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AIDS knowledge and risky sexual behaviors among registered female sex workers in Turkey

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Aim: To evaluate AIDS knowledge and risky sexual behaviors of registered female sex workers during their obligatory periodic examination in the Department of Dermatology and Sexually Transmitted Diseases, Ankara Metropolitan Municipality Hospital.

Materials and methods: A questionnaire composed of items on socio-demographic features and knowledge levels on HIV/AIDS, its transmission routes, and risky sexual behaviors was administered via face to face interviews.

Results: One hundred four sex workers were included in the study. Higher educated ones had more knowledge on AIDS, its transmission routes, and risky behaviors ($P \geq 0.05$, $P \leq 0.001$, $P \leq 0.05$). While those with more customers had more knowledge on AIDS ($P \leq 0.05$) and transmission routes ($P \leq 0.01$), those with regular customer numbers had scored higher on transmission routes and risky behaviors ($P \leq 0.05$ and $P \leq 0.05$, respectively). Higher monthly income indicated higher levels of knowledge on routes of information ($P \leq 0.05$). Women pre-informed on AIDS and who scored higher on both routes of transmission ($P \leq 0.01$) and knowledge on transmission routes ($P \leq 0.05$, $P \leq 0.01$) yielded higher lubricant usage at each intercourse and condom checking.

Conclusion: The study indicated the deficiencies in the transmission of gained knowledge to those who need the most – sex workers. Therefore, obligatory education programs must be revised to enable HIV (+) sex workers' contribution to the training environment in the short and long term objectives.

Key words: Commercial sex workers, HIV/AIDS transmission, risky sexual behavior

Türkiye'de kayıtlı seks çalışanlarının HIV/AIDS'e ilişkin bilgileri ve riskli cinsel davranışları

Amaç: Araştırma kayıtlı seks çalışanlarının HIV/AIDS'e ilişkin bilgi ve riskli cinsel davranışlarını saptamak amacı ile kadınların zorunlu periyodik muayeneye geldiği Ankara Büyükşehir Belediye Hastanesi'ne bağlı Deri ve Zührevi Hastalıklar bölümünde tanımlayıcı olarak yapılmıştır.

Yöntem ve gereç: Veri toplama formunda kadınların; sosyo-ekonomik özelliklerini, HIV/AIDS'e yönelik hastalık bilgileri, bulaşma yollarına ilişkin bilgileri ve riskli cinsel davranışlara ilişkin bilgilerini saptamaya yönelik sorular yer almaktadır. Veriler yüz yüze görüşme yöntemi ile toplanmıştır.

Bulgular: Araştırma 124 seks çalışanı ile tamamlanmıştır. Eğitim düzeyi yüksek olan seks çalışanlarının AIDS, bulaş yolları ve riskli cinsel davranışlara ilişkin bilgi düzeylerinin de arttığı görülmektedir. ($P \geq 0,05$, $P \leq 0,001$, $P \leq 0,05$). Müşteri sayısı fazla olan kadınların AIDS'e ($P \leq 0,05$) ve bulaş yollarına ($P \leq 0,01$) ilişkin, düzenli müşterisi olanların bulaş yolları ve riskli davranışlara ilişkin bilgi puanlarının daha yüksek olduğu ($P \leq 0,05$, $P \leq 0,05$) saptanmıştır. Aylık geliri yüksek olan kadınların bulaş yollarına ilişkin bilgi puanları da ($P \leq 0,05$) yüksek bulunmuştur. AIDS ve bulaş

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yollarına ilişkin bilgi düzeyi yüksek olan kadınların ($P \leq 0,01$) kondomun patlak/delik olup/olmadığını kontrol etme ve kayganlaştırıcı kullanma oranı daha yüksek bulunmuştur ($P \leq 0,05$, $P \leq 0,01$).

Sonuç: Bu çalışma seks çalışanlarının daha fazla bilgiye gereksinim duyduklarını göstermiştir. Bu nedenle zorunlu eğitim programları gözden geçirilmeli ve yenilenmelidir. Eğitimin uzun ve kısa vadeli hedefleri gerçekleştirmede HIV (+) seks çalışanlarının katkısı alınmalıdır.

