Risk Factors And Impacts Of Sexually Transmitted Diseases Among Adult Females In Cairo

E. A. El-Moselhy; H. O. Khalifa ; K. M. Abd-Allah; F. A. Hassan*; R. B. Atallah*; H. M. Hassan*; A. G. El-Darwish**; A. M. Ebrahim ***; A. M. Osman**** ; And M. A. Shatat*****

Departments of Community Medicine; Dermatology & Venereology[*];
Obstetrics & Gynaecology [**]; Psychiatry [***]; Microbiology[****] and Parasitology[*****]
Faculty of Medicine, Al-Azhar University.

Abstract

This study was conducted on ninety sexually transmitted disease (STD) adult female patients, attending Dermato-Venereology and Gynaecology Clinics, Al-Hussein University Hospital and an equal number of females as controls. The aim of the study was to determine sociodemographic, sexual and health care behaviours risk factors for STDs and to determine their impacts on the studied females. A retrospective, case-control, clinic based study was chosen to perform this research. Vaginal, cervical and urethral swabs and smears were taken. Also, scrapes from any suspicious lesions together with blood samples were taken from STD patients for various laboratory examinations. The most common STD was candidiasis (35.6%). Shared house and unskilled occupations were the most important sociodemographic risk markers, odds ratio (OR) =11.62 and 2.92, respectively. While, vaginal douche use and divorce were the most important gynaecological and reproductive risk factors, OR=7.16 and 4.06, respectively. Furthermore, premarital sexual practice and non-vaginal sexual practice were the most important sexual behaviours risk factors, OR=13.40 and 10.97, respectively. Also, previous infection with STDs and no partner referral were the most important health care behaviours risk factors, OR=6.45 and 4.93, respectively. Moreover, no religious obligation and drugs and/or alcohol use were the most important life style risk markers, OR=12.89 and 6.77, respectively. Lastly, history of pelvic inflammatory disease (18.9%) and pregnancy wastage (17.8%) were the most important impacts of STDs.

Introduction

Sexually transmitted diseases (STDs) are very common in most of the developing world and are among the most common causes of illnesses especially in women. However, its actual incidence is not known (Meheus and De Schryver, 1991). STDs are diseases that spread from person to another through intimate sexual contact. The reproductive tract is the most common site of infection, although, the mouth and anus may involved. There are more than 25 micro–organisms (bacteria, viruses, fungi, protozoa or arthropods) that can be sexually transmitted (Keersmaekers and Meheus, 1998 & Gerbase *et al*., 1998). The appearance of the acquired immuno-deficiency syndrome (AIDS), which is mainly STD, has led to change attitude to STDs problem (Meheus and De Chryver, 1991). The need for the control of STDs has become more urgent since they have been recognized as independent risk factors for the acquisition of AIDS (Richert *et al*., 1993 and Gertig *et al*., 1997). Moreover, some of STDs have been shown to increase the risk of transmission of AIDS by 24-fold (Laga *et al*., 1994 and Gerbase *et al*., 1998).

Political and economic conditions of the world may lead to situations that challenge the established balance between the social forces that spread STDs and those that limit their spread (Aral and Holms, 1999). In most of the world, the investment in public health development in general is

poor. Activities that limit the spread of infectious diseases in the society are in the public health sector (Thurow, 1996). Sociodemographic and health care behaviours are important risk factors in STDs epidemiology. Predominance of young adults with the highest rate of sex partners results in an increase in commercial and casual sex. Poverty has an impact on migration and prostitution. Also, risk sex and health care behaviours as low condom use are important risk factors (Brunham & Ronald, 1991; Brunham & Embree, 1992; Keersmaekers & Meheus, 1998 and Aral & Holmes, 1999).

The growing recognition of the major role, STDs play in reproductive health, infertility, pregnancy outcome and perinatal infections has added a new dimension to the STDs problem (Mabey *et al.,* 1985; Frost *et al.,* 1987 and Wasserheit & Holmes, 1992). The direct morbidity, the loss of economic productivity and long-term sequelae of STDs are equally important (Meheus and Keersmaekers, 1998). Complications, impacts and sequeale of STDs include: effect on pregnancy and the neonate (miscarriage, prematurity, congenital and neonatal infections, pelvic inflammatory disease (PID), ectopic pregnancy, infertility and cervical cancer (Braddick *et al.*, 1991 and Wasserheit, 1992).

In Egypt, data indicate that STDs are major health and social problem. Health services focus mainly on clinical cure without any preventive activities. A study conducted in Giza, revealed high preval-ence of reproductive tract infections among rural women (WHO, 2001). Another study showed that 3.0% of women attending family planning clinics, 5.35% of drug users and 4.0% of women attending antena-tal care clinics had at least one STD (WHO, 2002).

Prostitution and promiscuous relations are strictly forbidden from the Holy Quran. The Holy Quran says: "And Come Not Nigh To Adultery, For It Is Shameful And Evil Opening The Road" (S 17, V 32).

The aim of this study is to determine the sociodemographic and sex and health care behaviours risk factors for adult female patients with STDs attending Dermato-Venereology (DV) and Gynaecology Clinics (Cs), Al-Hussein University Hospital and to determine the impact of STDs on them.

