | 219        | 73.0 | 58         | 19.3 | 23       | 7.7  | 94.22          | 0.000** |
| Causes of infection                      | 179        | 59.7 | 66         | 22.0 | 55       | 18.3 | 80.34          | 0.000** |
| Types infection                          | 173        | 57.7 | 68         | 22.7 | 59       | 19.7 | 99.06          | 0.000** |
| Preventive of infection                  | 185        | 61.7 | 74         | 24.7 | 41       | 13.7 | 218.54         | 0.000** |
| Complication of infection                | 177        | 59.0 | 84         | 28.0 | 39       | 13.0 | 94.22          | 0.000** |
| Risk factor of infection                 | 179        | 59.7 | 66         | 22.0 | 55       | 18.3 | 80.34          | 0.000** |



|   |     |      |    |      |    |      |        |         |
|---|-----|------|----|------|----|------|--------|---------|
| Treatment of infection                  | 178 | 59.3 | 57 | 19.0 | 65 | 21.7 | 99.06  | 0.000** |
| Causative agents of infection           | 174 | 58.0 | 61 | 20.3 | 65 | 21.7 | 96.182 | 0.000** |
| Effect infection on reproductive health | 208 | 69.3 | 66 | 22.0 | 26 | 8.7  | 82.22  | 0.000** |
| Effect of infection on sexual relation  | 173 | 57.7 | 68 | 22.7 | 59 | 19.7 | 91.58  | 0.000** |
| Effect of infection on pregnancy        | 177 | 59.0 | 84 | 28.0 | 39 | 13.0 | 113.82 | 0.000** |

**Table (6):** shows that 90.7% of women use vaginal douches, 89.3% add disinfectant solution at washing underwear, and 85.7% avoid wearing others under wear of. While 49.7% of them don't use odors to relieve odour, and 49.0% of them don't wash their hands before toilet.

| Item   | Done |      | Not done |      | X <sup>2</sup> | P value |
|--|------|------|----------|------|----------------|---------|
|  | No   | %    | No       | %    |                |         |
| Wearing cotton clothes                                       | 222  | 74.0 | 78       | 26.0 | 69.12          | 0.000** |
| Boiling underwear clothes                                    | 222  | 74.0 | 78       | 26.0 | 69.12          | 0.000** |
| Avoid wearing under wear of others                           | 257  | 85.7 | 43       | 14.3 | 152.65         | 0.000** |
| Using vaginal odor relieve subjects                          | 151  | 50.3 | 149      | 49.7 | .013           |         |
| Applying pad for discharge                                   | 245  | 81.7 | 55       | 18.3 | 120.33         | 0.000** |
| Hand washing before toilet                                   | 153  | 51.0 | 147      | 49.0 | 0.120          |         |
| Hand washing after toilet                                    | 231  | 77.0 | 69       | 23.0 | 87.48          | 0.000** |
| Use vagina douche  | 272  | 90.7 | 28       | 9.3  | 198.45         | 0.000** |
| Perineal care during toilet                                  | 262  | 87.3 | 38       | 12.7 | 167.25         | 0.000** |
| Continuous Change to underwear to not be media for infection | 188  | 62.7 | 112      | 37.3 | 0.33           |         |
| Use disinfectant solution for washing underwear              | 268  | 89.3 | 32       | 10.7 | 185.65         | 0.000** |

**Table (7):** Reveals that 87.7% of women used cotton sanitary pads, 86.7% of them don't reuse the pad. On the other hand 48.3% of women don't take bath during menstruation, moreover 46.7% of them don't disinfect or clean toilet before or after use.