Anahtar sözcükler: Genelevde çalışan seks çalışanları, HIV/AIDS'e ilişkin bulaş yolları, riskli cinsel davranışlar

Introduction

AIDS, a fatal disease threatening people all over the world, has infected over 65 million people and killed about 25 million since the disease was first identified in 1980s (1). In 2008, Joint United Nations Program on HIV/AIDS (UNAIDS) reported over 33.4 million infections (2.7 million new cases) and 2 million deaths from AIDS. The same report stated that each day over 7400 new AIDS cases occur, 50% of which are women and 45% are at the age of 15-24. Ninety-six percent of the new infections occur in countries with middle or low income levels (UNAIDS 2009) (2).

Major global transmission routes are blood and heterosexual and homosexual intercourse (1,3-5). Risk of the transmission of AIDS from men to women (3/10,000) was higher than that of from women to men (20/10,000) (6-8). This rate was 50-300/1000 for homosexual relations (9).

Viral load varying by the disease stage, status of antiretroviral treatment, circumcised or not, presence of other sexually transmitted diseases, and sexual behavior influenced the transmission of HIV (7). Decreased number of sexual partners and proper condom use effectively controls HIV. Individuals must undergo tests to learn whether they were infected with HIV and how to reduce their risky sexual behaviors (4,10-12). Female sex workers who was older than 29, in the sex business for more than 10 years, addicted to alcohol/drugs, and who had multiple or many customers had higher HIV seropositivity and risky sexual behaviors (13-15).

According to the annual reports published by the Turkish Ministry of Health, there were 1142 AIDS patients and carriers (364 AIDS patients and 777 carriers) in 1985-2000 in Turkey. The number increased to 2544 patients (623 AIDS patients and 1921 carriers) in 2006. The majority of the AIDS patients and carriers were at the age of 30-40 and heterosexual intercourse was the leading transmission route (16).

Although extramarital sex is not common across Turkey where traditional family structure dominates, the number of sex workers has increased because of worsened income distribution. Sex workers constituted a high risk group for HIV transmission as they were mostly women or frequently changed sexual partners (17). Ankara Chamber of Commerce (ACC) reported that there were about 3000 registered sex workers in 56 brothels and 100,000 unregistered sex workers in 2004 (18). In other words, 1 in every 350 women was a sex worker and rose even further after 2008 economic crisis, cited by the Association of Turkish Industries and Businessmen (19). Furthermore, foreign women contributed to the transmission of HIV through uncontrolled sex trade (17). Unfortunately, these facts indicate the high risk of HIV/AIDS and its spread in Turkey. Lower income levels brought the lower information levels on AIDS and prevention measures in 45,000 sex workers (20).

The aim of the present study was to determine the level of information of registered sex workers on HIV/AIDS, transmission routes of HIV/AIDS, and their own risky sexual behaviors. Therefore, the findings of the study will be useful for future studies and projects aiming to decrease the risks incurred by sex workers for the spread of HIV/AIDS.

Materials and methods

Subject population

Of the 138 registered female sex workers working in 5 brothels in affiliation with the municipality of Ankara, 124 consented to participate in the study conducted at the Department of Dermatology

and Sexually Transmitted Diseases in Ankara Metropolitan Municipality Hospital, where registered sex workers undergo obligatory periodic examination. In Turkey, the employment conditions of sex workers are regulated by the general health protection law. Brothels in Turkey operate with government permission.

Registered sex workers are subjected to health controls with regular intervals by the health institution of municipality and trained on HIV/AIDS at least once a year. Routine management of newly diagnosed AIDS in those women includes obligatory notification (reporting to the Ministry of Health), cancellation of the license, and referral to a hospital for treatment. A written permission from the Ankara Greater Municipality Hospital and oral permission from the Head of the Department of Dermatology and Sexually Transmitted Diseases were obtained. In addition, verbal permission was obtained from the head of the Sexually Transmitted Diseases Department. Verbal consent was obtained from sex workers coming for examination.