Subjects And Methods

Ninety adult female patients with clinical diagnosis of STDs attending DV and Gyaenecology Cs, Al-Hussein University Hospital and an equal number of females as controls, were enrolled in this study. Controls were selected from female patients attending these clinics for reasons other than STDs and genital tract complaints. Also, virgin females were excluded. Patients and controle were screened by a standerdized questiannaire (first *et al.*, 1994) to excude psychiatic patients other than drug addicts. The entire control group were interviewed and examined, if any female of the control group had STD, she would be excluded. Both STD patients and controls were matched in age, their age range from 18 to 40 years. A retrospective, case-control, clinic based study was chosen to investigate this research problem. The purpose of the study and procedures to be performed were explained to both STD patients and controls. Informed consent of both of them was given. Patients and controls underwent a standardized complete pelvic examinations, speculum and bimanual. Attention was given to inflammation of the vulva, vagina and cervix, abnormal characteristics of vaginal discharge (increase amount, abnormal odour or yellow colour and consistency) and abnormal cervical, uterine and adnexal tenderness. Vaginal, cervical and urethral swabs were taken. Also, smears, swabs from any suspicious lesions together with blood samples were obtained from STD patients for various microbiological and serological investigations according to Brooks *et al*. (1998). Patients were routinely screened by microscopy for candidiasis, trichomoniasis, molluscum contagiosum and gonorrhoea, as well as for bacterial vaginosis. For patients with clinical diagnosis of cervical infection, microscopical examination for Gram-stained smears of cervical discharge was done. Also, swabs of cervical discharge were immediately plated on Thayer Martin

agar and incubated at $35^{o}C$ in 5% CO_2 for gonorrhoea and on blood agar at $37^{o}C$ for other bacterial pathogens. Growth on Thayer Martin agar was examined for Gram-negative dipliococci and fully identified by oxidase and sugar ferment-ation tests. While, growth on blood agar plates was identified by colonial morpho-logy, Gram-stain, coagulase test, catalase test and ability to grow on a bile salt agar for Gram-positive cocci and sugar ferme-ntation tests were performed for Gram-negative bacilli. Sera from patients with negative microscopical and culture results were examined for gonococcal antigens using ELISA technique. Lastly, cases of non-specific, non-bacterial cervicitis were examined for chlamydial infection by direct staining with flourescin-conjugated specific monoclonal antibodies. In cases of candediasis, direct Gram-stained smear was examined for Gram-positive budding yeasts of Candida albicans with further identi-fication by culture on Sabaroud's agar and germ tube test. T vaginalis (TV) was detected by wet mount and/or by culture using in pouch TV. Bacterial vaginosis was detected by quantitative morphology of Gram stained slides based on Nugent's criteria (Nugent et al., 1991). In case of primary syphilis, diagnosis was done by dark field or phase-contrast examination of exudates of lesion. While, in case of secon-dary syphilis, diagnosis was done by serolo-gical test, the rapid plasma reagin test, positive test was confirmed by Treponema pallidum haemagglutination test.

Genital herpes (GH) was clinically diagnosed by characteristic vesicular lesions, either with or without erosion or ulceration. Also, genital warts (GW) and molluscum contagiosum (MC) were diagn-osed clinically. Scabies and pediculosis were, also, diagnosed clinically. A positive past-history of sexual contact was a basic prerequisite to determine a sexually nature of transmission of these infestations. Scabies was confirmed microscopically by examination of scarped materials from infected areas of the skin (papules) according to Garcia and Bruckner (2001). As regard pediculosis pubis, pubic hair was carefully and closely examined by a hand lens to check for an infestation with adult lice or mites. In cases of PID, diagnosis was made when cervical, uterine and/or adnexal tenderness was present, and cervical muco-pus was seen. Patient was considered infer-tile if she reported that she wanted child or more, was trying to conceive and had had unprotected intercourse for more than 1 year.

Lastly, both STD patients and control group were submitted to an interview to answer questions relevant to topic of the study. Odds ratio (OR) with 95% confi-dence interval (CI) or exact confidence limits (ECL) and chi-square (χ^2) were used as tests of significance. The significance level for χ^2 was accepted if the P-value ≤ 0.05.

Results And Discussion

In this study (table 1), 35.6% of our STD patients had pure fungal infection (candidiasis), 21.1% had viral infections (10.0% GW, 6.7% GH and 4.4% MC), 16.6% had bacterial infections (8.9% BV, 3.3% gonococcal cervicitis, 2.2% syphilis and 2.2% non-gonococcal cervicitis), 13.3% had parasitic infestations (10.0% scabies and 3.3% pediculosis pubis) and 6.7% had mixed vaginitis (fungal and protozoal infections). Blankhart et al. (1999) and Garg et al. (2002) observed that 46.6% and 19.0% of their patients respectively had candidiasis. Oriel and Walker (1990) stated that genital warts are very common among sexually active people. Also, Csonka (1990) stated that scabies is a very common infectious dise-ase, more prevalent among low socioe-conomic population, as our patients, in presence of factors aiding, the spread of scabies as overcrowding, poor hygiene and sexual promiscuity. Also, these STDs could be considered non-STDs from patient's point of view, so, patients presented in clinic in big numbers with no fear of STDs stigma. As regard bacterial vaginosis, Blankhart *et al*. (1999); Behets *et al*. (2001); Claeys *et al*. (2001) and Garg *et al*. (2002) found that 29.1%, 53.0%, 32.5% and 41.0% of their patients respectively had bacterial vaginosis. Also, Blankhart *et al*.

(1999); Behets *et al.* (2001); Claeys *et al.* (2001) and Garg *et al.* (2002) observed that 9.9%, 24.0%, 7.1% and 4.0% of their samples respectively had trichomoniasis. As regard gonorrhoea, Behets *et al.* (2001 and 2002) found high prevalence of gonococcal cervicitis, 13.0% and 17.0%, respectively. While, Bogaerts *et al.* (2001); Claeys *et al.* (2001) and Clift *et al.* (2003) found that 0.5%, 2.8% and 4.0%, respectively. These figures difference could be explained, the smallest figures (0.5% and 2.8%) were found among married and general population of females. While, the high figures could be attributed to differences between the two communities. Our figure was closed to Claeys *et al.* (2001). While, Esquivel *et al.* (2003) and Mak *et al.* (2005) demonstrated that 12.4% and 7.4% of their patients respectively had chlamydia; this high figure is accepted as it represents a serodiagnosis. Also, Behets *et al.* (2001) observed that 16.0% and 16.0% of their patients had gonococcal and chlamydial cervicitis, respectively. As regard syphilis, Blankhart *et al.* (1999); Behets *et al*. (2001); Bogaerts *et al.* (2001); Claeys *et al.* (2001) and Clift *et al.* (2003) found that 6.7%, 4.0%, 2.9%, 2.2% and 24.0% of their samples respectively had syphilis. The highest figure (24.0%) could be accepted as the sample represent female sex workers. In Egypt, WHO (2001) stated that recent data show an increase in the incidence of syphilis. Also, we observed that 6.7% of our STD patients had genital herpes. This figure was smaller than these of Gottlieb *et al.* (2002); Xu *et al*. (2002) and Dan et al. (2003) who reported 52.0%, 13.2% and 13.3%, respectively. These high figures could be accepted as they represent seroprevalences.

