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UNEXPOSED UNDERGARMENTS TO SUN A MAJOR CULPRIT IN VAGINAL INFECTIONS

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ABSTRACT

Objective: To determine the association between vaginal infections & non-exposure of undergarments to sun & unhygienic behaviours. ***Design*:** A cross-sectional study. ***Place and duration of study:*** Rehman Medical Institute (RMI), Peshawar, Khyber Pakhtunkhawa, Pakistan, from March to September, 2017. ***Methodology:*** 337 female patients presented in Gynae/Obs Dept. of Rehman Medical Institute (RMI), Peshawar, Khyber Pakhtunkhawa, Pakistan, with clinical symptoms of vaginal infections, confirmed through investigations were sampled. A consecutive sampling technique was used to sample patients. Every woman in the study was vaginally examined to measure the vaginal *pH* by using *pH* 7.0 purchased from Shaheen Chemist Peshawar, through rubbing the *pH* paper along the lateral and posterior walls of the vagina to take some discharge and clarify *pH*. More over Data was collected from patients on a designed questionnaire. Data was presented by using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. Qualitative variables were compared using non-parametric chi-square test. Statistical significance was considered at p-value <0.05. ***Results:*** This study concluded a significant association between vaginal infections and unexposed undergarments to Sun (89.2% with P<0.05). ***Conclusion:*** The most common reasons of vaginal infections are unhygienic practices & unexposed undergarments to air and sunlight. Due to unnecessary hesitation, majority of women never let their undergarments to breath in fresh air and never put them under the sunlight after every wash which leads to high rate of vaginal infections in our population.

KEYWORDS: Vaginal infections, Undergarments, Sun, Sunlight, Fresh Air, Unhygienic Behaviour.

INTRODUCTION

As a major public health problem vaginal infection causes a variety of health problems for women of different ages.[13] Vaginitis is caused by changes in the normal vaginal defence mechanisms such as vaginal flora (lactobacilli), vaginal *pH*, and vaginal squamous epithelium layer.[18] There are two major types of vaginitis, whether infectious or non-infectious. For non-infectious vaginitis, it is caused due to different reasons such as: allergy to underclothes, feminine hygiene products, vaginal douches, beauty soaps, sanitary napkins, fabric of undergarments, hormonal causes as hypoestrogenism and iatrogenic causes as in intra uterine device (IUD), pessaries, and using chemical products, traumatic by foreign body inserted into the vagina, and contact dermatitis of the vulva caused by friction from rough surfaced sanitary towels, restricted presses tight undergarments etc.[15] While infectious vaginitis which accounts for 90% of all cases of vaginal infections have a basic reason, unhygienic behaviours of women during reproductive age and it's caused by one or more of the subsequent organisms: by Candida albicans (C. albicans) as yeast, Bacterial vaginosis (BV) caused by Gardnerella vaginalis (G. vaginalis) as bacteria, and Trichomonas vaginalis (T. vaginalis) as protozoa.[24] Infection is more likely caused due to reduced acidity either endogenously by hormones or exogenously by vaginal unhygienic practices as the mal-use of soaps or douche, poor menstrual hygiene, and tissue damage, in addition, to the personal unhygienic behaviours such as never putting undergarments under sunlight after every wash, or using contaminated sanitary towels, and using irritating and tight non-absorbent underwear.[2 & 21] The recurrence of vaginal infection is defined by four or more episodes of infection in a year. This is due to bad personal hygiene practices such as, unhygienic garments, vaginal douching that disrupt the normal vaginal flora and re-infection from an untreated partner. Furthermore, the self-diagnosis and the self-treatment by women from vaginal infection episodes without confirmation of infection by microbiological tests.[4] The American social health association (ASHA, 2013) reported that 70% of women are self-treated from vaginal infections before seeking a health care provider. Usually, they mistakenly thought they are suffering from yeast infection while in fact it was BV. So, it needs to confirm the diagnosis by

microbiological tests and full sexual health screen to exclude concurrent infection.[12&17] The primary purpose of this study about vaginal infections is to provide health education to women living in eastern culture in order to modify the health behaviours and to prevent the occurrence as well as recurrence of vaginal infections. The aim of the study is to evaluate health behaviours that are associated with vaginal infections among women living in urban & rural areas of Khyber Pakhtunkhawa (KPK) Pakistan.

