

Steroid misuse and its effect on sexually transmitted diseases among female sex workers: A cross sectional study

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Abstract

Background: Globally, female sex workers (FSWs) are considered as a high-risk population for sexually transmitted diseases (STDs). Although several studies investigated STDs among FSWs in Bangladesh, but study on misuse of steroid among FSWs was poorly documented. The aim of this study was to determine the rate and associated factors of steroid misuse and its effect on STDs among FSWs trading sex in Rajshahi city, Bangladesh.

Methods: The study was designed as a cross-sectional nature among FSWs in Rajshahi city, Bangladesh. A total of 225 FSWs were recruited for this study, and they were selected by multistage sampling. Data was collected from July 2015 to December 2016 using a standard semi-structured questionnaire. Descriptive, Chi-square test and logistic regression model were used to determine the rate, associated factors of steroid misuse and its effect on STDs among FSWs respectively.

Results: This study revealed that 58.7% of FSWs misused steroid to keep body shape attractive. FSWs coming from rural area they were more likely to misuse steroid than FSWs living in urban region (aOR=2.46, 95% CI: 1.37-4.42; $p<0.01$). Primary educated FSWs had more likelihood of misusing steroid than secondary or higher educated FSWs (aOR=1.88, 95% CI: 1.01-3.50; $p<0.05$). The FSWs misusing steroids were found to suffer from STDs in increasing number (76.1% vs 23.9%) and had more likelihood to develop STDs than who did not misuse (aOR= 4.26, 95% CI: 2.28-7.944; $p<0.01$).

Conclusion: This study revealed that a large number of FSWs misused steroid. The government and non-government health authorities should work to create awareness among female sex workers regarding misuse of steroid in Bangladesh, and our findings would help for the purpose.

Keywords

Female sex workers; Bangladesh; Steroid misuse; Binary logistic regression model.

Abbreviations

FSWs: Female Sex Workers; STDs: Sexually Transmitted Diseases; aOR: Adjusted odds ratio; CI: Confidence Interval; TB: Tuberculosis; HIV/AIDS: Human immunodeficiency virus/ Acquired immunodeficiency syndrome; SAARC: South Asian Association of Regional Cooperation; NGOs: Non-governmental organizations; SE: Standard Error; SPSS: Statistical Package for the Social Sciences; IBM: International Business Machines Corporation; BDT: Bangladesh taka; COR: Crude Odds Ratio.

Introduction

Steroid is widely used as medicine since 1935. Firstly, it was thought that this medicine could be used for Addison disease [1]. It has potent anti-inflammatory and immune-modulating properties, as well as some side effects including minor diseases like acne and major diseases such as Cushing's syndrome that can cause diabetes mellitus and life-threatening heart disease [2]. Steroid increases the risk of infectious diseases including sexually transmitted diseases (STDs). STDs refer to those diseases that are caused by pathogens such as bacteria, viruses, protozoa, fungi, and ectoparasites [3]. These conditions are acquired and transmitted through unprotected sexual intercourse. STDs occur most commonly in sexually-active teenagers and young adults, especially those with multiple sex partners like Female Sex Workers (FSW) [4]. These diseases create a huge burden for the individual, family and society in terms of pain, irritation, life threat and treatment cost.

In Bangladesh, according to a study conducted in 2009, FSWs numbered 63 to 74 thousand, and in Rajshahi, one of the big cities of the country where there is no brothel, 40.5%, 39.0% and 21.5% of FSWs actively traded sex in hotels, residences and streets [5]. Hotel and residence based FSWs entertained an average number of 61 clients per week [5]. In Bangladesh, sex trade is illegal outside brothel and strongly considered as antisocial that has made it a great challenge for FSWs in this country. They frequently change their trading places and identities including names, addresses, cell phone numbers etc. Most of the sex trading places are unhygienic and favorable environment for transmission of STDs, especially the street is relatively a more vulnerable place for infections. Most of the clients of these FSWs are transport workers and rickshaw pullers [6]. FSWs are to depend mostly on the attractiveness and fitness of their body, and for that reason they usually take medicines like steroids, vitamins and calcium.