As regard sociodemographic factors (table 2), 71.1% of our STD patients were illiterate or read and write (OR=1.94, 95% CI: 1.04-3.63). This was agreed with Gottlieb *et al*. (2002) who showed that the lowest educational level group among their herpes simplex virus (HSV) had the highest risk (OR=1.8, 95% CI: 1.5-2.2). Also, we found that secondary and university educations were risk for acquiring STDs (OR=2.12, 95% CI: 0.54-8.66). While,

Gottlieb *et al.* (2002) reported that university education was protective for their group of HSV. Also, unskilled occupation was present among 80.0% and 57.8% of our STD patients and controls, respectively (OR=2.92,95% CI: 1.43-6.01). Collectively, we reported that 75.5% of our STD patients were belonging to low social class (OR=1.86, 95% CI: 0.99-3.50). Socioeconomic status had direct and indirect effects on health promotion and health services provision (Aral and Holmes, 1999). Our result was in consistent with Xu et al. (2002) who reported high prevalence of HSV among group belongs to below poverty index and among minorities. While, Gottlieb et al. (2002) did not found that risk as regard income, but, they found more prevalence of HSV among minorities (OR=2.1, 95% CI: 1.8-2.5). Also, Amo et al. (2005) did not found risk as regard prevalence of STDs among minorities and migrants. Among low social class, poor standards of hygiene could be representing another possible non-sexually acquired aetiology of some STDs, such as candidiasis, trichomoniasis, scabies and pediculosis (Osoba, 1981). Lastly, we observed that shared house and water closet (WC), carried a risk marker for STDs acquisition (OR=11.62, 95% CI: 5.48-25.11). The social conditions in most developing societies were already fueling the spread of STDs (Aral and Holmes, 1999). This could be explained, shared house had an effect on sexual mixing, family cannot exert a conservative influence on individual social (including sexual) behaviour (Gillmore *et al*., 1999). Also, shared house could be indicate on low social class and urbanization and again, resulted in an increase in commercial and non-commercial casual sex and spread of STDs (Meheus and De Schryver, 1991; Keersmaekers and Meheus, 1998; Lopez-Velez et al., 2003 and Amo *et al*., 2005). Also, shared WC, could indicate on cross infection (a non sexually acquired aetiology) for some STDs, as candidiasis and trichomoniasis.

In this study (table 3), our results revealed that unmarried women (formerly married, i.e., divorced and widow) were at risk for acquiring STDs (OR=4.13, 95% CI:

1.90-9.10; 4.06, 95% CI: 1.68-10.06 and 2.39, 95% CI: 0.64-9.64, respectively). Binson *et al*. (1993) reported a higher figure of unmarried, this perhaps due to small age of their group. While, our finding was confirmed by Aral & Holmes (1999) and Abdullah *et al*. (2002), who considered unmarried status as a risk marker for STDs. We may suspect that married women had their own sexual partners (husbands). On the other hand, divorced and widow may engaged in casual relations. Regarding age at menarche <13 years, was found among 60.0% of our STD patients compared with 45.6% among controls (OR=1.79, 95% CI: 0.95-3.39). Berman and Hein (1999) stated that the average age at menarche has decreased. On the other hand, 25.6% of our STD patients found to be married before age 20 years, compared with 17.8% of controls (OR=1.95, 95% CI: 0.73-4.24). Moreover, 23.3% of our STD patients married by age ≥26 years compared with 24.4% among the controls (OR=0.94, 95% CI: 0.45-1.97). Also, we cleared that 45.6% versus 32.2% of our STD patients and control group respectively had an interval ≥7 year between initiating sexual practice and marriage (OR=1.76, 95% CI: 0.92-3.38). So, we can conclude that >13 years passed from age at sexual maturation tell age of marriage. Sociocultural and behavioural changes have combined with changes in developmental physiology of adolescents led to increase the risk of STDs (Berman and Hein, 1999). Also, Forrest (1993) agreed and stated that societal changes have resulted increases in the average age at which young women married. The interval between menarche and marriage has increased from 8 years to 14. Also, we observed that age at first pregnancy <20 years and ≥26 years were risk factors (OR=1.5, 95% CI: 0.65-3.45 and 1.75, 95% CI: 0.84-3.66, respectively). Moreover, number of lifetime pregnancies, 0 and ≥3 found to be risk factors for STDs acquisition (OR=2.12, 95% CI: 0.32 -17.20 and 1.59, 95% CI: 0.82-3.10, respectively). On the other hand, our results revealed that currently pregnant present protection (OR=0.35, 95% CI: 0.10-1.11). This could be accepted, pregnancy tend to decrease

sexual activities. Collectively, contraceptive using found to be a risk factor for STDs acquisition (OR=1.31, 95% CI: 0.70- 2.45). In details, intra uterine device (IUD) and oral contraceptive users, found to have similar risk (OR=1.28 and 1.10, respectively). Kirkman and Chantler (1993) stated that contraceptives alter in various ways the risk for acquiring STDs. IUD increase the risk of lower tract infections, as trichomoniasis and syphilis. There is an accepted biological explanation, IUD facilitate infection by mechanical means. On the other hand, Evans *et al*. (1993) showed that IUDs had protective effect against chlamydial infection by enhancing local immunity, recognized as foreign body, or by reducing the epithelial surface susceptible to infection through accelerating squamous metaplasia of columnar epithelium. Again, Kirkman and Chantler (1993) cleared that hormonal contraceptive gives protection to upper genital tract but not to the cervix. Also, Kirkman and Chantler (1993); Shoubnikova *et al*. (1997) and Rizk *et al*. (2003) noticed a lower prevalence of bacterial vaginosis among oral contraceptive users. Lastly, vaginal douche use, found to be a risk factor for STDs (OR=7.16, 95% CI: 2.91-18.15). Our finding was agreed with Claudia et al. (2001) and Rizk *et al*. (2003) who reported 36.0% and 38.2% respectively, close to our figure, 41.1%.

