

Systematic Review on the Status of Sexually Transmitted Infections (STI) in the Philippines: Challenges and Opportunities

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ABSTRACT

Sexually transmitted infections are considered a major global concern not only on a health perspective but more importantly for both the socio and economic status of a country. Articles covering the prevalence of sexually transmitted infections in the Republic of the Philippines were included in this study. The literature search was performed by searching the PubMed and Google Scholar databases. The search term combination of sexually transmitted infections (STI) + Philippines and specific keywords for STI + Philippines were used. Specific STI keywords consisted of chlamydia, Neisseria, syphilis, HIV/AIDS, Hepatitis B (HBV), Herpes simplex virus (HSV), and Human papilloma virus (HPV). A second round of search was done using keywords gonorrhea, *Treponema pallidum*, and genital warts. To this date, sexually transmitted infections, regardless of its etiology, are considered censored points of discussion in many developing countries. The reason may be attributed to the several psychological stigmas attached to it. For this reason alone, studies directed to STIs have been a challenge to several researchers due to the unavailability of respondents. In this study, we have provided the current status and opportunities of STI surveillance studies in the Republic of the Philippines.

Key words: Male sex workers, Female sex workers, Philippines, Prevalence, Sexually transmitted infection.

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INTRODUCTION

Sexually transmitted infections (STIs) have been and are still considered a social stigma that are seldom discussed and ignored due to the social shame of acquiring such infections.^[1] The global number of STIs have been steadily increasing over the years, and non-compliant patients to antibiotic and antiviral therapy paved the way to the emergence of several antibiotic resistant STI-causing organisms. This resulted to current challenges in managing some STIs, consequently affecting with great impact not only individuals who are infected

but as well the society in general. According to the Centers for Diseases Control and Prevention (CDC), an estimated 26 million new infections are registered in the US in 2018, half of the number belong to the 15-24 age group.^[2] In line with this, the World Health Organization (WHO) has named the four top sexually transmitted infection affecting the world: Trichomoniasis, chlamydia, gonorrhea, and syphilis which ranks 1st, 2nd, 3rd, and 4th respectively.^[3] STIs may be caused by infection of either protozoan, bacterial, viral, and fungal origins. Despite the growing number of cases around the world and the socio economic impacts STI brought about, it is surprising that there is still a lack in terms of research data concerning the prevalence of STI in infected individuals especially in developing countries due to the sensitivity of the study. For these reasons, national surveillance studies concerning STIs are needed to provide the overall status of a country

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in terms of the STI-causing pathogen burden of a country. Data from national prevalence and surveillance are sources in conceptualizing national policy briefs in the management of cases in a country. Although some challenges may include difficulty in the access to hospital records as well as respondents who are willing to undergo studies concerning being infected with STI due to the social stigma.

National surveillance studies and monitoring of the number of cases of STIs have been conducted in several European countries such as in Germany, where the total number of HIV and syphilis infected individuals were identified using a national surveillance data.^[4] In Belgium, the number of individuals infected with chlamydia, syphilis, gonorrhea and genital warts have been determined through a government mandated drive.^[5] There was a shift of case incidence from *Neisseria gonorrhea* infection to Chlamydia infection in France as per surveillance study conducted in 1994.^[6] This shift of infection rate is in agreement with the current surveillance data of France where Chlamydia infection was in fact four times higher than the last surveillance data of the country.^[7] While acquisition of data for prevalence studies in less conservative countries are easy, it may turn out otherwise for conservative countries in South East Asia (SEA). In Lao People's Democratic Republic, recent surveillance studies for STIs are only focused on HIV infection.^[8] In a study conducted in Cambodia, only 8 out of the 24 provinces have participated in a surveillance testing for STIs, also, only female sex workers (FSWs) were included in the study.^[9]

The Philippines is a conservative country whose culture stemmed from a religious background. For this reason, the discussion of STI in societal settings poses a challenge in conducting meaningful prevalence studies. The shame of even getting tested and be exposed are one of the reasons why surveillance reports proved to be ineffective especially in conservative countries. This results in a fragmented study of the possible STIs in the country as well as the true number of infected individuals. This review is intended to provide a clear and updated status, based on previous and current reports, on the STI present in the country.