Rajshahi city, situated at the south-western border of Bangladesh, is separated from India by a branch (the Padma) of the Ganges River. A large number of Bangladeshi people including FSWs and transport workers travel India that ranks the first among 30 highly burden countries for TB in the world [7,8]. The country also records the highest prevalence of HIV/AIDS among the SAARC countries [9]. So, it is important to survey the state of STDs among FSWs trading sex in this bordering city. There are some studies that have been conducted on TB among FSWs with other populations [10-14]. But, to the best of our knowledge, no study has so far been done in Bangladesh on steroid mis/use among FSWs. Therefore, we designed to investigate the misuse of steroid, its associated factors and its effect on STDs among FSWs in Rajshahi

city, Bangladesh. Though this study was conducted in Rajshahi city, it would explore some aspects of risks and help finding out measures to save the FSWs, their clients, and the society as a whole from STDs in Bangladesh.

Methods

Study design and population

This was a cross-sectional study. FSWs trading sex in streets, hotels and residences were our study population. A total of 225 FSWs participated in this study. The study design was to document the socio economic, demographic and sex trade practices related to misuse of steroid and sufferings from STDs among FSWs and particular attention was given to identify risk factors.

Inclusion criteria

This study only considered females who has traded sex in Rajshahi city, Bangladesh was considered subjects in this study.

Exclusion criteria

This study did not consider general women and girls having ordinary sex with their husbands and boyfriends. Furthermore, those suffering from osteoarthritis and taking steroids as per physician's advice were excluded.

Data collection procedure

This study was based on complete good clinical procedures. FSWs' personal cell phone numbers were collected from the non-governmental organizations (NGOs) working for the welfare of FSWs and their clients. Primarily, we contacted the key personnel of the NGOs. They introduced us with their peer educators (PEs) who themselves were FSWs and paid workers of the respective NGOs. These PEs managed appointments and meetings for us with FSWs. Thus, with the help of PEs, we contacted 300 FSWs over mobile phone. Of them, 243 FSWs willingly agreed for interviews. Finally, 225 FSWs provided their written consent. These agreed FSWs were interviewed at their suggested venues. We followed the procedure which was used in a previous study [15]. Data was collected from July 2015 to December 2016.

The following information was collected for the study: (i) general and specific information of steroid use and STDs (ii) socioeconomic and demographic characteristics of FSWs. The data were collected by using a semi-structured questionnaire. The original questionnaire was prepared in Bengali, it was translated to English for publishing paper in a journal. The original and translated questionnaires were reviewed by five professional experts and volunteers, and a mini survey study was conducted to legalize the questionnaire. We improved the questionnaire based on the results of the mini survey to make it easily understandable. To ensure privacy, names and specific whereabouts of the respondents were not recorded.

Outcome measure

The first outcome variable of this study was misuse of steroid. We asked a question: “Did/do you use steroid for body fitness without suggestion of physician?” The participant’s response was dichotomized (Yes=0, No=0). The second outcome variable was sexual transmission disease (STDs). To measure this variable, we asked a question to our selected FSWs: Did/do you have STDs diagnosed by healthcare providers using your urine or blood test? Their answer was dichotomized (Yes=1, No=0).

Independent variables

The following items were considered as independent variables: Age groups: ≤ 25 years, ≥ 26 years. Respondents’ education was classified based on the formal education system in Bangladesh: No education (0 years), primary education (1–5 years), secondary or higher education (6 years or more). Marital status was categorized as unmarried and ever married. Place of residence was categorized as rural and urban. Type of family was categorized as single and joint family. Client’s occupation was categorized as transport workers, small traders and service holder. Sex trade place was categorized as residence, hotel and street. Religion was two groups; Muslim and Hindu, and guardians occupation was three categories; Labor, business and unemployed. Respondent’s monthly family income was categorized as $< 10,000$ Taka and $\geq 10,001$ Taka. All variables and its categories were described in Table 1.