| Item   | Done |      | Not done |      | X <sup>2</sup> | P value |
|--|------|------|----------|------|----------------|---------|
|  | No   | %    | No       | %    |                |         |
| Take bath during menstruation                  | 155  | 51.7 | 145      | 48.3 | 1.33           | >0.05   |
| Bathing in standing position.                  | 240  | 80.0 | 60       | 20.0 | 108.00         | 0.000** |
| Perineal care with antiseptic solution         | 236  | 78.7 | 64       | 21.3 | 98.61          | 0.000** |
| Disinfect or clean toilet before and after use | 160  | 53.3 | 140      | 46.7 | 1.33           | >0.05   |
| Use sanitary pads                              | 224  | 74.7 | 76       | 25.3 | 73.01          | 0.000** |
| Sanitary pad is made from cotton               | 263  | 87.7 | 37       | 12.3 | 170.25         | 0.000** |
| Change pad every each bath                     | 180  | 60.0 | 120      | 40.0 | 12.00          | <0.05*  |

|  |     |      |    |      |        |         |
|--|-----|------|----|------|--------|---------|
| Change pad every 4hours especially in 1st day then every 8 hours | 252 | 84.0 | 48 | 16.0 | 128.72 | 0.000** |
| Don't reuse the pad  | 260 | 86.7 | 40 | 13.3 | 161.33 | 0.000** |

**Table (8):** shows studied women total knowledge score in relation to their personnel characteristics, it reveals that there was a highly statistical significant difference between women total knowledge score and their marital status, age at marriage, and years of marriage ( $p<0.001$ ). In addition there was a significant relation between knowledge and educational level. While there was no statistical significant difference between total knowledge and their age, residence, and occupation ( $p>0.05$ ).

| Items                            | adequate<br>N=247 |      | adequateN=53 |      | X <sup>2</sup> | P value  |
|----------------------------------|-------------------|------|--------------|------|----------------|----------|
|                                  | N0                | %    | N0           | %    |                |          |
| <b>Age( years )</b>              |                   |      |              |      |                |          |
| 20-                              | 110               | 44.5 | 21           | 39.6 | 642            | >0.05    |
| 25-                              | 83                | 33.6 | 18           | 34.0 |                |          |
| 30-                              | 54                | 21.9 | 14           | 26.4 |                |          |
| <b>Educational qualification</b> |                   |      |              |      |                |          |
| Illiterate                       | 97                | 39.3 | 21           | 39.6 | 8.51           | <0.05*   |
| Read and write                   | 73                | 29.6 | 8            | 15.1 |                |          |
| Secondary                        | 48                | 19.4 | 11           | 20.8 |                |          |
| University education             | 29                | 11.7 | 13           | 24.5 |                |          |
| <b>Marital Status</b>            |                   |      |              |      |                |          |
| Married                          | 189               | 76.5 | 30           | 56.6 | 12.34          | <0.001** |
| Widowed                          | 29                | 11.7 | 7            | 13.2 |                |          |
| Divorced                         | 29                | 11.7 | 16           | 30.2 |                |          |
| <b>Residence</b>                 |                   |      |              |      |                |          |
| Urban                            | 110               | 44.5 | 21           | 39.6 | .428           | >0.05    |
| Rural                            | 137               | 55.5 | 32           | 60.4 |                |          |
| <b>Occupation</b>                |                   |      |              |      |                |          |
| Working                          | 89                | 36.0 | 17           | 32.1 | .299           | >0.05    |
| House wife                       | 158               | 64.0 | 36           | 67.9 |                |          |
| <b>Age at marriage</b>           |                   |      |              |      |                |          |
| 18-<25                           | 154               | 62.3 | 14           | 26.4 | 22.86          | <0.001** |
| 25-<30                           | 93                | 37.7 | 39           | 73.6 |                |          |
| <b>Years of marriage</b>         |                   |      |              |      |                |          |
| 1-<5                             | 119               | 48.2 | 32           | 60.4 | 12.78          | <0.001** |
| 5-<10                            | 71                | 28.7 | 3            | 5.6  |                |          |
| 10-<15                           | 57                | 23.1 | 18           | 34.0 |                |          |