In this study (table 4) our results showed that 35.5% of our STD patients initiating sexual practice ≤20 years old compared with 21.1% of the controls (OR=2.06, 95% CI: 1.01-4.24). This was in accordance with Hunt (1974); Zelnik & Kantner's (1980); Laumann et al. (1992); Leigh *et al*. (1994); Centers for Disease Control and Prevention (1995); Aral & Holmes (1999); Berman & Hein (1999); Gottlieb *et al*. (2002); Xu *et al*. (2002) and Dimitry-Abraham *et al*. (2003). Hunt (1974); Leigh *et al*. (1994) and Centers for Disease Control and Prevention (1995) showed that age of first intercourse has steadily decreased. By age 14, only 3.0% of females were sexually experienced, by age 15, 26.0% of females were sexually experienced, by age 18, 56.0% of females

were sexually experienced and by age 25, about 66.6% of females were sexually experienced. Moreover, 94.0% of women ages 18 to 24 said that they had had vaginal intercourse (Laumann et al., 1992). These high figures could be explained, much of sexual relationships freedom in western countries and increase age of marriage. Furthermore, because of low marriage rate at these ages, most of this represents premarital sex (Gillmore et al., 1999). Also, we observed that 56.7% of STD patients had premarital sexual practice (OR=13.40, 95% CI: 5.46-34.10). The increase over time in premarital intercourse has been documented, this was confirmed by Zelnik and Kantner's (1980); Pratt *et al.* (1984) and Gillmore *et al.* (1999) who reported 44.1% to 51.5%. So, changes in sexual behaviour have placed females at increased risk for STDs with the trend to earlier age at first intercourse occurring worldwide (Friedman, 1992). It should be expected that premarital sex in the US has increased (Forrest, 1993), 94.0% of 18 to 24 years old American females had had sex (Laumann, 1994 and Aral & Holmes, 1999). The rise in premarital sexual activities were enabled in part by the technological advances of birth control, by the development of the modern women's liberation movement and by the social conditions and ideologies that promoted later marriage, women's entry into the labour force and a high divorce rate. Continuing late age at first marriage and the recycling of divorced people back into dating at various times in their lives mean that sex outside of marriage is likely to continue long into the foreseeable. On the other hand, there is no indication that values about extramarital sex are becoming more permissive, so whatever nonmonogamy occurs will probably continue to be clandestine. The real problem female's pose, in terms, social and public health concerns, is their failure to protect themselves against unwanted pregnancy and STDs (Gillmore *et al.*, 1999). Regarding sexual practice with symptomatic partner, 30.0% and 6.7% of our STD patients and controls respectively practiced with symptomatic sexual partners (OR=6.00, 95% ECL: 2.23-18.69). Also, 26.7% and 3.3% of our STD

patients and controls respectively were sexually practiced when they symptomatic (OR=10.55, 95% ECL: 2.98-56.37). This could be explained, many contributing factors as low socioeconomic standard, lack of health information's, lack of access to health care and bad sexual behaviour practice. As regard type of sexual practice (table 4) we found that non-vaginal practice was risk for STDs acquisition (OR=10.97, 95% CI: 2.48-99.32). While, vaginal practice represents protection (OR=0.36, 95% CI: 0.16-0.78). This could be explained, good proportion of STDs found among our patients did not need vaginal intercourse to transmit (scabies and pediculosis). As regard non-vaginal sexual practice (oral, coitus interfemoris and anal) there has been some suggestion that women may be used this practice as means of contraception or it may be a way to remain a technical virgin. Gillmore *et al.* (1999) stated that vaginal sex is the single most common form (80.0%) of sexual intercourse. Oral sex has become a common feature of sexual practice, while, anal sex, as a regular part of married sexuality remains relatively rare. However, non-vaginal sex was more common in short-term and extramarital relationships. About 60.0% of females report having experienced oral sex, rates of oral sex were comparable for formerly married women. Also, 20.0% of females report having anal sex at sometime in their lives and about 10.0% of women reported having anal sex in the past year (Laumann *et al.*, 1992). This represents a large number of women potentially at risk of contracting HIV and other rectally transmitted STDs (Gillmore *et al.*, 1999). As regard frequency of sexual intercourse per week, 56.7% and 67.8% of STD patients and control group respectively had 1-2 time intercourse per week (OR=0.62, 95% CI: 0.32-1.19). While, 24.4% and 20.0% of STD patients and controls respectively had ≥3 time intercourse per week (OR=1.29, 95% CI: 0.60-2.78), this might be explained, 85.6% of control group were married i.e. more chance to make sexual intercourse. Laumann *et al.* (1994) reported that about one third of females had vaginal intercourse 2 to 3 times a week. As regard number of

sexual partners in last 3 months, there was one sexual partner among 90.0% of STD patients versus 87.8% among controls (OR=1.52, 95% CI: 0.57-4.12). Of particular note, all married females of controls had only one sexual partner; Leigh *et al*. (1993) and Laumann *et al*. (1994) supported our results. On the other hand, there were two or more partners for 4.4% of the STD patients versus 0.0% for controls. This was in consistent with Brunham and Ronald (1991); Binson *et al*. (1993); Laumann et al. (1994) and Latkin *et al*. (1994) who reported multiple sexual partners in the last 3 months. Regarding number of lifetime sexual partners, 28.9% and 4.4% of STD patients and controls respectively had two-lifetime sexual partner (OR= 8.73, 95%, ECL: 2.80-35.76). While, 12.2% and 3.3% of STD patients and controls respectively had ≥3 lifetime sexual partners (OR=4.04, 95% ECL: 1.01-23.19). This was in accordance to Gottlieb *et al*. (2002) and Xu *et al*. (2002). As regard exchange sex for money/gifts, 23.3% and 3.3% of STD patients and controls respectively exchange sex for money/gifts (OR=8.83, 95% ECL: 2.46-47.59). This was in accordance with Carael et al. (1991); Latkin *et al*. (1994); Keersmaekers & Meheus (1998); Ryan *et al*. (1998); Aral & Holmes (1999) and Abdullah *et al*. (2002) who reported 2.0%-63.0%. Commercial sex has been most common in settings characterized by poverty and social disintegration and it has clearly a major role in the epidemiology of STDs in many developing countries (Keersmaekers & Meheus, 1998 and Aral & Holmes, 1999).