MATERIALS AND METHODS

A cross-sectional study on 337 female patients presented in Gynae/Obs Dept. of Rehman Medical Institute (RMI), Peshawar, Khyber Pakhtunkhawa, Pakistan, with clinical symptoms of vaginal infections, confirmed through investigations were sampled. A consecutive sampling technique was used to sample patient from March to September 2017. Most patients were from rural areas of Kyber Pakhtunkhawa. Rehman Medical Institute (RMI) is situated in the provincial capital city of KPK, where a large number of patients visit from different urban and rural areas of Khyber Pakhtunkhwa, Pakistan. Every woman in the study was vaginally examined to measure the vaginal *pH* by using *pH* 7.0 purchased from Shaheen Chemist Peshawar, through rubbing the *pH* paper along the lateral and posterior walls of the vagina to take some discharge and clarify *PH*. Two vaginal swabs were taken from the posterior vaginal fornix under aseptic technique and were sub cultured onto Macconkey, Blood Agar Plate (BAP) and Sabouraud agar.[9] The involved stains were gram, giemsa and Leishman stained. Whiff test was performed to differentiate between C. albicans from other species by using KOH, if there was strong fishy or oniony odour this indicated of BV, in addition to the wet mount technique to test the motility of trichomoniasis (5). Catalase, coagulase and germ tube tests were performed. To identify Gardnerella, samples were incubated under 5% to 10% carbon dioxide, after 48 hours colonies appeared very small (1mm), glistening 'dew- drops' with Beta haemolytic on BAP. By putting lawns on two slides of BAP, on one slide a drop of 3% H2O2 was added and to another a disc of trimethoprim was added. Gardnerella inhibited by H_2O_2 and sensitive at trimethoprim.[8] More over Data was collected from patients on a designed questionnaire. Statistics entry was done using Ms Excel. Quality management was performed at the steps of coding and data entry. Data was presented by using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables. Qualitative variables were compared using non-parametric chi-square test. Statistical significance was considered at p-value <0.05.

RESULTS

This study was conducted on 337 women with an age range from 20 to 46 years; their mean age was 32.50 ± 7.50 SD (standard deviation). 165 of them had secondary education with high percentage being house wives living in rural areas. 310 women out of 337 were married. Half of the married women had low satisfactory socio-economic standard.

Table 1 shows association between hygiene practices & vaginal infections among the studied population. It showed a noteworthy percentage of infected women according to their hygienic behaviours with an importance of hanging undergarments in the sunlight after every wash. 89.2% infected women never hang their undergarments in sunlight after every wash. (P value < 0.05 significance).

Table 1: Association Between Hygiene Practices & Vaginal Infections.

Hygienic Behaviours	Number of women replied Yes		Number of women replied No		X2	P Value
	Total	%	Total	%		
Hanging undergarments under sunlight after every wash	39	10.8	298	89.2	199.05	*
Using disposable pads	268	79.5	69	20.5	117.51	*
Washing or changing underwear daily	73	21.7	264	78.3	110.53	*
using purely cotton made undergarments	127	37.7	210	62.3	20.44	*
Cutting nails weekly	164	48.7	173	46.3	0.24	**
Taking Bath daily	59	17.5	278	82.5	142.31	*
(X2) = Chi square significance test						

(*) =Statistical significance between unhygienic behaviours and vaginal infection. P value is less than 0.05 (p<0.05)

(**) =Statistical significance between hygienically good behaviours and vaginal infection. P value is greater than 0.05

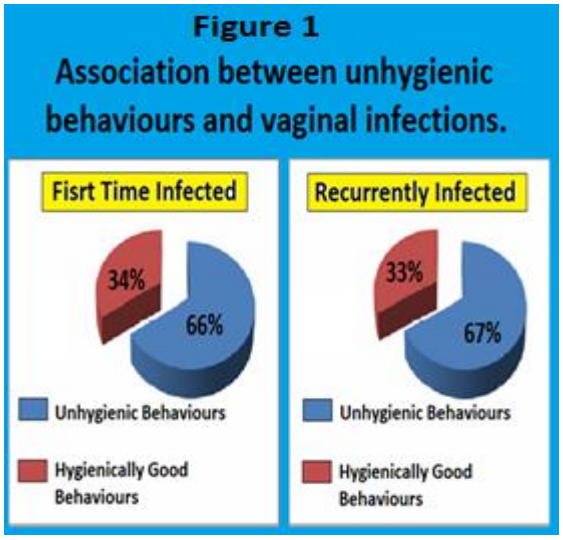

Figure 1: Shows that 66 percent of total infected women having unhygienic behaviours and 67 percent of total recurrently infected women having bad or poor hygienic behaviours.

