

ORIGINAL ARTICLE

Characteristics of Sexually Transmitted Infections in Genito-Urinary Medicine Clinic, Sarawak General Hospital between 2018 and 2020

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Abstract**Background**

Sexually transmitted infections (STIs) are common worldwide. This study aims to determine the patterns of STIs among attendees in the Genito-Urinary Medicine (GUM) clinic of Sarawak General Hospital (SGH).

Methods

This is a retrospective study. Medical records of new cases referred to GUM clinic, SGH between the year 2018 and 2020 were reviewed. Demography data, diagnosis, and clinical characteristics of STIs were reviewed and analysed using SPSS software.

Results

There was a total of 225 patients with newly diagnosed STIs. Their mean age was 30.9 years old. There were 124 (55.1%) males and 101 (44.9%) females. Nearly half (46.7%) of the patients were Malay, followed by Sarawak indigenous groups (33.3%), and Chinese (18.7%). Most patients (n=119, 52.9%) were single at the time of diagnosis. Three quarters (73.3%) of the patients were heterosexual, while 47 (20.9%) patients were homosexual or bisexual, and missing data in the remaining 5.8%. Anogenital wart was the commonest STI (49.8%), followed by syphilis (n=91, 40.4%), genital herpes (n=24, 10.7%) and gonorrhoea (n= 15, 6.7%). The commonest symptoms were genital growth (n= 107, 47.6%), followed by pelvic discharge (n=22, 9.8%).

Conclusion

The most common STIs in our study are anogenital warts, syphilis, genital herpes and gonorrhea. Effective national sexuality education in Malaysia is paramount in reducing premarital sex and STIs. Human Papillomavirus (HPV) vaccines are effective to reduce genital warts and HPV related malignancies.

Key words: Sexual transmitted disease, Syphilis, Anogenital warts

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Introduction

STIs are very common with 1 million new cases every day worldwide in the year 2016.¹ Sexual transmitted infections can be caused by viral, bacterial or parasites. According to WHO, the commonest STIs are chlamydia, gonorrhoea, syphilis and trichomoniasis which contribute to 376 million new cases in males and females aged between 15 and 49 years in 2016.² On the other hand, viral STIs such as Herpes Simplex Virus

(HSV) infection and Human Papillomavirus (HPV) infections had been reported as high as well, with estimated cases of 417 and 291 million, respectively in the same year.¹ STIs can increase the risk of acquisition and transmission of the Human Immunodeficiency Virus (HIV).³ STIs can lead to a wide range of complications such as pelvic inflammatory diseases, cancers, ectopic pregnancies and infertility.⁴ Furthermore, untreated STIs can have poor maternal and fetal outcomes.⁵

Therefore, STIs should be treated promptly. However, many symptomatic patients are reluctant to seek treatment due to social stigmatisation, needless to say for those asymptomatic patients. The true incidence of STIs is largely unknown, as not all STIs need mandatory reporting including genital herpes. Perhaps under-reporting of STIs among general practitioner further jeopardy the true incidence of STIs. Younger generations tend to have earlier sexual exposure with a higher percentage of teenage pregnancies in Sabah and Sarawak compared to Peninsular Malaysia.⁶ There is also an increasing number of men having sex with men (MSM) and a change in sexual preference such as oral sex as well. As a result, the presentations and disease patterns of STIs have been changed. However, there is limited local data on the STIs among our local population. This study aims to determine the patterns of STIs among attendees in the Genito-Urinary Medicine clinic of Sarawak General Hospital (SGH) from the year 2018-2020.

Materials and Methods

This retrospective study was done in Genito-Urinary Medicine (GUM) clinic, SGH. SGH is a tertiary hospital in East Malaysia and received referrals from Kuching and its surrounding cities in southern Sarawak. A team of dermatologists, dermatology fellows and senior medical officers manage the clinic and provide care for patients with STIs. Patient records will be kept in a designated area in the clinic to maintain patient confidentiality.

In this study, all medical records of new cases

referred to the GUM clinic, SGH between January 2018 and December 2020 were retrieved. Demography data, diagnosis, and clinical characteristics of STIs were reviewed and analysed using SPSS software version 26.0.

