Assess the Common Sexually Transmitted Diseases and Cost-effectiveness Estimation

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Abstract

Backgrounds: Sexually transmitted diseases (STDs) are diseases with tremendous health and economic consequences.Sexually transmitted diseases prevention programs can mitigate the health and economic burden of STDs.

Objectives: To assess the pattern of common STDs in patients that attending the hospitals and primary health care centers, and to estimate the economic cost of STDs treatment.

Subjects and methods: This descriptive study is carried on in the Department of Pharmacology, College of Medicine, Diyala University, Iraq. Drug prescription data of 17391 cases, recruited 648 cases from district hospitals, and 16743 cases from primary health care centers were assessed in this study. The estimated cost in Iraqi Dinar (ID) was calculated for each prescribed drug therapy.

Results: The results of this study showed that females are most commonly complained from sexual transmitted diseases at age 15-49 years old. Vaginal discharge was the most common complain (57.1%) and the most common reported diseases were chlamydial infection (33.2%), chancroid(26.9%) and trichominiasis (19.1%). The cost-treatment of STDs reported in the hospitals only was 5,717,400 ID. While the total cost for STDs reported in Diyala during 2012 is equal to 153,440,889 ID, and the mean cost of individual treatment 8,236 IDs.

Conclusions: Chlamydial infection, chancroid and trichomoniasis are the most common sexual transmitted disease in Diyala governorate during 2012, Gonorrhea and syphilis were not reported in this study. The cost of management and treatment of these diseases is reasonable to the patient, but it is large and constituted a burden on the society which could be avoided if the prevention program for STDs is well applied.

KeyWords: Sexually transmitted diseases (STDs), Treatment cost, Chlamydia, Chancroid, Trichomoniasis.

{**Citation:** Qutuba G. Karwi. Assess the common sexually transmitted diseases and cost-effectiveness estimation. American Journal of Research Communication, 2013, 1(6): 18-26}www.usa-journals.com, ISSN: 2325-4076.

Introduction

The availability of baseline information on the epidemiology of sexually transmitted infections and other associated risk behaviors is essential for designing, implementing and monitoring successful targeted interventions (1). Sexually transmitted diseases (STDs) continue to present major health, social and economic problems in the developing world, leading to considerable morbidity, mortality and stigma. The prevalence rates apparently are far higher in developing countries where STDs treatment is less accessible (2). Notification for STDs is a prime component of well-designed public health policy. However, several aspects of STDs must be taken into account for the correct management of surveillance activities (1,2). Sexually transmitted diseases now rank among the five most important causes of healthy productive life lost in the developing countries (3). Each year, millions of new cases of youth acquire STDs in USA. Estimates of the economic burden of STDs might help to quantify the impact of the disease on the nation's youth and on the payers of the cost of their medical care (4).

The world health Organization (WHO) has placed emphasis on syndromic approach for case measurement and management, particularly in high-prevalence areas having in adequate laboratory facilities, trained staff and transport facilities (3,5). Sexually transmitted diseases prevention programs can mitigate the health and economic burden of STDs. A tool to estimate the economic benefit of STDs programs could prove useful to STDs program personnel (4). The objectives of current study were to assess the pattern of common STDs in patients that attending the hospitals and primary health care centers, and to estimate the economic cost of STDs treatment in Diyala 2012.

Materials and Methods

This observational study was carried in the department of Pharmacology, College of Medicine, Diyala University, Iraq. The study was approved by the local Scientific and Ethic Committee of the institute. The sources of the data were the prescriptions delivered in the outpatient and consultant clinics of dermatology, obstetrics and gynaecology in the district's Hospitals and Primary Health Care centers (PHCcs) from1st Jan. to 31st of Dec. 2012. A total number of 17391 prescriptions were assessed that involved 648 prescriptions obtained from the teaching hospitals and 16743 prescriptions obtained from PHCcs. The prescriptions of patient demographics obtained including age, gender, clinical diagnosis, number of

prescribed items, generic name of prescribed drug and the cost of prescription. Unfortunately, the data in the prescriptions didn't contain the marital status of the patients and it was a quality descriptive study, so the results are expressed as number and percentages were analysed manually.