As regard partner use of condom (table 5), 75.6%, 21.1% and 3.3% of our STD patient's partners never, sometimes and ever used condom, respectively. On the other hand, 84.4%, 15.6% and 0.0% of controls never, sometimes and ever used condom, respectively (OR=0.57, 95% CI: 0.25 -1.27; 1.45, 95% CI: 0.64-3.33 and undefined, respectively). This could be explained, in developing countries where prevalence of condom use is generally low (Gertig *et al*., 1997), condom is not a popular method neither for contraception nor protection, as in Egypt. In this study, it

is used mostly by husbands already have STDs, or their wife's have, or as a female request who do not want get pregnant or by individuals who do not want their sexual partners get pregnant in their casual relationships. Kegeles (1988) cleared that female over-estimating the resistance and negative attitude that males have about condom use. Also, Overby and Kegeles (1994) showed that females often feel that they have little or no risk of acquiring STDs. Moreover, Guttmacher et al. (1995) cleared that embarrassment about purchasing condoms may be a particular obstacle for females. Aral and Holmes (1999) stated that use of condom diminished over the duration of a relationship and a major concern, however, is the belief that partners, particularly steady partners, would view the request to use a condom as indicating a lack of trust. Conversely, if the request for used is made by the male, the female may assume he is dating outside the relationship. Our results were concord by Potter and Anderson (1993); Binson *et al*. (1993); Zenilman *et al*. (1995); Berman & Hein (1999); Radcliffe *et al*. (2001); Abdullah *et al*. (2002) and Dimitry-Abraham *et al*. (2003). Potter and Anderson (1993) found that 31.0% of their women's partners used condoms. Also, Dimitry-Abraham *et al*. (2003) claimed that 22.6% of their sample used condom. As regard previous infection with STDs, we reported that 23.3% and 4.4% of STD patients and controls respectively had previous STDs infection (OR =6.54, 95% ECL: 2.05-27.19). Gottlieb *et al*. (2003) found similar risk. While, early consultation for diagnosis and treatment not found among 17.8% and 8.9% of STD patients and controls, respectively (OR=2.22, 95% CI: 0.83-6.04). Laga (1995) and Mohebbi (2005) stated that in many countries STDs treatment for females is seen in the most stigmatizing terms, while, unmarried females are too ashamed to access care, where needed treatment can obtained. Aral & Holmes (1999); Aral & Wasserheit (1999) and Mohebbi (2005) stated that data suggested that the stigma concerning STDs may act as a barrier to prompt health care seeking or perhaps related to issues of confidentiality

or seeking to care symptoms through self-treatment. Thus, females may bear silently the symptoms of genital infections without seeking any health care (Ryan *et al.,* 1998). Moreover, females were not informed about STDs symptoms, Barbin *et al.* (1995) found that 90.0% of females had untreated symptoms such as discharge and irritation that warned care but which the females accepted as normal. Adler (1996) and Ryan *et al.* (1998) emphasized the importance of tracing the contacts of STDs patients and the integration of STD control services into health facilities that women use. These facilities include primary health care centers, general hospitals outpatient clinics, maternal and child health centers and family planning centers. Where a broader concern for reproductive tract infections may be preferable than the more narrow focus on STDs, because the former creates less of a stigma and reflects a more comprehensive approach to women's needs for reproductive health services. On the other hand, compliance with therapy for STDs not found among 23.8% and 0.0% of STD patients and controls, respectively. This was in accordance with Brookoff (1994) and Aral & Wasserheit (1999). Studies suggest that extra efforts on the part of providers can greatly improve compliance. Having convenient and effective treatment regimens can help (Friedman & Litt 1987 and Haddix *et al.,* 1995). Lastly, regarding partner referral, 60.0% and 23.3% of our STD patients and controls respectively not referred their partners (OR=4.93, 95% CI: 2.47-9.92). This could be explained, casual relationships, STDs stigma, self-treatment or confidentiality (Aral and Wasserheit, 1999).

As regard religious obligation (table 6), 90.0% of STD patients were not religiously obliged versus 41.1% of the controls (OR=12.89, 95% CI: 5.43-31.50). This was confirmed by Bearman & Bruckner (2001) and Abdullah *et al.* (2002). Religious obligation is important in abstain from sex until marriage. In Egypt, religious and cultural norms forbid premarital and extramarital sex, they are completely unaccepted for women. On the other hand, smoking was found among 18.9% and 4.4% of STD patients and controls, respectively (OR=5.01, 95% CI: 1.53-21.19). This was in accordance with Abdullah *et al.* (2002). Also, drugs and/or alcohol dependency were reported among 13.3% and 2.2% of STD patients and controls, respectively (OR=6.77, 95% ECL: 1.43-63.57). This was in consistent with Zenilman *et al.* (1994); Abdullah et al. (2002); Crosby *et al.* (2003) and David & Tang (2003). These researchers concluded that alcohol and drugs were associated with risky sexual behaviour and would increase the risk for acquiring STDs. Exclusion of disinhibeted mentally ill patient was useful in excluding drug addicts with dual diagnosis. The exclusion covered axis I only, so history of detention or adjudication were found among 6.7% and 1.1% of STD patients and controls, respectively (OR= 6.36, 95% ECL: 0.74-295.63). This was confirmed by Crosby et al. (2003) and David & Tang (2003) who showed that adjudication increase the risk for STDs acquisition.