Table 2 shows unexposed undergarments to sun & frequency of recurrent vaginal infections. 86.5% of the cases had recurrence with a rate of three times per year. 70.02% of recurrently infected women never hang undergarments in sunlight. And 11.57% used to hang undergarments under sun but always cover them with towel or some other cloth after every wash. Only 5.04% women hanging their undergarments under the sunlight after every wash.

Table 2: Unexposed Undergarments to Sun & Frequency of Recurrent Vaginal Infections.
Total recurrently infected women 292 out of 337 = 86.5%

Hanging undergarments under the sun after every wash	17	5.04% of 337
Hanging undergarments under the sun but always covered with towel or some other cloth, after wash.	39	11.57% of 337
Never hang undergarments under the sun	236	70.02% 0f 337

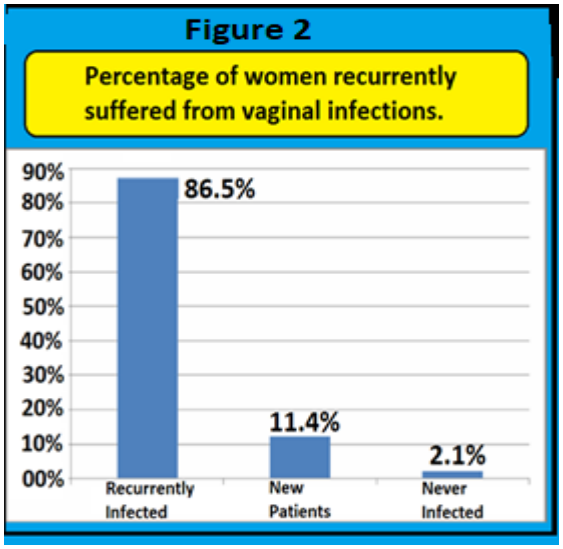

Figure 2 clearly shows percentage of women recurrently suffered from vaginal infections, A very high percentage of 86.5% women infected recurrently.

Table 3 shows an association of vaginal Infections with medication compliance. It reflected that less than two third of infected women had a treatment through medication and more than one quarter of spouses also received treatment with their wives.

Table 3: Association of Vaginal Infections with Medication Compliance.
(n=337)

Compliance to medication	**Infected cases**		**X2**	**P value**
	Cases	**%**		
Previously treated (n=337)				
Yes	281	83.4	144.92	0.000
No	56	16.4		
Used the prescribe medication (n=281)				
Yes	176	63.1	17.94	0.030
No	105	36.9		
Used other medication without medical advice. (n=107)				
Medication without prescription	55	16.3	14.12	0.001
Home remedies	52	15.4		
Treatment prescribed for spouse (n=281)				
Yes	72	25.6	66.79	0.000
No	209	74.4		
Spouse used the medication prescribed (n=72)				
Yes	50	69.4	10.88	0.001
No	22	30.6		

(X2) = Chi square significance test
(*) =Statistical significance at p<0.05
The total number of advisements not equal 100% because the of double sources of advisements

DISCUSSION, CONCLUSIONS & RECOMMENDATIONS

Vaginal infection is considered one of the major feminine health problems.[11] Women suffer from vaginal infections time to time during their reproductive lives due to their strong connection with hygienic behaviours, menstrual cycles, medicines, contraceptive methods, aging, or changes after pregnancy.[1] Regarding the effect of the sociodemographic factors on the occurrence of vaginal infections, this study describes that infection occurs at all ages especially at the age range from 20 to 40 years which is comparable to that reported with Bahram et al. (2009)[3] that the difficulty in distinguishing for the age distribution patterns of vaginal infections due to various behavioural, physiological and immunological variable interactions. For the socioeconomic values, our study found that about half of the vaginally infected ladies suffer from unsatisfactory socioeconomic standards that implicate the role of socio-economic standards in the causation of vaginal infections as the most of women were under the average in the level of nutritional status which could be correlated to the low social standards. Because the healthy diet and the good nutritional status help the body to fight against infection, to resist against the colonization of bacteria and encourage the success of the medical treatment.[10 and 2]