Statistical analyses

Frequency distribution was conducted to determine the rate of FSWs misused steroid by their socio-economic and demographic characteristics. Crude logistic regression (univariate) was used to identify the independent variables for multivariable logistic regression model. Selected factors having p -value < 0.25 provided by crude logistic model were included as independent variable in multivariable model. Binary multivariable logistic regression model was selected to determine the effect of socio-economic and demographic factors on misuse of steroid. The magnitude of the standard error (SE) was utilized to detect the multicollinearity problem among the independent variables; if the magnitude of the SE lied between 0.001 and 0.5, it was judged that there was no evidence of multicollinearity [16]. Analyses were performed using statistical package for social sciences (SPSS version 26 IBM). Significance for all analyses was set at $p < 0.05$.

Results

Out of 225 FSWs, 58.7% misused steroid for body fitness (Figure 1). They used two types of steroids such as oradexon (dexamethasone) (40.9%), and prednisolone (8.0%) (Figure 2).

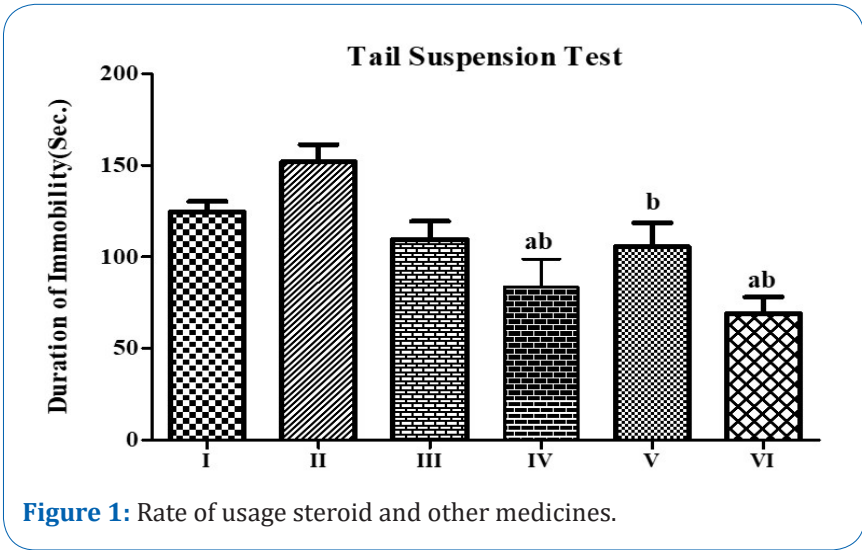


Figure 1: Rate of usage steroid and other medicines.