Results

There were 245 new cases referred to GUM clinic, Sarawak General Hospital between the year 2018 to 2020. Of these, 225 patients were diagnosed with STIs. The remaining 20 patients were diagnosed with non-STIs such as vaginal candidiasis, screening test and other dermatoses. We analysed the data from all 225 patients diagnosed with STIs during our study periods. The age of the STI patients ranged widely from 3-88 years old with a mean of 30.94 \pm 13.52. Most patients were in the age group of 20-29 years old (n=165, 73.3%), followed by those aged <20 (n=21, 9.3%) and 40-49 (n=19, 8.4%). There were 124 (55.1%) male and 101 (44.9%) female patients with a ratio of 1.2:1 in our study population. For the ethnic group, 105 (46.7%) of the patients were Malay, followed by Sarawak Indigenous groups (n=75, 33.3%), and Chinese (n=42, 18.7%). There were only 2 (0.9%) and 1 (0.4%) of the study populations were foreigners and Indians respectively. Most of the patients (n=119, 52.9%) were single at the time of diagnosis. Ninety-five (42.2%) of them were married with the remaining 9 (4%) and 2 (0.9%) of the patients were divorcees and widowed, respectively.

In terms of sexual orientation, 165 (73.3%) of the patient were heterosexual, while the remaining 39 (17.3%) were homosexual and 8 (3.6%) of the patients were bisexual. Among our study population, 115 (51.1%) of them were employed, 37 (16.4%) were housewives and 26 (11.6%) of them were students. Another 9 (4%) patients were unemployed, 7 (3.1%) were retirees and 5 (2.2%) of the remaining were self-employed. Our sources of referral were mainly inter-department referral from our centre (n=106, 47.1%), government clinic and district hospital (n=98, 43.6%), blood bank (n=14, 6.2%) and general practitioner (n=7, 3.1%).

A total of 172 (76.4%) patients were symptomatic whereas the remaining 53 (23.6%) were asymptomatic at the time of diagnosis. Most of the symptomatic patients presented with growth at anogenital area (n=107, 47.6%), followed by pelvic/urethral discharge (n=22, 9.8%), cutaneous skin lesions (n=20, 8.9%), genital ulcer (n=10, 4.4%), painful lesion (n=9, 4%) and pruritus (n=4, 1.8%). Asymptomatic patients were mainly diagnosed via asymptomatic screening (n=22, 9.8%), blood donation screening (n=14, 6.2%), antenatal screening (n=12, 5.3%), and contact tracing (n=5, 2.2%).

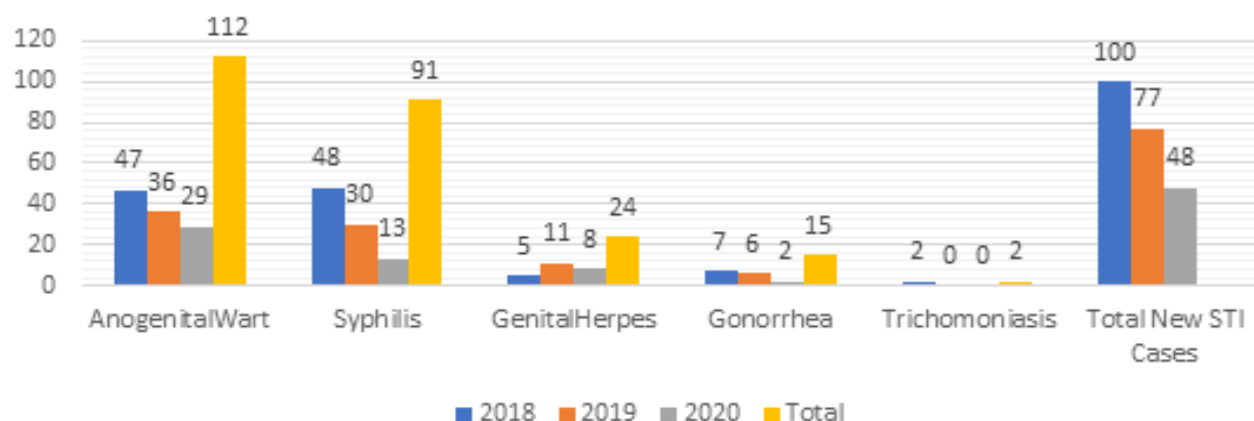
Among the 225 patients with STIs, anogenital warts were the commonest reported STI, diagnosed in 112 (49.8%) of the patients. Another 91 (40.4%) patients were diagnosed with syphilis, 24 (10.7%) patients diagnosed with genital herpes, followed by gonorrhoea (n=15, 6.7%), and trichomoniasis (n=2, 0.9%). A total of 19 (8.4%) patients had concomitant 2 different STIs at the time of presentation. Among the patients with STIs, 50 (22.2%) of them had concomitant HIV infection, with another 7 (3.1%) had hepatitis B infection and 8 (3.6%) had hepatitis C infection. Further analysis of the trend of STI cases revealed that a total of 100 patients with STIs had been reported in our centre in the year 2018. This number had been reduced to 77 cases in 2019 and 48 cases in the year 2020. The total number of cases in the individual STI group showed a similar reducing trend except for genital herpes in which 5 cases were reported in 2018 and the reported cases increased significantly to 11 cases in the year 2019 before it was reduced to 8 cases in 2020 (Figure 1).