It was clear from our study that the majority of the studied population suffered from vaginal infections due to unhygienic behaviours, especially a high percentage of infected women admitted that they never put there under garments in sunlight, nor in open air after every wash. Furthermore, the occurrence of earlier recurrent infection was high in our study as the cause of the recurrence of infection is due to the reinfection from an untreated partner, the mal practiced handling and the experimental use of treatment without medical advice.[7] Due to strict cultural believes and because of unawareness from the importance of sunlight to kill the bacteria 89.2 percent of infected women never put their undergarments in sunlight & never let them breath in open air. On the other side we found that most of women don't know how often they need to wash their undergarments and how often they should throw them in the bin to get new ones. It is required that underwears should be washed after each wear, but you don't need to wash bras as often. Bras can be washed after about 2-3 wears. Good Housekeeping recommends replacing bras and underwear every six months to a year, and sooner if they shrink, stretch, or otherwise become uncomfortable or no longer fit properly[20]

Regarding the health behaviours, it was evident from our work that the majority of infected women didn't change their underwears daily also, some of the infected women didn't cut their nails frequently as fingernails are considered to be one of the most common areas affected by fungal and bacterial infections and can be transferred it into vagina during vaginal washing.[19] Also, it was evident from our study that the prevalence of vaginal infection was significantly high, whereas the majority of infected women had unsatisfactory health behaviours and poor socio-economic status.[3] The current study shows that the majority of the infected ladies were previously treated whereas more than one third of them didn't took prescribed medication with regimen. The blend of unhygienic practices with the empirical treatment without bacteriological identification of the causative microorganism lead to temporarily relieving the symptoms, then repeating the treatment from herself without seeking for medical advice or discontinuing the treatment due to the feeling of discomfort.

Moreover, low socioeconomic standards and poverty plays a major role on the ability of buying medications and relieving symptoms of infection.[14] Not only tight undergarments are often uncomfortable when worn for long periods of time, it's also not the healthy situation for vagina because it limits airflow. "Undergarments made by cotton are the best due to their absorbing capacity and breathability," explains Melissa Goist, MD, an ob/gyn at The Ohio State University Wexner Medical Center. "Synthetic fabrics have tendency to grasp wetness, possibly causing skin irritation". Also need to use a skin-friendly laundry detergent. Skin should be treated sensitively as possible. Hypoallergenic soaps, washing powders and detergents which are made for sensitive skin, free of dyes or perfumes," Dr. Piliang says. Also need to avoid using bleach on laundry day if your underwears are involved. "You never have to bleach your undergarments and panties," warns Dr. Piliang. "Not only does it break down the fibers of the cloth of undergarments, it can also expose skin of sensitive body parts to chemicals when it interacts with elastic that can cause an allergic reaction on skin. In addition, undergarments specially, underwear should be changed daily, particularly during menstrual periods, sweaty summer or rainy season to avoid fungal & bacterial vaginal infections. It's also important to note that undergarments, specially underwears has a shelf life: "Once the softness & elasticity is failed and they're not staying in place and causing shifting & moving around and extra rubbing, it's time to throw them out and get some new ones," Dr. Piliang says.[21]

Another important recommendation is the treatment of husbands during their wife's treatment to bound the infection and stop recurrence (CDC, 2010).[6] In our study, it was found that the treatment suggested to partners, less than two third of them didn't receive medications, because most of male persons have a false belief that there is no need to get medical treatment even if their wives are suffering from vaginal infection recurrently. Based on the conclusion of our study we found that the women visited RMI Hospital suffer from high frequency of bacterial vaginal infection with high level of reappearance, because most of them never hang their undergarments in sunshine after wash, just due to hesitation and their cultural believes. In order to improve the actual situation, we recommend to promote health

awareness programs through print & electronic media for women in order to educate them about vaginal hygienic care and importance of sun to kill bacteria, which is main cause of infections. There is also a need to educate men about their responsibility during the course of their partner's treatment. For this purpose, it's essential to organise workshops, seminars and training sessions for all OB/GYN staff regarding counselling of infected patients about prevention from recurrence of vaginal infections through giving sun bath to their undergarments and let them breath in the fresh air after every wash.

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