Questionnaire

A questionnaire was administered to registered female sex workers by face to face interviews. Interviews were carried out in a private room, where only the researcher and the registered female sex worker were allowed to be, at the Department of Dermatology and Sexually Transmitted Diseases of Ankara Metropolitan Municipality Hospital. Each interview took approximately 30 min.

The questionnaire includes items related to socio-demographic features and inquiring about the HIV/AIDS related knowledge level and risky behaviors among female sex workers. Twenty questions, mostly open ended, for demographic data were asked. Basic risky sexual behavior characteristics were questioned with 14 'yes' or 'no' type questions. Information level on HIV/AIDS and routes of transmission were evaluated with 5 and 11 'yes' or 'no' type questions, respectively, Information on risky sexual behavior was collected with 6 'safe' or 'unsafe' questions.

Each correct answer received 1 point. Thus, information on HIV/AIDS was scored out of 5, information on transmission routes was scored out of 11, and information on risky sexual behavior was scored out of 6. A pilot study was also applied to 8 unregistered sex workers at different education levels and then the questionnaire was revised accordingly.

Statistical analysis

Statistical analysis was performed using SPSS 11.5. Descriptive statistics were reported as median (minimum-maximum). The chi-squared test was used to evaluate the association between categorical variables. Differences in variables with a continuous distribution across dichotomous or ranked categories were assessed using the Mann-Whitney U-test and the Kruskal-Wallis nonparametric ANOVA, respectively, and for measurable data, chi square (χ^2) test was used. Statistical significance in this study was defined as $P \leq 0.05$.

Results

Socio-demographic features

In the present study 93.5% of the participants were women and 6.5% were transsexual; 48.4% were 41-56 years of age, and 46.8% in 25-40. The age of first sexual experience ranged between 9 and 19 ($\overline{X}$:16.6) for the 85.4% of the participants. Nearly one third (35.5%) worked at brothel for 18-25 years; 43.6% lived alone and more than half (57.3%) were primary school graduates; 46.8% had 60-120 customers per week, and 94.4% regular customers. Monthly income was ≥ 2000 USD for 37.9% and 82.3% had been informed about AIDS previously (Table 1).

Common beliefs about AIDS and the transmission routes

Some sex workers in the study were misinformed about AIDS, routes of transmission, and risky sexual behaviors. The majority (67.7%) of them considered AIDS as a 'curable' disease, 66.9% as a disease of homosexuals only, and 50.8% as a disease that can be treated with an effective vaccine. While the major transmission routes of HIV/AIDS were defined correctly by majority of sex workers, transmission via kissing her baby by the carrier mother (59.7%), common use of spoons, forks and plates (72.6%), clothes, telephone or towels (62.1), social kissing (51.6%), through sneezing and coughing (75.8%), sweat and tears (68.5%), and insect or mosquito sting (84.7%) were also considered as routes of

Table 1. Sociodemographic characteristics of the participants.

	N (%)
Age groups	
25-40 years	58 (46.8)
41-56 years	60 (48.4)
57-73	6 (4.8)
Reported gender	
Woman	116 (93.5)
Transsexual	8 (6.5)
Education	
Uneducated	27 (21.8)
Primary school	71 (57.2)
High school or higher	26 (21.0)
Past history of AIDS related training	
Received	102 (82.3)
Not received	22(17.7)
Age at first sexual experience	
9-19 years	105 (85.4)
20-30 years	18 (14.6)
Alcohol consumption	
Non-drinker	71 (57.2)
Social drinker	42 (33.9)
Regular drinker	11 (8.9)
Permanent boyfriend	
Yes	40 (32.3)
No	84 (67.7)
Duration of working at brothel	
3-20 years	89 (71.8)
21 years and over	35 (28.2)
Number of customers per week	
0-60	28 (22.6)
60-120	58 (46.8)
121-180	23 (18.5)
≥181	15 (12.1)
Type of customer	
Has regular customers	117 (94.4)
Does not have regular customers	7 (5.6)
Monthly income (USD)	
≤670	20 (16.1)
671-1000	18 (14.5)
1001-1330	15 (12.1)
1331-2000	24 (19.4)
≥2000 USD	47 (37.9)