Results

The results of this study showed the majority of patients with STDs presented non-specific (non Gonococcal) Chlamydia in the lower genital tract infection which accounted 215 (33.2%) that involved 167 female and 48 male out of 648 patients. Chancroid was 174(26.9%) and Trichomoniasis of lower genital tract was reported 124(19.1%) in female only, and there was other STDs found in this study (Table 1), while the pediculosis, genital herpes simplex virus and gonorrhoea did not report in this study.

Table 1: Distribution of STDs according to gender, age and clinical diagnosis in Diyala Districts' hospitals

STDs Disease	<14 year		15-49 year		> 50year		Total		Total
	M	F	M	F	M	F	M	F	No%
Chlamydia	5	4	29	108	14	55	48	167	215(33.2)
Trichomoniasis	0	23	0	74	0	27	0	124	124(19.1)
Candidacies	0	42	0	0	0	0	0	42	42(6.5)
Bacterial vaginosis	0	3	0	10	0	28	0	41	41(6.3)
Chancroid	0	10	0	128	0	36	0	174	174(26.9)
Genital warts	0	1	0	32	0	1	0	34	34(5.2)
Molluscum-contagiousum	0	4	4	5	2	3	6	12	18(2.7)
Total	5	87	34	357	16	150	54	592	648(100)
	(14.2%)		(60.3%)		(25.5%)				

STDs: Sexual transmitted diseases, M: Male, F: Female. The results are expressed as number (%).

The distribution of cases according to the gender, age and the syndrome conditions associated with or superimposed with STDs showed the majority (79%) of cases were of age group 15-49 years out of total cases. Vaginal discharge was the highest (57.1%), while urethral discharge in males comprised only 0.7% of total cases (Table 2, Figure 1). The therapeutic regimen that prescribed to patientsthose included antiviral, antibacterial, antifungal, antiprotozoal and minor surgical or physical therapy, and estimated cost of STDs treatment (Table 3). The variation in drug prescription to each disease reflected the different opinions

of physicians in management of these diseases. The estimated cost for treatment of hospital cases was 5,717,400 ID. In general the mean cost of treatment of each case was 8,236 ID.

Table 2: Distribution of STDs according to gender, age and syndromic presentation associated with sexual transmitted diseases in Diyala' Primary health Care centers

STDs diseases	<14 year		15-49 year		> 50year		Total		Total %
	M	F	M	F	M	F	M	F	
Urethral discharge	7	-	94	-	2	-	103	0	103(0.6)
Vaginal discharge	-	183	-	7842	-	1542	-	9567	9567 (57.1)
Genital ulcer	0	0	0	406	0	217	0	626	626 (3.7)
Neonatal conjunctivitis	11	16	-	-	-	-	11	16	27(0.1)
Lower abdominal pain	0	177	0	5304	-	939	0	6420	6420 (38.3)
Total	18	360	94	13146	2	2688	114	16629	16743(100)
	2.3%		79.0%		18.7%				

STDs: Sexual transmitted diseases, M: Male, F: Female.