In this study (table 7), 16 (17.8%) and 3 (3.3%) of our STD patients and controls respectively had a history of pregnancy wastage, with a statistically significant difference (P=0.001). This was in consistent with Schulz et al. (1986). Regarding ectopic pregnancy, 7 (7.8%) and 1 (1.1%) of STD patients and controls respectively had a history of ectopic pregnancy, with a statistically significant difference (P=0.029). Regarding history of maternal infection, 11 (12.2%) and 3 (3.3%) of STD patients and controls respectively had a positive history, with a statistically significant difference (P=0.025). This was in consistent with Plummer et al. (1987). Regarding history of PID, 17 (18.9%) and 4 (4.4%) of STD patients and controls respectively had a positive history, with a statistically significant difference (P=0.002). This was in consistent with Frost *et al.* (1987) and Berman & Hein (1999). Regarding history of infertility, 8 (8.9%) and 2 (2.2%) of STD patients and controls respectively had a positive history, with a statistically significant difference (P=0.050). STDs and PID can lead to infertility in women due to post infection tubal obstruction. Rate of bilateral tubal

obstruction is 3 times higher in Africa than in the world, the most important infections are chlamydia and gonorrhoea (Mabey *et al.*, 1985 and Meheus & De Schryver, 1991). Lastly, a history of complications among infants, were found among 5 (5.6%) and 1 (1.1%) of STD patients and controls respectively, with a non-statistically significant difference (P=0.096). This was in accordance with Datta *et al.* (1988).

In this study (Table 8), practice with symptomatic partner found among 20.8% and 43.2% of married and unmarried (divorced or widow) STD patients respectively, the difference was statistically significant (P=0.021). Also, 11.3% and 48.7% of married and unmarried STD patients practiced when they were symptomatic, the difference was statistically significant (P=0.000). These figures and previously mentioned figures could be explained, lower figures among married because of trust and care among married couples. While, higher figures among divorced and widow represent casual relationships and/or exchange sex for money or gifts. At the same time, 13.2% and 37.8% of our STD patients who had previous infections with STDs were married and unmarried respectively, the difference was statistically significant (P=0.006). This could be explained, sexual relationships for unmarried females were casual or commercial sex with high risk for STDs acquisition. As regard type of sexual practice of married and unmarried females, we claimed that 92.4% of married STD patients their type of sexual practice was vaginal. Laumann *et al.* (1994) confirmed our result and said that vaginal intercourse is the most common form (80.0%) of the sexual expression among married couples. On the other hand, 40.5% of unmarried STD patients their type of sexual practice was non-vaginal and this could be explained, as a method of contraception, casual sex with no trust or low price commercial sex. As regard partner use of condom, 92.4% of married STD patients their partner's never used condom. While, 40.5% of unmarried STD patients their partner's sometimes used condom. Regarding number of sexual partners in the last 3 months, 98.1% and

78.4% of our STD patients who had one partner were married and unmarried, respectively. Also, 1.9% and 8.1% of STD patients who had ≥2 partners were married and unmarried, respectively. Hunt (1974) said that divorced women had a median of 4 partners per year. Also, our results revealed that 88.6% and 16.2% of STD patients who had only one-lifetime sexual partners were married and unmarried, respectively. While, 7.6% and 59.5% of those who had 2 lifetime sexual partners were married and unmarried, respectively. Lastly, 3.8% and 24.3% of those who had ≥ 3 sexual partners were married and unmarried, respectively. All previously mentioned differences were statistically significant. These results could be explained, widow and divorced women with no free regular sexual partner tend to look for casual and commercial sex i.e. increase number of lifetime sexual partners. Lastly, 1.9% and 54.1% of our married and unmarried STD patients make sex for money or gifts respectively, the difference was statistically significant. These results are understood as married patients have a free and regular sexual partner.

It could be concluded that STDs are an important health and social problem. Unskilled occupation, divorce and live in shared house are important risk markers. Practice when symptomatic and premarital sex are important sexual behaviour risk factors. Also, no partner referral is an important health care behaviour risk factor. Lastly, drugs and/or alcohol use and no religious obligation are the most important life style risks markers. Identification of these risks will help in prevention of STDs. It could be recommended that more work should be carried out on big number of population to understand the true epidemiology and situation of STDs in Egypt and to doubling of efforts to address vulnerable and high-risk groups. Also, the need for a strong national STD prevention and control strategy, tracing the contacts of STDs patients, the integration of STDs control services into health facilities that women use and a comprehensive approach to women's needs for reproductive health services.

Table (1): Distribution of STDs among the studied female sample.

Type of STDs	No. (n=90)	%
Candidiasis	32	35.6
Genital warts (GW)	9	10.0
Genital scabies	9	10.0
Bacterial vaginosis (BV)	8	8.9
Pelvic inflammatory disease (PID)	7	7.8
Genital herpes (GH)	6	6.7
Trichomoniasis	6	6.7
Mixed vaginitis	6	6.7
Molluscum contagiosum (MC)	4	4.4
Pediculosis pubis	3	3.3
Gonococcal cervicitis	3	3.3
Syphilis	2	2.2
Non-gonococcal cervicitis	2	2.2

Table (2): Distribution of STD patients and control group according to their sociodemographic risk factors.

Sociodemographic risk factors	STD patients		Controls		OR (95% CI)
	No.	%	No.	%	
Educational level:					
Illiterate, read & write	64	71.1	43	47.8	1.94 (1.04-3.63)
Elementary	18	20.0	29	32.2	0.53 (0.25-1.09)
Secondary & university	8	8.9	18	20.0	2.12 (0.54-8.66)
Occupation Level:					
Unskilled	72	80.0	52	57.8	2.92 (1.43-6.01)
Semi-skilled & skilled	14	15.6	25	27.8	0.48 (0.22-1.06)
Professional	4	4.4	13	14.4	0.28 (0.07-0.96)
Social class:					
Low	68	75.5	48	53.3	1.86 (0.99-3.50)
Middle	16	17.8	27	30.0	0.50 (0.23-1.08)
High	6	6.7	15	16.7	0.42 (0.14-1.27)
Residence status:					
Shared house & WC	67	74.4	18	20.0	11.62 (5.48-25.11)
Independent house & WC	23	25.6	72	80.0	0.09 (0.04-0.18)

Table (3): Distribution of STD patients and control group according to their gynaecological and reproductive history risk factors.