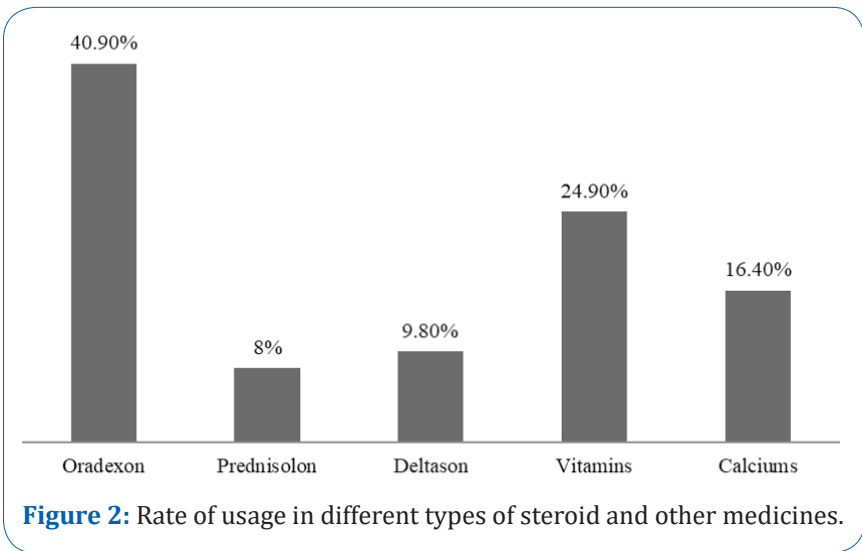


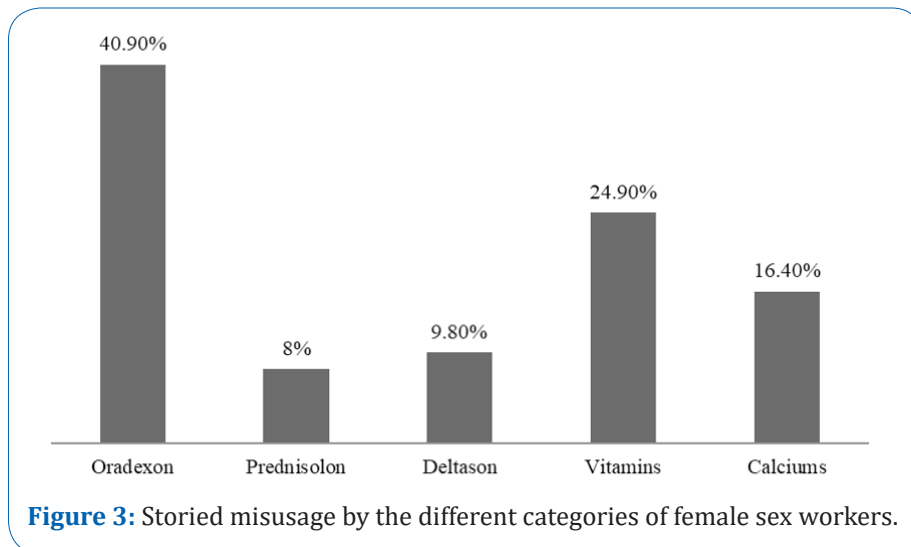
Figure 2: Rate of usage in different types of steroid and other medicines.

Of all the participants, 92.4% were ever married and more likely to misuse steroid compared to unmarried FSWs (59.1% vs 52.9%). Most (96.5%) of FSWs came from nuclear family and they misused steroid at a higher rate than those coming from joint family (59.0% vs 50.0%). Of the respondents, 89.8% were Muslim and they were less likely to misuse steroid than Hindus (54.4% vs 60.9%). More than 50% of FSWs were living in urban area and rural FSWs misused steroid more than urban ones (69.6% vs 49.6%). Of the participants, 54.2% were ≥26 years old and they were more likely to misuse steroid compared to their younger counterparts (age ≤25 years) (63.1% vs 53.4%). We observed that only 14.2% FSWs were uneducated while 36.9% were secondary and higher educated; primary educated FSWs (48.9%) misused steroid at a higher rate than other two groups (primary 64.5%; illiterate 56.2%; secondary and higher 51.8%). Legal guardians of 32.0%, 29.3% and 38.7% LFSWs were labor, businessman and unemployed respectively, and of them, 58.3%, 63.6% and 55.2% misused steroid. Most of the FSWs (64.4%) traded sex in hotels, whereas 11.6% and 24.0% at residence and street respectively. It was observed that about 69.3% of FSWs' family income was ≤10,000 in BDT and they were less likely to misuse steroid compared to their counterparts (30.7%) having monthly family income of ≥ 10,001 in BDT (Table 1 and Figure 3).

Table 1: Socio economic and demographic profile of the subjects.