**Table (9):** Shows studied women total practice score in relation to their personnel characteristics, it reveals that there was a statistical significant difference between women total practice score and their residence, age at marriage, and years of marriage ( $p<0.05$ ). While there was no significant relation between total practice and their age, educational level, and

occupation

| Items                            | satisfactory N= 72 |      | tisfactory N=228 |      | X <sup>2</sup> | P value |
|----------------------------------|--------------------|------|------------------|------|----------------|---------|
|                                  | N0                 | %    | N0               | %    |                |         |
| <b>Age( years)</b>               |                    |      |                  |      |                |         |
| 20-                              | 28                 | 38.9 | 103              | 45.2 | 3.36           | >0.05   |
| 25-                              | 22                 | 30.6 | 79               | 34.6 |                |         |
| 30-                              | 22                 | 30.6 | 46               | 20.2 |                |         |
| <b>Educational qualification</b> |                    |      |                  |      |                |         |
| Illiterate                       | 33                 | 45.8 | 85               | 37.3 | 3.13           | >0.05   |
| Read and write                   | 14                 | 19.4 | 67               | 29.4 |                |         |
| Secondary                        | 14                 | 19.4 | 45               | 19.7 |                |         |
| University education             | 11                 | 15.3 | 31               | 13.6 |                |         |
| <b>Marital Status</b>            |                    |      |                  |      |                |         |
| Married                          | 56                 | 77.8 | 163              | 71.5 | 2.31           | >0.05   |
| Widowed                          | 5                  | 6.9  | 31               | 13.6 |                |         |
| Divorced                         | 11                 | 15.3 | 34               | 14.9 |                |         |
| <b>Residence</b>                 |                    |      |                  |      |                |         |
| Urban                            | 47                 | 65.3 | 122              | 53.5 | 3.08           | <0.05*  |
| Rural                            | 25                 | 34.7 | 106              | 46.5 |                |         |
| <b>Occupation</b>                |                    |      |                  |      |                |         |
| Working                          | 25                 | 34.7 | 81               | 35.5 | .015           | >0.05   |
| House wife                       | 47                 | 65.3 | 147              | 64.5 |                |         |
| <b>Age at marriage</b>           |                    |      |                  |      |                |         |
| 18-<25                           | 33                 | 45.8 | 135              | 59.2 | 3.97           | <0.05*  |
| 25-<30                           | 39                 | 54.2 | 93               | 40.8 |                |         |
| <b>Years of marriage</b>         |                    |      |                  |      |                |         |
| 1-<5                             | 27                 | 37.5 | 124              | 54.4 | 7.27           | <0.05*  |
| 5-<10                            | 25                 | 34.7 | 49               | 21.5 |                |         |
| 10-<15                           | 20                 | 27.8 | 55               | 24.1 |                |         |

**Table (10):** reveals a highly positive significant correlation meaning that increased knowledge will subsequently increase practice score of women regarding lower reproductive tract infection

| Variables             | Total practice score |          |
|-----------------------|----------------------|----------|
|                       | R                    | P value  |
| Total knowledge score | .240                 | <.0001** |

### Discussion:

Infections of the lower reproductive tract are common quite simply due to the nature of the female genital tract anatomy. The vagina naturally has a variety of bacteria and yeast that can lead female reproductive to be disrupted due to various factors including antibiotic use, pregnancy, sexual intercourse and decreased

immune response (**Blacksberg,2014**).

Regarding the socio-demographic characteristic of studied women, the results of the current study revealed that the mean age of women was  $25.67 \pm 2.09$  years, nearly half of them were between 20-25 years. The majority of them were married, more than one half were living in urban areas, and one third had secondary level of education. These results are nearly similar to those reported by **Bohara et al. (2012)** study who showed that mean age of studied sample was  $32.10 \pm 8.81$  years. The majority of them were married and approximately half of them had middle education. The study showed that low socio demographic factors negatively predispose to genital tract infection. The results of current study agree with **Ahmed et al. (2000)**, **Paulo et al. (2007)**, **Okunlola et al. (2009)**, and **Kamel (2011)** who reported a statistically significant relation between lower educational level and incidence of genital tract infection.