transmission. Furthermore, 37.9% of them thought they could avoid the transmission of AIDS via contraceptive pills. Among women, 94.4% of women considered that oral sex with ejaculation in the mouth is unsafe and considered one of routes of HIV transmission. Additionally, participants believed that anal sex (79%), oral sex (87.1%), and sex during menstrual periods (96.8%) are unsafe. Finally, most of the participants considered that sexual abstinence (77.4%) and sex with a circumcised man (65.3%) are unsafe for HIV/AIDS transmission.

In addition, 34.7% did believe that AIDS is not transmitted from circumcised men. Selected measures considered effective by sex workers for protection against sexually transmitted diseases were perineal cleaning with an antiseptic solution after each sexual intercourse and having antibiotic administered without any prescription.

Current risky behaviors

When risky behaviors among the participants were evaluated, 75.8% of them did not check the expiratory date of the condom; 55.6% did not check whether the condom was intact; 51.6% used condom at each intercourse; 67.6% had vaginal sexual contacts without a condom; 31.2% oral and 1.2% anal. Lubricant users (57.3%) mostly preferred (60.8%) oil based products.

Sex workers did not examine customers (89.5%) before intercourse for sexually transmitted diseases (wounds in the genital region, rashes on the body, discharge etc.). The sexual behaviors constantly demanded from sex workers beside vaginal intercourse were: anal sex (30.5%), fantasy enactment (15.6%), oral sex (14.0%), anal sex with vibrators or bottle (13.3%), licking or kissing feet (11.7%), sado-masochist relation (10.2%), and urination in the mouth or flatus (4.7%).

There was no statistically significant difference in knowledge level on AIDS, routes of transmission, and risky sexual behavior in terms of age groups, age of first sexual experience, and alcohol consumption status among female sex workers (Table 2).

As expected, education has a significant impact on knowledge of the participants on AIDS, routes of transmission, and risky sexual behaviors ($P = 0.05$, $P = 0.000$, and $P = 0.019$, respectively); graduates

Table 2. Relation between sociodemographic features and knowledge level on AIDS, routes of transmission, and risky sexual behavior.

		Knowledge level [median (minimum-maximum)]					
	N (%)	**AIDS**	**P**	**Route of transmission**	**P**	**Risk behavior**	**P**
Age (years)							
25–40	58(46.8)	4.0(1–5)		5.0(0–11)		5.0(1-6)	
41–56	60(48.4)	4.0(0–5)	0468	3.0(0–11)	0.064	5.0(0-6)	0.724
57–73	6(4.8)	4.0(2–5)		3.5(1–7)		5.0(3-6)	
The age of first sexual experience							
9–19	105(85.4)	4.0(1–5)	0.353	4.0(0–11)	0.520	5.0(0-6)	0.167
20–30	18(14.6)	3.0(0–5)		4.0(1–11)		5.0(3-6)	
Reported gender							
Woman	116(93.5)	4.0(0–5)	0.561	4.0(0–11)	**0.001***	5.0(0-6)	0.229
Transsexual	8(6.5)	4.0(2–6)		9.0(5-11)		6.0(4-6)	
Education level							
Uneducated	27(21.8)	4.0(1–5)		2.0(1–7)		5.0(0–6)	
Primary school	71(57.2)	4.0(0–5)	**0.054*****	4.0(0–10)	**0.001***	5.0(1–6)	**0.019*****
High school or higher	26(21.0)	4.0(3–5)		8.0(1–11)		6.0(3–6)	
The number of customers in the last week							
0–60	28(22.6)	3.0(0–5)		3(0–10)		5.0(0–6)	
61–120	58(46.8)	4.0(1–5)	**0.016*****	4(0–11)	**0.003****	5.0(1–6)	0.071
121–180	23(18.5)	4.0(1–5)		3(1–10)		5.0(2–6)	
≥181	15(12.1)	5.0(3–5)		7.0(4–9)		6.0(4–6)	
Monthly income (USD)							
≤670	20(16.1)	4.0(1–5)		2.0(0–10)		5.0(0–6)	
671–1000	18(14.5)	4.0(2–5)		3.0(1–10)		5.0(1–6)	
1001–1330	15(12.1)	4.0(3–5)	0.299	4.0(0–11)	**0.039*****	5.0(3–6)	0.109
1331–2000	24(19.4)	3.5(2–5)		4.0(1–10)		5.0(4–6)	
≥2000	47(37.9)	4.0(0–5)		5.0(1–10)		6.0(1–6)	
Alcohol consumption status							
Social drinker	42(33.9)	4.0(1-5)		4.0(1-10)		5.5(2-6)	
Non-drinker	71(57.2)	4.0(0-5)	0.107	4.0(0-11)	0.098	5.0(0-6)	0.339
Regular didrinker	11(8.9)	4.0(2-5)		2.0(0-9)		5.0(3-6)	
Past history of AIDS related training							
Received	102(82.3)	4.0(0–5)	1.000	4.0(0–11)	**0.004****	5.0(0-6)	0.413
Not received	22(17.7)	4.0(2–5)		2.0(1–9)		5.0(1-6)	
Type of customer							
Has regular customers	117(94.4)	4.0(0-5)	0.518	4.0(0–11)	**0.053*****	5.0(1-6)	**0.020*****
Does not have regular customers	7(5.6)	3.0(1–5)		2.0(1–11)		5.0(0-6)	