Variable with category	N (%)	Variable with category	N (%)
Respondent's age (year)		Respondent's education level	
≤25	103(45.8)	No education	32(14.2)
≥26	122(54.2)	Primary	110(48.9)
Religion		Secondary and above	83(36.9)
Muslim	202(89.8)	Guardians occupation	
Hindu	23(10.2)	Labor	72(32.0)
Type of present residence		Business	66(29.3)
Rural	102(45.3)	Unemployed	87(38.7)
Urban	123(54.7)	Sex trading place	
Marital status		Residence	26(11.6)
Ever married	208(92.4)	Hotel	145(64.4)
Unmarried	17(7.6)	Street	54(24.0)
Type of family		Monthly family income in BDT	
Nuclear	217(96.4)	≤ 10,000	156(69.3)
Joint	8(3.6)	≥ 10,001	69(30.7)

Note: BDT-Bangladesh taka (currency)



Simple (univariate) logistic regression model showed that only four variables (p-value <0.25)- respondent's age, type of residence, respondent's education level and sex trading place could be considered as independent variables for multivariable model. Multivariable model demonstrated that FSWs coming from rural area had a 2.46-fold higher chance to misuse steroid compared to FSWs living in urban environment (aOR=2.46, 95% CI: 1.37-4.42; p<0.01). Primary educated FSWs were more likely to misuse steroid than secondary or higher educated FSWs (aOR=1.88, 95% CI: 1.01-3.50; p<0.05). It was observed that FSWs' living place (residence) put highest contribution (46.61%) to misusing steroid followed by sex trading place and education level (16.10%), and age (11.02%) (Table 2).

Table 2: Effects of selected socio economic and demographic on misuse of steroid.

Variable with category	COR	95% CI for COR		aOR	95% CI for aOR		Individual contribution(%)
		Lower	Upper		Lower	Upper	
Respondent's age (year)							11.02
≥26	1.49	0.88	2.55	1.25	0.69	2.26	
≤25 ^R							
Religion							0.85
Muslim	1.12	0.46	2.68				
Hindu ^R							
Present residence							46.61
Rural	2.33	1.34	4.04	2.46**	1.37	4.42	
Urban ^R							
Marital status							0.85
Ever married	1.29	0.48	3.47				
Unmarried ^R							
Type of family							1.69
Nuclear	1.44	0.35	5.90				
Joint ^R							
Respondent's education level							16.10
No education	1.20	0.53	2.72	1.36	0.54	3.40	
Primary	1.69	0.95	3.03	1.88*	1.01	3.50	
Secondary and above ^R							
Guardian occupation							5.93
Labor	1.14	0.61	2.14				
Business	1.42	0.74	2.74				
Unemployed ^R							
Sex trading place							16.10
Residence	1.72	0.664	4.47	2.46	0.83	7.36	
Hotel	1.76	0.938	3.31	1.67	0.86	3.27	
Street ^R							
Monthly family income (Taka)							0.85
≤ 10,000	1.14	0.640	2.03				
≥ 10,001 ^R							
Hosmer and Lemeshow Test				Chi-square value=11.368			p-value=0.182

Note: ^aOR- Adjusted odds ratio; COR- Crude odds ratio; CI- Confidence Interval; R- Reference case; **: p-value<0.01; *: p-value<0.05.

It was found that a greater number of FSWs suffered from STDs who misused steroid than who did not misuse steroid (76.1% Vs 23.9%). Logistic regression model demonstrated that FSWs misusing steroid had a 4.57-fold higher chance to contract STDs than those who did not misuse the drug [COR= 4.57, 95% CI: 2.58-8.11; p<0.01]. Almost the same result was found when we controlled the effect of other selected variables- FSWs who misused steroid were more likely to develop STDs than those who did not misuse [aOR= 4.26, 95% CI: 2.28-7.944; p<0.01] (Table 3).

Table 3: Effect of storied misuse on STDs among female sex workers.

Storied misuse	STDs		COR (95% CI)	aOR ^a (95% CI)
	Yes	No		
Yes	86 (76.1%)	46 (41.1%)	4.57 (2.58-8.11)**	4.26 (2.28-7.944)**
No	27 (23.9%)	66 (58.9%)	Ref.	Ref.

Note:^a Adjusted for age, marital status, sex trading place, clients’ occupation, respondents’ education, respondents type of residence, use condom during sex activities with client; **p-value <0.01.