In addition more than half of cases were married at the age of 18 to 25 years and duration of marriage ranged from one to five years. Also two third of women were house wife. Regarding personal characteristics of male, pertness the results showed that one third of them were illiterate and vocational occupation. This result may be explained by the fact that women during childbearing period are most commonly exposed to lower reproductive tract infection due to poor personal hygienic practices, which lead to high prevalence of infection

The results of current study showed that more than half of studied women had menarche at 10-13 years age, It was noticed that two-thirds of them had irregular period cycle duration was days and 8-10. This finding is in line with **Yassin (2012)** who revealed a high prevalence of menstrual disorders, almost all of the study subjects suffered from one or more of menstrual disorders.

Regarding gravidity and parity, this study revealed that more than one third of studied women were para 3. In the same line **Abd El-Aliem, (2015)** showed that the majority of women had 1-3 pregnancies this result was in accordance with **Bahram et al. (2009)** who found insignificant correlation between vaginal infection and number of pregnancies, which increase the risk to infection. This may be related to increase vaginal secretions and lowered immunity defense of the pregnant women causing vaginal infection particularly Candida infection. On the other hand, revealed that, slightly more than one third of the women were using the IUD, for one year and that IUD is not a predictor which might contribute to the incidence of genital tract infection. **Al Quaiz (2000)**; **Omar (2001)** and **Kurewa et al. (2010)**, reported no statistically significant relation between IUD and the incidence of genital tract infection. On the contrary, **Saullam et al. (2008)** and **Okunlola et al. (2009)**, reported a statistically significant relation between using IUD and the incidence of genital tract infection. The present study showed that, two thirds of women complained from abnormal vaginal discharge with bad odor, white, intermittent, viscous and vaginal itching since more than one month. **Kamel (2011)**, indicated, subside era of abnormal vaginal discharge, change in color of discharge, bad odor, vaginal itching, dysuria, dyspareunia, and lower abdominal pain with a highly statistically significant difference ( $p = 0.000$ ). Moreover, findings of this study indicated that redness and swelling of genitalia were decreased with highly statistically significant differences ( $p = 0.001$  &  $p = 0.032$  respectively). In addition, findings of the current study indicated normal vaginal swabs among 65% of the sample after health education and follow-up course of treatment.

Concerning the reason of using vaginal douche, the current study stated that two third of the studied women used vaginal douche by water every shower 1-3 weeks, sit in dish with water, personal hygiene, and used afrangy toilet. The results of the present study revealed deficient

knowledge among studied women regarding meaning of lower reproductive tract infection, signs&symptoms and effect of infection on reproductive health. In the same line **Mohamed, (2015)** regarding students' knowledge about RTIs, it was evident that the majority of the studied sample had unsatisfactory knowledge score level about RTIs. This may be attributed to insufficient basic information about this topic. Lack of knowledge might be due to the fact that mothers themselves suffer from lack of information about reproductive problems and may not feel comfortable in discussing such issues as reported by various studies

The current study revealed that the majority of women, who use vaginal douches, add disinfectant solution for washing underwear and wear cotton under clothes. These findings disagree with **Dimetry et al. (2007)** and **Hacalioglu et al. (2009)** who reported significant associations between infection and unsatisfactory personal hygiene e.g. those who wear clothes other than cotton.

The current study revealed that the majority of studied women had healthy perineal hygiene practice, healthy practices during menstruation with the use of cotton sanitary pads, cotton, don't reuse the pad and change pad every 4 hours. These results agree with **Zoetermeer (2007)** who stated that learning about menstrual hygiene is a vital part of education of females to continue work and maintain hygienic habits throughout their life. The ideal menstrual health education curriculum encourages females to think about the relationships between knowledge, choice, behavior's and enhanced human health. **Mudey et al. (2010)** proved that vaginal infections due to lack of hygiene during menstruation reported in many studies are mainly related to appropriate information about menstrual hygiene. Also **Lawan et al. (2010)** proved that poor menstrual hygiene and inadequate self-care are major determinants of morbidity and other complications among the reproductive age group. This result disagrees with **Ahmed (2009)** who mentioned that the majority of the women had improper perineal hygiene practice.