For the treatment of anogenital warts, 74 (66.1%) of patients received liquid nitrogen (LN) spray alone, whereas 24 (21.4%) of them received LN sprays in combination with other treatment modalities like imiquimod and podophyllin. Another 5 (4.5%) and 4 (3.6%) patients received imiquimod and podophyllin local application alone, respectively. One (0.9%) patient underwent electrocautery, and another patient (0.9%) underwent surgical

removal of warts (table 2). There were 3 (2.7%) patients with anogenital warts resolved without active treatment. All patients with syphilis received intramuscular benzathine penicillin as the standard of treatment.

Table 1. Demographic data and clinical presentation of new STI cases in GUM clinic, SGH between the year 2018-2020

Variables		Frequency, n=225	Percent (%)
Age Group	<20	21	9.3
	20-29	165	73.3
	30-39	1	0.4
	40-49	19	8.4
	50-59	6	2.7
	>=60	13	5.8
	Total	225	100.0
Gender	Male	124	55.1
	Female	101	44.9
Ethnicity	Malay	105	46.7
	Sarawak Indigenous	75	33.3
	Chinese	42	18.7
	Indian	1	0.4
	Foreigners	2	0.9
Marital Status	Single	119	52.9
	Married	95	42.2
	Divorcees	9	4.0
	Widowed	2	0.9
Sexual Orientation	Heterosexual	165	73.3
	Homosexual	39	17.3
	Bisexual	8	3.6
	Missing Data	13	5.8
Employment	Employed	115	51.1
	Unemployed	9	4.0
	Self Employed	5	2.2
	Housewife	37	16.4
	Students	26	11.6
	Retirees	7	3.1
	Missing data	26	11.6
Presenting symptoms	Symptomatic	172	76.4
	Growth	107	47.6
	Discharge	22	9.8
	Skin Lesions	20	8.9
	Genital Ulcer	10	4.4
	Pain	9	4.0
	Pruritus	4	1.8
	Asymptomatic	52	23.6
	Asymptomatic Screening	22	9.8
	Blood donation screening	14	6.2
	Antenatal Screening	12	5.3
	Contact Screening	5	2.2

Figure 1. Number of New STI Cases in GUM Clinic, SGH During 2018-2020

Intramuscular ceftriaxone in combination with azithromycin or doxycycline was given to patients with gonorrhoea infection whereas acyclovir was given for all patients with genital herpes infection except one who was diagnosed with resolved genital herpes with no evidence of recurrence.

Table 2. Treatment modalities among patients with anogenital wart in GUM Clinic SGH, year 2018-2020

Anogenital Wart		Frequency, n	Percent/%
Treatment	LN Spray	74	66.1
	Combination Therapy	24	21.4
	Imiquimod	5	4.5
	Podophyllin	4	3.6
	Electrocautery	1	0.9
	Surgical Excision	1	0.9
	Observation	3	2.7
	Total	112	100.0

Discussion

Our study showed that the majority of the STI patients are from the age group of 20-29 with a male to female ratio of 1.2:1. This finding is consistent with previous studies on the prevalence of STIs.⁷ This group of patients are of reproductive age. Inadequate treatment will lead to deleterious effects among females and during their pregnancies.^{4,5} On the other hand, untreated STIs increase the risk of HIV infection. Both AIDS and STDs have a major demographic, economic, social, and political impact.⁸ Therefore, prompt diagnosis and treatment of these curable STIs and HIV are fundamental to minimise their impact on country developments and health.