*P ≤ 0.001, **P ≤ 0.01***P ≤ 0.05

of high school or higher education got the highest scores. Past training on AIDS had a positive influence only on the routes of transmission (P = 0.004). Furthermore, those with regular customers were more knowledgeable on routes of transmission (P = 0.053) and risky sexual behaviors (P = 0.020) (Table 2).

Transsexuals had higher knowledge scores on routes of transmission (5 vs.11; P ≤ 0.001) but not on the risky sexual behavior and AIDS compared to the others. The other factors with significant impact on the participants' scores were the number of customers [AIDS (P = 0.016) and route of transmission (P = 0.003)], and monthly income [route of transmission (P = 0.039)]. Those with ≥180 customers per week had higher knowledge on all issues (AIDS, transmission routes) than others. The increased level of monthly income indicated higher knowledge level on infection routes (P ≤ 0.05) (Table 2).

There was no statistically significant difference in level of AIDS knowledge, routes of transmission, and risky sexual behavior in terms of the prevalence of condom use. However, there was a significant relation between using lubricant at each intercourse and knowledge about route of transmission (P = 0.012), and between checking whether the condom is intact and the knowledge about both route of transmission (P = 0.004) (Table 3).

Condom use was more frequent among the younger participants (25-40 years) compared to the older ones (41-73 years) (P ≤ 0.01). In addition, checking the expiry date of the condom and whether it is intact before the intercourse were significantly more common among the participants who experienced first sex at younger ages (P ≤ 0.05 and P ≤ 0.01, respectively). Similarly, more educated ones had higher condom expiry date and intactness checking levels (P ≤ 0.05 for both). Regular alcohol consumption decreased the intactness check (P ≤ 0.05). Transsexuals, on the other hand, had higher levels of checking expiry date of the condom (P ≤ 0.05) (Table 4).

Table 3. Relation between current risk behaviors and the knowledge level on AIDS, routes of transmission, and risky sexual behavior.

		Knowledge level [median (minimum-maximum)]					
	N (%)	**AIDS**	**p**	**Route of transmission**	**p**	**Risk behavior**	**p**
Using condom during each intercourse							
Yes	64(51.6)	4.0(0-5)	0.485	4.0(0-11)	1.000	6.0(0-6)	0.101
No	60(48.4)	4.0(1-5)		4.0(1-10)		5.0(1-6)	
Using lubricant during each intercourse							
Yes	71(57.3)	4.0(0-5)	0.973	4.0(1-11)	**0.012****	5.0(2-6)	0.397
No	53(42.7)	4.0(1-5)		3.0(0-10)		5.0(0-6)	
Checking the expiry date of the condom							
Yes	30(24.2)	4.0(0-5)	0.683	4.5(2-11)	0.133	5.5(3-6)	0.395
No	94(75.8)	4.0(1-5)		4.0(0-10)		5.0 (0-6)	
Checking whether the condom is intact							
Yes	55(44.4)	4.0(0-5)	0.569	6.0(1-11)	**0.004****	6.0(3-6)	0.095
No	69(55.6)	4.0(1-5)		3.0 (0-10)		5.0(0-6)	