METHODS

Literature Search Strategy

The literature search was performed by searching the PubMed and Google Scholar databases. The search term combination of sexually transmitted infections (STI) +

Philippines and specific keywords for STI + Philippines were used. Specific STI keywords consisted of chlamydia, *Neisseria*, syphilis, HIV/AIDS, Hepatitis B (HBV), Herpes simplex virus (HSV), and Human papilloma virus (HPV). A second round of search was done using keywords gonorrhea, *Treponema pallidum*, and genital warts. Titles and abstracts were screened using inclusion and exclusion criteria. Inclusion criteria consisted of (a) studies on prevalence of sexually transmitted diseases using the specific keywords provided, (b) case reports, (c) retrospective studies, (d) prevalence studies conducted within the Philippine territory, (e) although articles with full-text are of focus, articles without full-text were included provided that it includes statistical data on the prevalence of any of the STIs was described in the abstract as this addressed the primary objective of the study. Exclusion criteria consisted of (a) studies performed outside of the Philippines, (b) review papers, (c) methods evaluation, (d) studies concerning behavioural patterns of individual in acquiring STIs, and (e) modelling/simulation studies.

Eligibility criteria

Studies published in the English language which reports the prevalence of sexually transmitted infection in the Philippines are included in the study. Studies of prevalence of pathogenic organisms not considered to be of sexually acquired, effects of socio behavioral patterns causing infection, reviews and mini reviews done concerning sexually transmitted diseases are excluded in this review. On the other hand, studies which include prevalence of multiple STIs in the Philippines are included in the review. Finally, due to the rarity of published studies involving surveillance and prevalence of STIs in the Republic of the Philippines, and to provide a more accurate picture of the status of sexually transmitted infections in the country, time of publication was not included in the eligibility criteria of articles screened in this review.

RESULTS

Article search results and description of qualified articles

A total of 64 research articles were retrieved from two main databases (31 from Pubmed and 33 from Google Scholar). 2 articles were checked as duplicate titles and were excluded from the review. A further 52 out of 62 articles were excluded from the study because they fall in any of the following: reviews, book chapters, and articles that do not focus on prevalence of sexually transmitted infections in the Philippines. A total of

10 articles are accepted and included in this review (Figure 1). 2 (20%) of the accepted articles are viral associated STI, 3 (30%) are bacterial associated STI, 4 (40%) are considered protozoan associated STI, and 1 (10%) include all three major causes of STI (viral, bacterial, and protozoan) (Table 1).

Only 2 (20%) of the articles included in the study have male respondents while the rest are focused on female sex workers (FSW). This suggests that almost 98% of those surveyed for STI in the country were female and only 8% are male respondents (Figure 2). Also, it is observed that most of the surveillance are focused on STIs associated with protozoan infection, in particular, *Trichomonas vaginalis* infection, while it is followed by bacterial associated STIs. The results showed that Trichomoniasis is considered as the most occurring STI infection, followed by Chlamydia, then HIV in the country (Figure 3).

Finally, majority of the studies preferred molecular analysis (50%) to confirm the presence of STIs among the respondents, followed by using serological methods (29%), culture (14%), and microscopic identification (7%) (Figure 4).

DISCUSSION

To this date, sexually transmitted infections, regardless of its etiology, are considered censored points of discussion in many developing countries. The reason may be attributed to the several psychological stigmas attached to it. For this reason alone, studies directed to STIs have been a challenge to several researchers due to the unavailability of respondents. In this study, we have provided the current status and opportunities of STI surveillance studies in the Republic of the Philippines.