Gynaecological & reproductive history risk factors	STD patients		Controls		OR (95% CI)
	No.	%	No.	%	
Marital status:					
Married	53	58.9	77	85.6	0.24 (0.11-0.53)
Unmarried:	37	41.1	13	14.4	4.13 (1.90-9.10)
Divorced	28	31.1	9	10.0	4.06 (1.68-10.06)
Widow	9	10.0	4	4.4	2.39 (0.64-9.64)
Age at menarche:					
< 13 years	54	60.0	41	45.6	1.79 (0.95-3.39)
≥ 13 years	36	40.0	49	54.4	
Age at marriage:					
< 20 years	23	25.6	16	17.8	1.95 (0.73-4.24)
20-25 years	46	51.1	52	57.8	0.76 (0.41-1.43)
≥ 26 years	21	23.3	22	24.4	0.94 (0.45-1.97)
Time between sexual maturation and marriage:					
≥ 7 years	41	45.6	29	32.2	1.76 (0.92-3.38)
Age at first pregnancy:	n=86		n=88		
<20 years	19	22.1	14	15.9	1.50 (0.65-3.45)
20-25 years	39	45.3	55	62.5	0.50 (0.26-0.95)
>26 years	28	32.6	19	21.6	1.75 (0.84-3.66)
Number of lifetime pregnancies:	n=82		n=88		
0	4	4.9	2	2.3	2.12 (0.32-17.20)
1-2	41	50.0	56	63.6	0.57 (0.30-1.10)
≥ 3	37	45.1	30	34.1	1.59 (0.82-3.10)
Currently pregnant:					
Yes	5	5.6	13	14.4	0.35 (0.10-1.11)
Current contraceptive use:					
Yes:	46	51.1	40	44.4	1.31 (0.70-2.45)
Intra uterine device (IUD)	34	37.8	29	32.2	1.28 (0.66-2.47)
Oral contraceptive	12	13.3	11	12.2	1.10 (0.42-2.88)
Vaginal douching use:					
Yes	37	41.1	8	8.9	7.16 (2.91-18.15)

Table (4): Distribution of STD patients and control group according to their sexual behaviour risk factors.

Sexual behaviour risk factors	STD patients		Controls		OR (95% CI)
	No.	%	No.	%	
Age at initiating sexual practice:					
≤ 20 years	32	35.5	19	21.1	2.06 (1.01-4.24)
21-25 years	51	56.7	46	51.1	1.25 (0.67-2.35)
≥ 26 years	7	7.8	25	27.8	0.22 (0.08-0.28)
Premarital sexual practice:					
Yes	51	56.7	8	8.9	13.40 (5.46-34.10)
Practice with symptomatic partner:					
Yes	27	30.0	6	6.7	6.00 (2.23-18.69)*
Practice when symptomatic:					
Yes	24	26.7	3	3.3	10.55 (2.98-56.37)*
Type of sexual practice:					
No practice	10	11.1	11	12.2	0.90 (0.33-2.43)
Vaginal	61	67.8	77	85.6	0.36 (0.16-0.78)
Non vaginal (oral/anal/interfemoris)	19	21.1	2	2.2	10.97 (2.48-99.32)*
Frequency of intercourse/week:					
0	17	18.9	11	12.2	1.67 (0.69-4.12)
1-2	51	56.7	61	67.8	0.62 (0.32-1.19)
≥ 3	22	24.4	18	20.0	1.29 (0.60-2.78)
No. of sexual partners in last 3 months:					
0	5	5.6	11	12.2	0.35 (0.09-1.11)*
1	81	90.0	79	87.8	1.52 (0.57-4.12)
≥ 2	4	4.4	0	0.0	----------------**
No. of lifetime sexual partners:					
1	53	58.9	83	92.3	0.12 (0.05-0.31)
2	26	28.9	4	4.4	8.73 (2.80-35.76)*
≥ 3	11	12.2	3	3.3	4.04 (1.01-23-19)*
Exchange sex for money and/or gifts:					
Yes	21	23.3	3	3.3	8.83 (2.46-47.59)*

* Exact confidence limits

** Undefined: odds ratio cannot be calculated due to control group = 0.

Table (5): Distribution of STD patients and control group according to their health care behaviour risk factors.

Health care behaviour risk factors	STD patients		Controls		OR (95% CI)
	No.	%	No.	%	
Your partner use condom:					
Never	68	75.6	76	84.4	0.57 (0.25-1.27)
Sometimes	19	21.1	14	15.6	1.45 (0.64-3.33)
Ever	3	3.3	0	0.0	--------------**
Previous infection with STDs:					
Yes	21	23.3	4	4.4	6.45(2.05-27.19)*
No	69	76.7	86	95.6	0.15 (0.04-0.49)*
Early consultation for diagnosis and treatment of STDs:					
Yes	74	82.2	82	91.1	0.45 (0.17-1.20)
No	16	17.8	8	8.9	2.22 (0.83-6.04)
Compliance with STDs therapy:	n = 21		n = 4		
Yes	16	76.2	4	100.0	0.00 (0.00-6.63)*
No	5	23.8	0	0.0	--------------**
Partner referral for therapy:					
Yes	36	40.0	69	76.7	0.20 (0.10-0.41)
No	54	60.0	21	23.3	4.93 (2.47-9.92)

* Exact confidence limits

** Undefined: odds ratio cannot be calculated due to control group = 0

Table (6): Distribution of STD patients and control group according to their life style markers.