Data are shown as median (minimum-maximum)
P ≤ 0.01*P ≤ 0.05

Table 4. Condom use habits according to age, education, age at first sexual intercourse and risk behavior.

Condom use	**N (%)**	**P**
Age groups		
25-40 years	37 (63.8)	**0.004****
41-73 years	27 (40.9)	
Age at first sexual experience		
9-19 years	53 (50.5)	0.404
20-30 years	11 (61.1)	
Past history of training on AIDS		
Yes	50 (49.0)	0.157
No	14 (63.6)	
Checking whether condom was intact		
Age groups		
25-40 years	27 (46.6)	0.370
41-73 years	28 (42.4)	
Age at first sexual experience		
9-19 years	41 (39.0)	**0.002***
20-30 years	14 (77.8)	
Past history of training on AIDS		
Yes	48 (47.1)	0.142
No	7 (31.8)	
Education level		
Uneducated	10(37.0)	
Primary school	28(39.4)	**0.051*****
High school or higher	17(65.4)	
Alcohol consumption status		
Social drinker	14(33.3)	
Non-drinker	38(53.5)	**0.055*****
Regular drinker	3(27.3)	
Checking the expiry date of the condom		
Reported gender		
Woman	25 (21.6)	**0.020*****
Transsexual	5 (62.5)	
Age groups		
25-40 years	17 (29.3)	0.452
41-56 years	12 (20.0)	
Age at first sexual experience		
9-19 years	21(20.0)	**0.014*****
20-30 years	9 (50.0)	
Education level		
Uneducated	3(11.1)	
Primary school	16(22.5)	**0.026*****
High school or higher	11(42.3)	
Past history of training on AIDS		
Yes	26 (25.5)	0.336
No	4 (18.2)	

*P ≤0.001, **P ≤0.01***P ≤0.05

Discussion

Sex workers are considered a high-risk group for sexually transmitted infections, including human immunodeficiency virus (HIV), and are often targeted by prevention interventions with safer sex messages. Most FSWs perceived themselves at risk of HIV; however, most believed that their chances of getting infected were higher through sex work than through their private sexual relationships (21). Political discordance and migration from poor countries to countries where the AIDS epidemic is common, an increase in sex trade, and lack of information and practices for preventing AIDS/HIV played a significant role in HIV/AIDS epidemics (22). Better knowledge levels for routes of transmission and the risky sexual behavior among transsexuals in the present study may be because of transsexuals' higher sensitivity due to the prevailing idea in the society as well as sex workers that HIV/AIDS is a disease of homosexuals (23).

While it was expected that older sex workers would have higher scores in parallel to the increase in experience and training programs on AIDS (24), age was not related to knowledge levels concerning AIDS, transmission routes, and the risky behavior among our subjects. Moreover, although the risk of HIV was 1.35 times higher among sex workers who experienced first sexual intercourse at an age younger than 16 (14), there was no relation between the age of first sexual intercourse and the knowledge on AIDS, transmission route, and risky behavior among our participants. The age and first sexual experience age did not have any correlation between checking the expiration date and intactness of condoms.

In fact, when compared to past studies (14-25), our population of female sex workers was composed of older women with higher numbers of weekly customers and longer work hours as well as younger age of first sexual intercourse, all of which suggesting a high risk of being infected with HIV.

Supported by previous data (13) concerning inaccurate and deficient information on routes of information among sex workers with low level of education, there was a linear relation between education level and knowledge level of sex workers in our study, with the highest scores obtained among high school graduates.