Gender biases in establishing STI prevalence in the Philippines

Gender bias in studies are considered as one of the most important challenges encountered in many epidemiological health sciences related studies.^[10,11] In a scientific approach, the importance to establish an equal participation/distribution of male and female

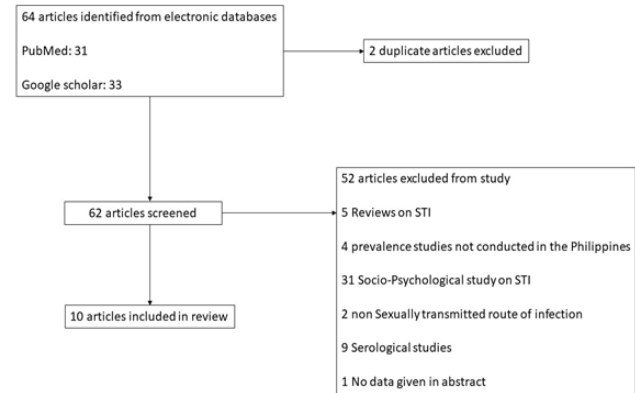


Figure 1: Flowchart of exclusion and inclusion process of articles qualified in study.

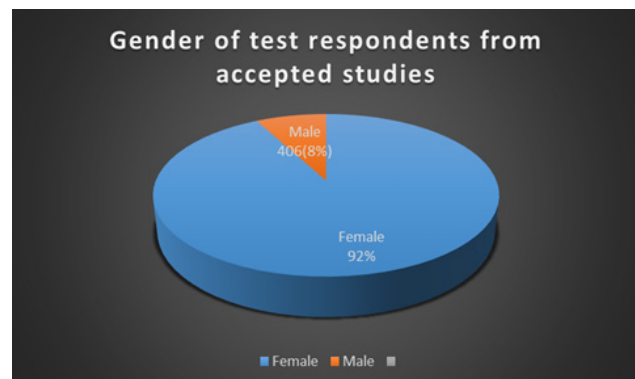


Figure 2: Gender distribution of respondents in the accepted article in current study.

Table 1: List of accepted articles in the study showing the STI type and number of population surveyed.

Population (n)	Gender	Associated STI			References
		Viral	Bacterial	Protozoan	
371	F	x	x	x	[30]
406	M	x	x		[31]
100	F	x	x		[20]
1484	F		x		[21]
46	M/F			x	[32]
611	F			x	[33]
969	F			x	[23]
377	F			x	[22]
121	F			x	[27]
1284	F			x	[19]

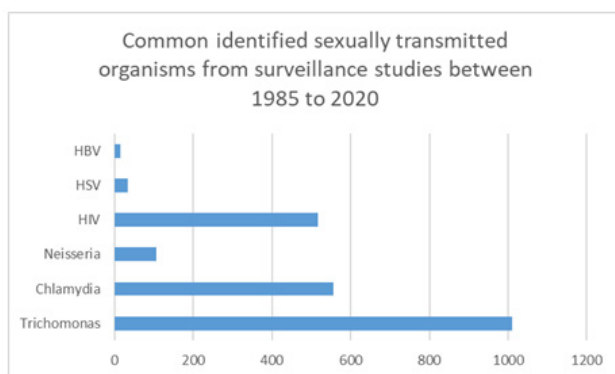


Figure 3: Most common surveyed STI related organism and the number of positive outcomes from respondents. Bar graph showing *Trichomonas vaginalis* detected in 1000 respondents from studies conducted between 1985 to 2020.

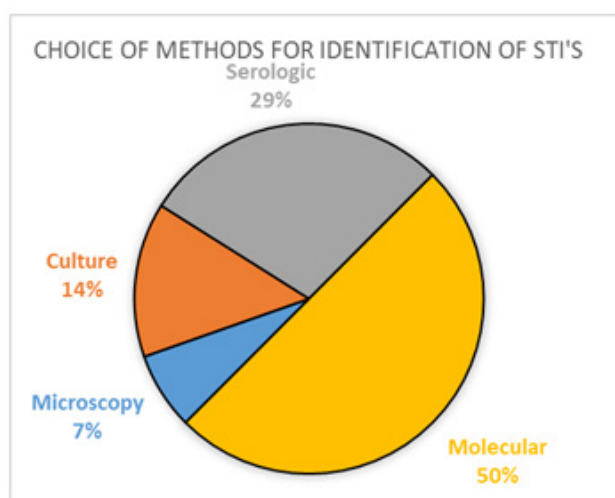


Figure 4: Distribution of method choice for the identification of STI's in the accepted articles.

respondents in epidemiological studies will enable researchers to avoid gender bias regardless of its types.^[12] Further, this equal representation will provide more validity of the results obtained from research findings and with more accurate conclusions on the current status of a certain disease, its potential sources, and risk management protocols.^[13] The importance of gender sensitivity particularly in epidemiologic studies have been validated by several studies.^[14-16] Although this is the case, this may not be true with studies concerning STI's, while male participation as respondents dominate other types of studies and women are left out, it had an inverse proportionality when it comes to studies involving prevalence of STIs. Some may have argued the reason is attributed to a psychological aspect which is the stigma and stereotype of STI's with women,^[17] specifically those that work as female sex workers (FSW). In this study, 92% of the data for STI infection came from women who have mostly worked as FSWs.