Life style risk markers	STD patients		Controls		OR (95% CI)
	No.	%	No.	%	
Religious obliged:					
Yes	9	10.0	53	58.9	0.08 (0.03-0.18)
No	81	90.0	37	41.1	12.89 (5.43-31.50)
Smoking habit:					
Yes	17	18.9	4	4.4	5.01 (1.53-21.19)
No	73	81.1	86	95.6	0.20 (0.05-0.65)*
Drugs and/or alcohol dependency:					
Yes	12	13.3	2	2.2	6.77 (1.43-63.57)*
No	78	86.7	88	97.8	0.15 (0.02-0.70)*
History of detention /adjudication:					
Yes	6	6.7	1	1.1	6.36 (0.74-295.63)*
No	84	93.3	89	98.9	0.16 (0.00-1.35)*

* Exact confidence limits

Table (7): Distribution of STD patients and control group according to STDs impacts.

STDs impacts	STD patients		Controls		χ^2	P-Value
	No.	%	No.	%		
History of pregnancy wastage:						
Yes	16	17.8	3	3.3	9.94	0.001
History of ectopic pregnancy:						
Yes	7	7.8	1	1.1	4.71	0.029
History of maternal infections:						
Yes	11	12.2	3	3.3	4.96	0.025
History of PID:						
Yes	17	18.9	4	4.4	9.11	0.002
Infertility:						
Yes	8	8.9	2	2.2	3.81	0.050
Complications among infants:						
Yes	5	5.6	1	1.1	2.76	0.096

Table (8): Distribution of STD patients' marital status by some sexual and health care behaviour risk factors.

Sexual and health care behaviour risk factors	STD patients (n=90)				χ^2	P-Value
	Married (n=53)		Unmarried (n=37)			
	No.	%	No.	%		
Age at initiating sexual practice:						
≤ 20	17	32.1	15	40.5	0.68	0.409
21-25	31	58.5	20	54.1	0.17	0.676
≥ 26	5	9.4	2	5.4	0.49	0.482
Practice with symptomatic partner:						
Yes	11	20.8	16	43.2	5.25	0.021
Practice when symptomatic:						
Yes	6	11.3	18	48.7	15.53	0.000
Previous infection with STDs:						
Yes	7	13.2	14	37.8	7.39	0.006
Type of sexual practice in last 3 months:						
No practice	0	0.0	10	27.1	16.11	0.000
Vaginal	49	92.4	12	32.4	35.94	0.000
Non vaginal (oral, anal & coitus interfemoris)	4	7.6	15	40.5	14.24	0.000
Partner use of condom:						
Never	49	92.4	19	51.4	19.93	0.000
Sometimes	4	7.6	15	40.5	14.24	0.000
Ever	0	0.0	3	8.1	4.45	0.034
Number of sexual partners in last 3 months:						
0	0	0.0	5	13.5	7.58	0.005
1	52	98.1	29	78.4	9.43	0.002
≥ 2	1	1.9	3	8.1	1.99	0.158
Number of lifetime sexual partners:						
1	47	88.6	6	16.2	47.26	0.000
2	4	7.6	22	59.5	28.58	0.000
≥ 3	2	3.8	9	24.3	8.58	0.003
Exchange sex for money and/or gifts:						
Yes	1	1.9	20	54.1	33.15	0.000

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عوامل خطورة وتأثير الأمراض التى تنتقل عن طريق الاتصال الجنسى

فى الإناث البالغات فى القاهرة

عصام عبد المنعم المصيلحى– حامد عمر خليفه– خالد محمد عبد الله ـ فيصل عبد العزيز حسن*ـ ربيع بدير عطا الله*–حسن محمد حسن*– عبد العزيز جلال الدرويش** – عبد الكريم مصطفى ابراهيم ***ـ الأمين محمد عثمان****ـ مصطفى عبده شتات*****

أقسام طب المجتمع – الجلدية والتناسلية* – النساء والتوليد** – الطب النفسى*** – الميكروبيولوجى**** – الطفيليات*****

أجريت هذه الدراسة على 90 مريضة من الإناث البالغات المصابات بأمراض تنتقل عن طريق الاتصال الجنسى من بين المترددات على عيادات الأمراض الجلدية والتناسلية وأمراض النساء بمستشفى الحسين الجامعى وكذلك على عدد مماثل من الإناث السالمات من تلك الأمـراض كمجموعـة ضـابطة. وتهدف هذه الدراسـة إلى تحديد عوامـل الخطورة الاجتماعية – الديموجرافية ، السلوك الجنسى وسلوك البحث عن الرعاية الصحية وكذلك تحديد تأثير الإصابة بتلك الأمراض على مجموعة المريضات. وقد اختير نمط دراسة الحالـة ـ الضـابطة، الاسترجاعية بالعيادة لإجراء هذا البحث. وقد تم أخذ عينات ومسحات من المهبل ، قناة مجرى البول ، عنق الرحم وكذلك تم أخذ كشطات من كل إصابة محتملة مـع عينات دم من المريضات لإجراء مختلف الاختبارات المعملية.

وقد بينت الدراسة ما يلى : من أكثر الأمراض انتشارا كان الإصابة بالكانديدا (35.6 %). وأن الوظائف الغير ماهرة والعيش فى مساكن مشتركة كانت من أهم علامات الخطورة الاجتماعية – الديموجرافية (نسبة أودز= 11.62 و 2.92 على الترتيب). بينما كان استعمال الدش المهبلى والطلاق من بين أهم عوامل الخطورة النسوية والإنجابية (نسبة أودز= 7.16 و 4.06 على الترتيب). أيضا كان ممارسة الجنس قبل الزواج و الاتصـال الجنسى عن غير طريق المهبل من أهم عوامل الخطورة للسلوك الجنسى (نسبة أودز= 13.40 و 10.97 على الترتيب). وأيضا كان سابق الإصابة بتلك الأمراض وعدم تحويل الجنس للفحص والعلاج من أهم عوامل الخطورة لسلوك البحث عن الرعاية الصحية (نسبة أودز= 6.45 و 4.93 على الترتيب). كما كان عدم الالتزام الدينى وإدمان المخدرات و/أو الكحوليات من أهم علامات الخطورة لنمط الحياة (نسبة أودز= 12.89 و 6.77 على الترتيب). وأخيرا كان من أهم تأثير الإصابة بتلك الأمراض : الإصابة بأمراض التهاب الحوض (18.9%) وفقدان الحمل (17.8%).