As known, the probability of transmission of HIV/AIDS increases as the number of sexual intercourse and partners increases. Probability of being HIV seropositive was 2-fold higher in sex workers with more than 20 customers a month than those with less than 10 customers a month. Each intercourse carried a 1.25 fold more seropositivity risk (25). In accordance with these results, knowledge level was higher among sex workers with 181 or more customers per week in the present study. Limited economic sources, poverty, and other social and cultural factors were the factors underlying the employment of women in the sex sector (13). As female sex workers expressed, declaration of municipal government concerning the plan of closing of their brothel in the near future caused anxiety because of future financial insecurity. Therefore, those with higher numbers of customers may also have even higher anxiety.

While higher scores obtained on transmission routes of AIDS among sex workers who had been previously informed was a positive finding indicating the efficacy of training given, it was noteworthy that 22 sex workers stated that they had not received information while it was obligatory for sex workers to receive training once a year and to undergo ELISA test during routine examinations. Likewise, some sex workers replied "no" to the question whether they had undergone ELISA test, which shows that sex workers do not have adequate feedback on the tests carried out.

Since there was no difference in condom use between those who had received AIDS training and those who had not, the infrastructure of the education given should be evaluated again. Nevertheless, in a study carried out on sex workers working on the street and in hotels, it was reported that the information level of sex workers on AIDS, routes of transmission, and protective effect of condom was high, but the rate of condom usage was still low (26). Since customers who refuse to use a condom for a higher feeling of satisfaction may offer extra money for sex without a condom (27,28), similarity between sex workers who had received training previously or not in terms of condom use during sexual intercourse may also reflect the sex workers' choice of obeying wishes of the customers due to economic reasons.

In fact it was established that, although sex workers are informed on AIDS and routes of transmission, their information was deficient and inaccurate (27). In addition, 3.5% of the sex workers stated that they did not need any information on AIDS and routes of transmission. In this vein, sex workers in our study reported that they had HIV (+) colleagues who can maintain their lives with no evidence of disease for a long time. It has been established that sex workers do not consider AIDS a fatal disease, rather a curable disease that can be treated with early diagnosis and treatment. This misinformation can be attributed to ineffective and/or insufficient training by the official training team.

Furthermore, since it has been reported that (29) in the transmission of HIV, anal intercourse had 10-fold higher risk than vaginal intercourse, consideration of anal intercourse as a more risky way of HIV transmission by 74.2% of our subjects is worth noting in this manner. Since anal sex was not favored by Turkish women, this drawback may have a prominent role in the determination of the lower incidence of anal intercourse among the participants.

In contrast to the higher levels (56.6%) reported for the evaluation of customers in terms of having sexually transmitted disease performed by sex workers (27) and the resulting refusal of intercourse when symptoms of sexually transmitted disease were recognized by 42.2% of sex workers, very few women were determined to perform an evaluation of their customers with regard to disease in our study. When they saw discharge on the penis, rash on the skin, or wound in the genital region, they accepted the customer provided that they used double condom or they refused intercourse.

It was reported that (30) the number of partners, sexual behavior, and condom use were important in the prevention of sexually transmitted diseases and the correct use of condoms as well as spermicidal lubricants was stressed in relation to their influence increasing the efficacy of condoms.

In accordance with the documented lack of sufficient information on the use of lubricants among sex workers (27), the use of oil-based products such as Vaseline and baby oil, which may lead to slipping, removal, or breakage of the condom, was also common in the present study. In this regard, higher scores for routes of transmission obtained by our subjects with more frequent use of lubricants suggest that this group had been informed that lubricant helps to protect the integrity of skin and tissue.

Accordingly, checking whether the condom is intact by female sex workers was found to be related to higher knowledge scores on route of transmission in our study. Regular alcohol consumers in the study failed to check the intactness and expiration date of condoms. Similarly, alcohol consumption decreased condom use and increased HIV infection because of risky sexual behaviors (24).

Additionally, in the present study, it was established that sex workers have inadequate information on the cleaning of the perineal region and they used some antiseptic solutions, such as zephiran, whose use on mucosal surfaces should be avoided (28).