The big disparity between the number of male and female respondents may be due to several factors that concerns the society's attitude as well as the behavior of individuals in the study group. While FSW's are beginning to be accepted in society, the Philippines, as well as several countries in Southeast Asia, are still considered a conservative country and same sex sexual acts (male to male/female to female) are considered taboo and criminalized.^[18] Due to this, individuals who practice same sex acts operate clandestinely which makes it difficult not only for the government but as well to researchers conducting surveillance studies to monitor and get respondents respectively. Moreover, because of this homophobic environment, stigmatizing beliefs, as well as a discriminative attitude towards those who practice homosexual acts and eventually test positive, are some of the reasons why individuals engaging acts deemed criminal fail to submit to routine checks mandated by the government for STI screening.

Sexually Transmitted Organisms in the Philippines

As mentioned previously, the WHO have considered sexually transmitted diseases resulting to protozoan and bacterial infections as the main causes of global STDs. Incidentally, our results show Trichomoniasis, caused by the protozoan *Trichomonas vaginalis*, to be the top infecting organism followed by non-gonococcal infections, and lastly by HIV among individuals having STI in the country. However, it is important to note that most of the data obtained from this study came from FSW who submitted specimens such as urine/vaginal swabs or papanicolau smears.^[19-23] With this in mind, most of the screening tests performed to the respondents involved the isolation and identification of protozoan and bacterial organisms which are easily identified using the samples previously mentioned. Unfortunately, viral infections, in particular HIV/AIDS, which are identified using blood samples are not collected and screened in most of the articles included in this study. This may be due to several barriers and facilitators to HIV testing among FSWs as expressed by some studies.^[24] In a 2019 report, there is an estimated 91,000 males who are living with HIV while only 5800 are females.^[25] Although the current data in this study shows a big difference between HIV morbidity rates from protozoan infections, it is again important to put into perspective that majority of the respondents in this study are females. The high trend of HIV infection among males who voluntary visit testing centers in the country are indicators for the need to include more male respondents in conducting surveillance and prevalence studies for STIs.

Detection and management of STIs in the Philippines

Technological advancement in the Philippines have greatly improved since the last decade. The use of much more sophisticated automation has been instrumental in the detection of organism causing STI such as PCR and sequencing. The current development of rapid detection assays for *Trichomonas vaginalis* have greatly contributed in the faster testing and screening of individuals so that medical intervention can be provided.^[26,27] Although this is the case, innovation concerning bacterial and viral detection, as well as protocols for their management have somewhat have fallen behind. In fact, since the identification of the first quinolone resistant strain of *Neisseria gonorrhoea* (QRNG) identified in 1988, the Figure has risen to 55% of FSW who tested positive while ciprofloxacin resistant strains are 63% of FSW in 2003.^[28] The steady rise of antibiotic resistant strain can be directly attributed to improper therapeutic regiment which is most of the time administered through self-medication among sex workers in the country.^[29]

CONCLUSION

Sexually transmitted infections has been and is still considered a major public health challenge to both clinicians and researchers alike. The need to provide substantial and concrete data through surveillance and epidemiological studies have been difficult due to the many factors enumerated in this study. What is clear, however, is that there is a need to augment the current void of data through balanced epidemiological data to a much wider study group in order to provide a clearer picture on where the country stands in terms of the current status of infected individuals of sexually transmitted organisms.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

STI: Sexually transmitted infection; **FSW:** Female Sex Worker; **CDC:** Center for Disease Control and Prevention; **WHO:** World Health Organization; **QRNG:** Quinolone resistant strain *Neisseria gonorrhoea*.

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