Prevalence of STIs

The WHO report in the year 2016 on the prevalence of 4 common STIs showed that trichomoniasis had the highest prevalence, especially in females, followed by chlamydia, gonorrhoea and syphilis.^{1,2} A study done in Chiang Mai, Thailand in 1997 showed the prevalence of chlamydial infection (16.9%), gonococcal infection (14.4%) and condyloma acuminata (4.6%) among commercial sex workers.⁹ Our study showed that the highest number of STIs among attendees of our GUM clinic were anogenital warts followed by syphilis, genital herpes, and gonorrhoea. This finding is consistent with the other study done by Hariyadurai HR et al. in Hospital Kuala Lumpur (HKL).⁷ The common STIs along the GUM clinic attendees in HKL were warts (30.2%), syphilis (21.7%), gonorrhoea 13.8% and primary herpes (11.4%). However, our study will likely underestimate the true prevalence of gonorrhoea, chlamydia and trichomoniasis for a few reasons. Firstly, many patients with STIs are reluctant to seek treatment at government hospitals due to the social stigmata and lack of confidentiality. They tend to receive treatment at private clinics or hospitals. A prevalence study done in 1998 showed that 77% of the STI notification were done by private clinics and hospitals.¹⁰ On the other hand, those who seek treatment at government facilities are mostly treated at the health clinics due to easy access. Basic investigations and treatments are readily available in these health clinics.

Moreover, most specialist clinics in tertiary

hospitals do not accept walk-in consultation. Patients are required to have an initial assessment at the health clinics before they are scheduled for an appointment to receive treatment at the specialist clinic if needed. This forms a barrier to the treatment of STIs by dermatologists among the local population. Thirdly, the lack of high sensitivity tests such as the Nucleic Acid Amplification Test (NAAT) for gonorrhoea, chlamydia and trichomoniasis is the other factor for the low prevalence of these diseases in our centre. In our centre, smear for gonococcal and culture with chocolate agar are commonly used in cases of suspected gonorrhoea. Posterior vaginal wet mount microscopies are done for cases suggestive of trichomoniasis. These tests had lower sensitivity to diagnose STIs and highly depend on the sampling method as well.¹¹

There is no molecular test available to diagnose chlamydia infection in our centre. Centers for Disease Control and Prevention (CDC) has recommended NAAT in cases of suspected *Neisseria gonorrhoea*, *Chlamydia trachomatis* and *Trichomonas vaginalis* infection given its higher sensitivity and specificity when compared to the other methods¹². The high number of anogenital warts in our clinic is due to a variety of treatment modalities that are available only in the GUM clinic such as liquid nitrogen spray, imiquimod and podophyllin application.

Trend of STD Referral in GUM clinic, SGH

In our study population, the total number of STIs cases were reducing in trend from the year 2018 to 2020. There were 100 STI Patients seen in the GUM clinic in 2018 and the number reduced to 77 and 48 patients, respectively, in 2019 and 2020. The reducing GUM referral is unlikely due to the reducing incidence of STIs in our local population. According to the Ministry of

Health, Malaysia report in the year 2016-2019, the 2 notifiable diseases, namely gonorrhea and syphilis, continue to see an increasing incidence, especially among male patients.¹³ Malaysia has started STI friendly clinics in selected government health clinics since June 2016.¹⁴ These primary healthcare facilities offer various point-of-care testings and treatments for STIs thus the STIs referral to GUM clinic in the hospital is significantly reduced. The cases were further reduced in the year 2020 largely due to the Covid-19 pandemic announced by WHO on March 2020.¹⁵ With the movement control order and strict social activities including the closure of the entertainment centers such as pubs and karaoke centers, the cases of STIs had been estimated to be reduced. On the other hand, patients with STI may not seek treatment during the pandemic in the fear of COVID-19 infection.

STIs among patients with HIV and MSM

In our study, 50 (22.2 %) and 47 (20.9%) of the patients were HIV positive and homosexual/bisexual, respectively. Among this group, 96% of the HIV positive patients and 97.4% of the non-heterosexual patients were male ($p=0.000$) (table 3). For the past decades, the HIV cases in Malaysia has been commonly transmitted via sharing needle but more recently sexual contact had become the main mode of transmission of the HIV according to the local data.¹⁶ In the Malaysia key population estimation report 2018, It is estimated that there is a total of 220,000 MSM in Malaysia. This represents 2.2% of the total adult male population in Malaysia.¹⁷ The Integrated Biological and Behavioural Surveillance (IBBS) 2014 report revealed that HIV prevalence among MSM substantially increased over the years. Increased alcohol consumption prior to sex and reduced condom used had been shown to be significantly associated with HIV prevalence among MSM.¹⁸

Table 3. Distribution of HIV infection and sexual orientation according to gender

	HIV (n=225)			Sexual Orientation (n=212*)		
	Positive (n=50)	Negative (n=175)	p-Value	Homosexual/ Bisexual (n=47)	Heterosexual (n=165)	p-Value
Female	2 (4%)	99 (56.6%)	0.000	1(2.1%)	98(59.4%)	0.000
Male	48 (96%)	76 (43.4%)		46(97.9%)	67(40.6%)	
Total	50 (100%)	175 (100%)		47(100%)	165(100%)	