Discussion

In this study, the expectation was that most of the FSWs would be knowledgeable and more aware about misusage of medicines like steroid. But it was revealed that a large number of FSWs were misusing it. FSWs use steroid usually for attractiveness and client’s satisfaction [17]. In fact, body fitness, beauty and attractiveness are the main capital of sex trade. That is why the FSWs always try to maintain fitness and attractiveness of their body and figure and use medicines for that purpose. Social activists reported that the steroid can cause diabetes, high blood pressure, skin rashes and headaches and is highly addictive. The FSWs do not have knowledge the side effect of the drug, they continue to consume steroid for keeping them strong and healthy, and they believe which can help to get more clients in order to earn enough money to survive [18].

We found that FSWs of the minority religious (Hindu) community misused medicines like steroid at a higher rate. This can be explained by the fact that the Hindus are traditionally more knowledgeable and conscious about sex. In our study, most of the FSWs coming from rural areas misused steroid perhaps for the lack of knowledge about its adverse effects on health. Most of the ever-married female sex workers misused steroid. They might have more knowledge compared to their counterparts on misuse of steroid and its harmfulness but they perhaps ignored it only for earning money by attracting clients. In this study, it was observed that most of the FSWs of nuclear family misused medicine like steroid at a higher rate than those coming from joint family. The reason behind it might also be for attracting more clients and earning more money. This study revealed that most of the subjects who had no and primary level education were misusing steroid. Probably, they did it for having no or less knowledge on misuse of steroid and its harmful effects. In this study, most of the subjects whose guardian’s occupation was business misused steroid. This might be for the lack of knowledge and belief that they could be able to recover the side effects by using other medicines, as they were considerably rich. The subjects whose clients were small traders or business men misused steroid at a higher rate. Perhaps they were encouraged to do it because these types of clients preferred beautiful and attractive FSWs.

Strengths

The strength of this research is that it is the first of its kind in Bangladesh. The standardized questionnaire format was carefully developed to ascertain accurate information from the subjects. The peer educators were trained up, and closely monitored during the survey by the principal author of this study.

Appropriate statistical tools were used for data analysis. Though the study area was Rajshahi city, findings of this study can be generalized because socioeconomic and cultural characteristics of the FSWs and their clients are almost similar all over the country. This study identified some associated factors of misuse of steroid that are modifiable.

Limitations

Firstly, the cross-sectional study actually did not permit us to establish any absolute cause of misuse of steroid. The issue needs a longitudinal research to fully identify and understand its complex nature and underlying mechanisms. Secondly, this study used the only quantitative survey. For the development of culture-sensitive communication strategies, qualitative studies are also necessary. We couldn't do it due to time and resource constraints. Lastly, the idea of misusing medicines, which has several meanings, was hard to be conceived by everyone in the same way without any physical and biological investigation.

Conclusions

The findings of this study showed that a large number of FSWs were infected STDs due to misuse of steroid, which is an alarming public health issue. Therefore, the health ministry, policy makers, respective donor agencies, and nongovernment organizations should work on safe sex promotion.

Declarations

Ethical clearance: 'University of Rajshahi, Bangladesh' has an ethic committee under Institute of Biological Science (IBSc). We submitted our current study protocol to IBSc for getting approval. The ethical approval was received from IBSc memo no: 64/ 320IAMEBBC/IBSC. Also, informed consent was obtained from each subject. In our study, methods were performed in accordance with the relevant guidelines and regulations of the Declaration of Helsinki.

Consent to publish: Not applicable.

Availability of data and materials: The study was based on the primary data. Corresponding author will provide data when necessary.

Competing interests: The authors declare that they have no competing interests.

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Authors' Contributions: MMR and MGH designed the study. MMR, MAW and MGH conducted the data analysis. MMR and MAW wrote the first draft of the manuscript. MGH, MAW and DD made critical revisions of the manuscript. All authors read and approved the final version of the manuscript.

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