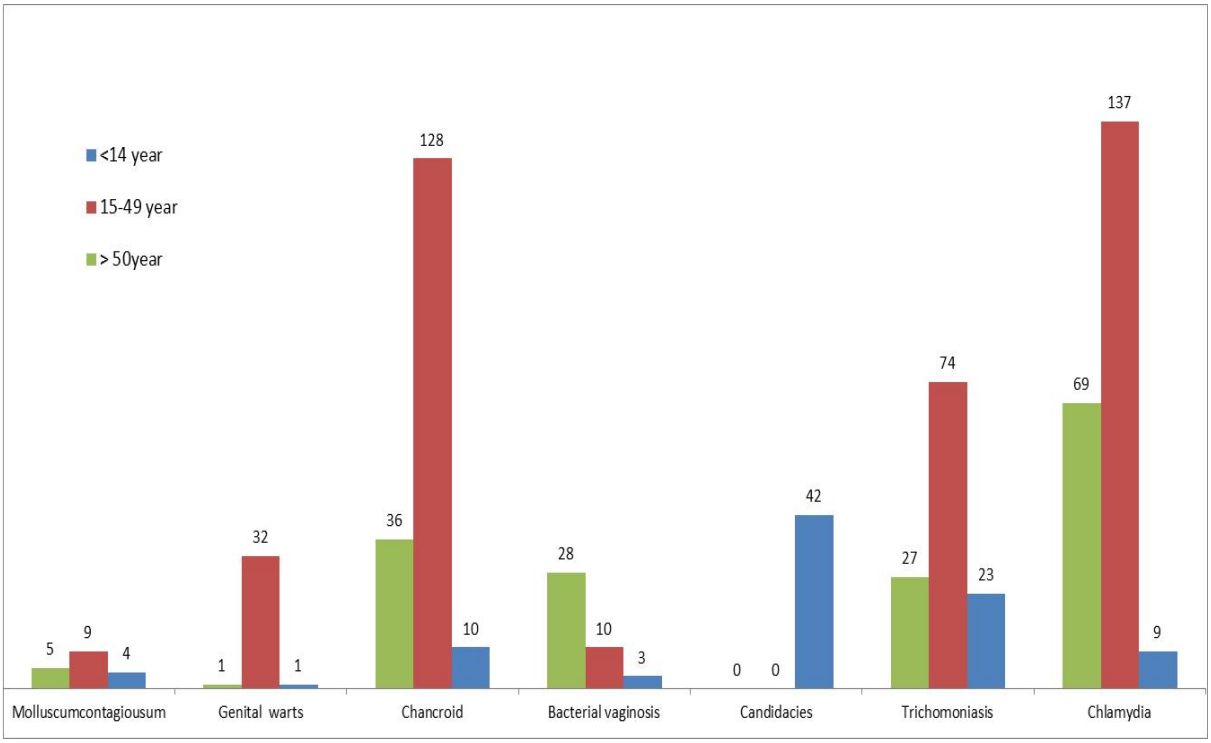

Figure 1: Distribution of STDs according to age and clinical diagnosis in Diyala Districts' hospitals.

Table 3: The therapeutic regimens for each STDs case and the estimated cost of treatment, in Diyala' Districts hospitals

STDs	Type of treatment	Dose	Estimated cost for one case (ID*)	Total estimated cost (ID*)
Non gonorrhea Chlamydia	Doxycycline	100 mg oral dose (Twice daily for 7 days)	7000	1,505,000
Trichomoniasis	Metronidazole	2 gm oral dose (single dose)	600	74,400
Candidiasis	Clotrimazol	500 mg oral dose (single dose)	7500	315,000
Bacterial vaginosis	Metronidazole	2gm oral dose (single dose)	600	24,600
Chancroid	Ciprofloxacin Erythromycin	500 mg oral dose (single dose), 500 mg oral dose (single dose)	850 5250	147,900 913,500
Genital herpes (primary attack)	Acyclovir	200 mg oral dose (five times daily for 7 days)	17500	595,000
Subsequent attacks		200 mg oral dose (three times daily)	63000	2,142,000
Genital warts	Electro-cuterization, cryosurgery,	One time	Carried out in the hospital	0.0
Molluscum-contagiousum	Electro-cauterization , Cryosurgery,	One time	Carried out in the hospital	0.0
				5,717,400

*One USD= 120.00 ID

Discussion

The results showed that sexual transmitted diseases are common in women and commonly presented with vaginal discharge. From the cost point of view these diseases are burden to the patients as well as the society. The available data do not represent the real data of all patients complained from STDs due to ignorance in case-report, lack of awareness of health personnel to the importance of such program and reporting issues with fear to register these disease due to cultural causes or the patient regarding the notification of it as a stigma to health people or others. Gonorrhea, syphilis or tumors related to lower genital tract did not reported in this study and this minimizes the cost of drug therapy in management of STDs.

In women, chlamydial and gonococcal infections may cause pelvic inflammatory disease, tubal infertility, chronic pelvic pain, and ectopic pregnancy (6). Chlamydial infection may also be linked to cervical cancer, in same time chlamydial and gonococcal infections might increase the susceptibility to transmission of human immunodeficiency virus in both men and women (7). Because these infections are easy to diagnose and curable with a single dose of oral antibiotics, early detection and treatment are an important component of efforts to reduce the disease burden (7,8).