*13 missing data on sexual orientation

The incidence of STIs among this population is expected to be increased as well. Malaysia National Strategic Plan for Ending AIDS 2016-2030 aimed to end AIDS epidemic by the year 2030. The strategies include prompt detection and treatment of HIV among high-risk populations and decentralize testing and treatment to accredited primary health centres. The Harm Reduction Programme will be intensified among injecting drug users. To reduce sexual transmission of HIV and STIs, mapping of the geographic and local hotspots for HIV transmission will be conducted. A National Task Force on Mitigation of HIV through Sexual Transmission will look into innovative and effective ways to reduce sexual transmission and explore innovative ways of addressing the changing sexual transmission scenarios, particularly the increasing use of mobile devices and social media for the sex trade. These strategies will be implemented between 2016 to 2030 as part of the national efforts to reduce HIV and STI cases.

Premarital Sex and Sexuality Education

Our study showed that 52.9% of the patients were single. This indicates an alarmingly high rate of premarital sex among the local population. Therefore, innovative, and effective sexuality educations are fundamental among teenagers in secondary schools to advocate correct sexual behaviours and minimise high-risk sexual activities. Johari Talib et al. reported that 90% of the university students agreed that sexuality education has not been taught in Malaysian schools. The same study also concluded that informal information given by most of the teachers were vague thus not useful in term of sexuality education.¹⁹ Khalaf ZF et al. reported that Malaysian multicultural society, lack of community involvement as some of the barriers to national sexuality education. Respondents in this study believed that school-based sexuality education is not easily accomplished in Malaysia. Therefore, campaigning to raise the awareness of families, teachers, community leaders, religious authorities and policymakers are essential to establish an effective national sexuality education in Malaysia.²⁰

HPV Vaccination

Vaccinations are helpful to prevent Human

Papillomavirus (HPV) Infections which can potentially lead to anogenital warts and malignancies. HPV 6, 11 contribute up to 90% of genital warts. Moreover, 4.5% of all cancer cases are attributable to HPV every year and present with vulva, vagina, anus, penis, and oropharynx cancer.²¹ HPV 16, 18, 33, and 58 were commonly detected HPV types from the cervical samples among females in Malaysia.²² There are three HPV vaccines available at the moment, 2vHPV (HPV 16, 18), 4vHPV (HPV 6, 11, 16, 18), and 9vHPV (HPV 6, 11, 16, 18, 31, 33, 45, 52, 58). Only 4vHPV and 9vHPV protect against HPV type 6 and 11 that are commonly associated with anogenital warts. Both 2vHPV and 4vHPV protect against HPV 16 and HPV 18 infections which are the commonest HPV types implicated in the majority of cervical malignancies. 9vHPV provide extra protection towards other HPV types such as HPV 31,33,45,52,58 that contribute to cervical malignancies as well. A study in Sweden reported a substantially reduced risk of invasive cervical cancer at the population level after quadrivalent HPV vaccination.²⁵

Giuliano AR et al. reported that the 9vHPV vaccine did not prevent disease related to vaccine HPV types detected at baseline, but significantly reduced cervical, vulvar, and vaginal diseases related to other vaccine HPV types.²⁶ In the global health sector strategy on sexually transmitted infections 2016-2021 which aim toward ending STIs, WHO advocated the implementation of prophylactic HPV vaccination to eliminate cervical cancer and genital warts.²³ HPV vaccination has been incorporated in our national immunization program in 2010 for all female students who are 13 years of age at government schools, with the aim of three doses completion rate of 95%.²⁴ However, vaccination among boys will be required to reduce the incidence of HPV related warts and cancers in male patients. To date, the vaccination is not offered for male students under the national immunisation programme.

Conclusion

The most common STIs in our study are

anogenital warts, syphilis, genital herpes and gonorrhea. HIV and MSM are common especially among male patients in our study cohort. With the strategies endorsed under the national strategies plan to end AIDS epidemic by 2030, the incidences of STIs are expected to be reduced. STI-friendly clinics in primary care settings help to provide quality and prompt treatment of STIs in the effort to reduce transmission. National Sex education programmes require collaboration between government, private sector and religious authorities to improve the quality and efficacy of sex education among school children and young adults. HPV vaccination for both adolescent male and female students is recommended to reduce HPV related diseases and malignancies.

Conflict of Interest Declaration

The authors have no conflict of interest to be declared.

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