As regards the current study disagrees with **Abd El-Aliem (2015)** who showed that minority of women take shower during menstruation involving genital area cleanliness, bathing in standing position, disinfection or cleaning toilet before and after use, use of sanitary perineal pad and that sanitary pads were made of cotton, changed pad every bath and every 4 hours especially in the 1st days of cycle then every 8 hours till end of the menstrual period. About one half of studied women reported reuse of the perineal pad which is an unhygienic practice. Additionally **Bhudhagaonkar & Shinde (2014)** found that the majority of study sample use the homemade sanitary cotton clothes with a vast unmet need to teach them menstruation practices to prevent health complications due to unhygienic practices. They found that only 17% of sample change their pads 6 hourly whereas 28 % of samples change their pads when needed.

The current study revealed that the majority of women do perineal care with antiseptic solution after sexual relation and sit in warm water after sexual relation. These findings disagree with **Mohamed et al. (2015)** who showed that all women had unhealthy vaginal hygienic practices regarding sexual relation. This is explained by, the fact that the majority of them were newly married and hadn't enough and correct knowledge about hygienic practices after sexual relations. This finding is in the same line with **Hull et al. (2010)**, who reported that intravaginal cleaning was the most prevalent practice among the majority of the studied women.

As regards the correlation between women's total knowledge score level and their socio-demographic characteristics, the results of current study revealed a highly statistically significant relation between women total knowledge score level with their years of marriage, age of

marriage, and marital status. This may be due to lack of awareness about reproductive tract infection at secondary school education in rural area compared to urban areas. It may also be attributed being newly married and deficient and correct knowledge about reproductive tract infection.

This finding agree with **Mohamed et al. (2015)**, who showed a highly statistically significant relation between women's total knowledge score level and their residence, and marital status. This finding disagree with **Salve et al. (2012)**, who showed poor knowledge about female reproductive system among rural women. This finding agrees with **(Lan et al., 2009)**, who reported that overall RTI/STI knowledge was higher among married women. This could be attributed to the sensitive nature of the issue and feelings of shame among women, especially unmarried, when talking and asking questions about reproductive matters.

As regards the relationship between women's total practice score level and socio-demographic characteristics, the current also finding showed a statistical significant relation between women's total practice score level and their residence, and their age at marriage and years of marriage. This finding agrees with **Mohamed et al. (2015) & Slave et al. (2012)**, who found statistical significant relation between hygienic practices among adolescent girls and their residence. This might be explained that, married women may have higher level of awareness about proper hygienic practices in order to maintain a healthy reproductive tract that is needed in the childbearing period.

Concerning statistical correlation between women's total knowledge score level and their total practice score level, the present work findings showed a positive correlation between adequate/inadequate knowledge and satisfactory / unsatisfactory practices. Thus when knowledge improves, practice tends to be more healthy (hygienic). This result is in agreement with **Bobhate & Shrivastava (2011)**, who mentioned that significant association was observed between having good/fair knowledge and good practice regarding menstrual health.

### **Conclusion:**

Based on results of the present study, the following can be concluded:

Most common of the studied group are mean age  $25.67 \pm 2.09$  married, house wife, and are living in urban area. There is highly statistically significant differences women's total knowledge score and their marital status, age at marriage, and years of marriage. The total practice score in relation to their personal characteristics, it reveals that there was a statistical significant difference between women total practice score and their residence, age at marriage, and years of marriage in addition to highly positive significant correlation that clarifies that increase knowledge will subsequently increase practice of women regarding lower reproductive tract infection.

### **Recommendations**

**In the light of the result of the present study, the following recommendations are suggested:**

- Based on identified needs, designing and implementing relevant educational classes/programs for women having reproductive tract infection Use of appropriate educational strategies to increase women health awareness and significance of adopting healthful life style, nutrition & hygiene,.

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