Although, screening for Chlamydia trachomatis is widely recommended among young adult women, a little information is available regarding the prevalence of chlamydial and gonococcal infections in the general young adult population due to inaccurate or under reporting (9). Early detection of these infections is challenging because most women and men with chlamydial infection, and many women with gonorrhea are asymptomatic. However, infected persons who are asymptomatic can still transmit the infection to sexual partners and are at risk for complications. Consequently, many major medical organizations recommend screening of adolescent and young adult women who are asymptomatic for chlamydia infection (11). The identification of annual chlamydia screening among sexually experienced young women highlights the recognized importance of screening. In contrast, chlamydia screening for men has been endorsed less consistently. Screening for gonorrhea is recommended for high-risk women (12), although in the current study no report about gonorrhea.

Harrelet al.(13) in their study developed a formulas can be a useful tool for STDs program to generate evidence-based estimates of the economic impact of their program and can facilitate the assessment of the cost-effectiveness of their activities. The researchers present a series of formulas that can be used to estimate the economic benefits of sexual transmitted diseases prevention using data routinely collected by STD program. In this study, the cost-treatment of STDs reported in the hospitals only approximately 5,717,400 Iraqi Dinars (ID) that means average cost of each STD a case will cost of 8,823 ID. When we calculated the STDs cases from primary health care centres, it were 16743 cases, however the cost of the last cases was 147,723,489 ID. The total cost for STDs reported during 2012 in Diyala is equal to 153,440,889 ID. This cost is large and constituted a burden on the community which could be avoided if the prevention program for STDs is well applied, at that time this cost can be

exploited for management of other serious diseases. Although the cost in the current study is low if compared with the cost of treatment of STDs in other studies (13, 14).

In the current study, it is clear that there is under reporting and neglect of registration, particularly for Gonorrhea, syphilis and tumours, inguinal pediculosis and other like scabies which can be added to STDs.This is possible to explain because of the reluctance of the patients to consult governmental health institutions for their sense of stigma or discrimination, and tend to consult the private clinics, and might give a false name, address and other data. As a result no registration of the cases mentioned in the governmental hospitals or health center, nor available feedback from the private clinics because of weak or vanishing of communication between governmental and private clinics in regard to reporting or registration of diseases. On the other side some doubt in over reporting of some STDs like Chancroid.

The possible explanation for low percent of STDs in elderly age group is relate to the health professionals who are frequently reluctant to recognize or investigate the sexuality of older patients. Thus, sexual health may never be addressed, even among older adults who come into frequent contact with health care professionals. As the dominant culture continues to shift toward a more realistic view of aging that supports the expression of sexuality among older adults, evaluation of sexual health is a critical component of comprehensive assessment of the geriatric patient (14). Rates of sexually transmitted diseases such as chlamydia, gonorrhea and syphilis have doubled for people in their 50s, 60s and 70s in the past decade, but safe sex awareness among older adults and its promotion by doctors is still lagging, according to an article published today by researchers at Kings College and Saint Thomas's Hospital in London(15). Post-menopausal women may be at risk due to the vaginal changes such narrowing and shortening of the vagina and lack of lubrication which develop in women of this age group. Vaginal injuries can be facilitated the infiltration of viruses and bacteria (16,17). According to the U.S. Centers for Disease Control and Prevention, there were 885 reported cases of syphilis in 45 to 64-year-olds in 2000, while in 2010, there were more than 2,500. In 2000, there were 6,700 cases of Chlamydia in this age group, the number ballooned to more than 19,000 by 2010 (18). In conclusion, the Chlamydia infection, chancroid and trichomoniasis are the most common sexual transmitted disease in Diyala governorate during 2012 and the cost of treatment was reasonable for the patient, but the total cost of treatment of these diseases was high and constituted a burden on society. In the case of application of

prevention program of these diseases, it is possible to exploit these amounts for the treatment of other serious disease conditions.

Acknowledgment

I would like to express my gratitude to the patients that participated in this study and to staff of outpatient and consultant clinics of dermatology, obstetrics and gynaecology in the district's Hospitals and Primary Health Care centers and to all colleagues that support and facilitate this work.

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