In conclusion, determination of lower than expected rates of condom use in such a population that is composed of registered sex workers under obligatory regular medical supervision and training programs related to AIDS, transmission routes, and risk behaviors indicates the deficiencies in the translation of the gained knowledge to the corresponding attitude. Therefore, obligatory training programs must be revised in terms of related short and long term objectives enabling contribution of HIV (+) sex workers to the training environment. Furthermore, less important factors, such as inequality of income distribution leading to an increase in working hours as well as the number of customers, must be reconsidered. The repetition of the study with sex workers working on the street and providing sex workers with HIV/AIDS positive with free treatment are also of paramount importance. Finally, since the closing down of the brothel by the government would probably increase uncontrolled sex trade, conservation of brothels would still be beneficial for controlling HIV/AIDS transmission.

Inclusion of the nurses who provide health care for sex workers in education programs on women's health, ending social discrimination and violence, and granting of legal rights would meet the demands of sex workers. Not only education of sex workers on HIV/AIDS would be adequate, also the customers (men, who buy services from them) need to be trained in projects led by community leaders, such

as religious leaders and teachers. Further studies on obtaining information on their personalities and perceiving legal rights would contribute to the knowledge of the society.

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References

1. Karim AS, Karim QA, Gouws E, Baxter C. Global Epidemiology of HIV-AIDS. Infect Dis Clin N Am 2007; 21: 1-17.
2. Joint United Nations Programme on HIV/AIDS (UNAIDS), Global summary of the AIDS epidemic, December 2009. Available from: URL: http://data.unaids.org/pub/Global Report/2009 (accessed 16 Sep 2010).
3. World Health Report, A Global Emergency: A Combined Response, 2004. Available from: URL: http://www.who.int/whr/2004/en/03_chap1_en.pdf, (accessed 01 May 2009).
4. Klimas N, Koneru AO, Flaetcher MA. Overview of HIV. Psychosomatic Med 2008; 70: 523-30.
5. Peters PJ, Kilmarx PH, Mastro TD. AIDS: Global Epidemiology, encyclopedia of virology. 3rd Ed. 2008; 58-68.
6. Nicolosi A, Correa Leite ML, Arici C, Gavazzeni G, Lazzarin A. The efficiency of male–to-female and female-to-male sexual transmission of the human immunodeficiency virus: a study of 730 stable couples. Italian Study Group on HIV Heterosexual Transmission. Epidemiology 1994; 5: 565-67.
7. Pettifor AE, Hudgens MG, Levandowski BA, Rees HV, Cohen MS. Highly efficient HIV transmission to young, women in South Africa. Epidemiology and Social 2007; 21: 861-65.
8. Webber G. Impact of migration on HIV prevention for women: constructing a conceptual framework. Health Care for Woman International 2007; 28: 712-730.
9. DeGruttola V, Seage GR, Mayer KH, Horsburgh RC. Infectiousness of HIV between male homosexual partners. Journal of Clinical Epidemiology 1989; 42: 849-56.
10. Guimaraes MDC, Vlahov D, Castilho E. Postcoital vaginal bleeding as a risk factor for transmission of the human immunodeficiency virus in a heterosexual partner study in Brazil. Arch Intern Med 1997; 22: 1362-368.
11. O'Farrell N. Enhanced efficiency of female-to-male HIV transmission on core groups in developing countries. Sexually Transmitted Diseases 2001; 28: 84-91.
12. Ricgters J, Hendry O, Kippax S. When safe sex isn't safe. Culture, Health & Sexuality 2003; 5: 37-52.
13. Hosain GMM, Chatterjee N. Beliefs, sexual behaviours and preventive practices with respect to HIV/AIDS among commercial sex workers in Daulatdia, Bangladesh. Journal of the Royal Institute Public Health 2005; 119: 371-381.
14. Bautista CT, Sanchez JL, Montano SM, Torres AL, Suarez L, Sanchez J, Campos P et al. Seroprevalence of and risk factors for HIV-1 infection among female commercial sex workers in South America. Sexually Transmitted Infections 2006; 82: 311-316.
15. Islam M, Conigrave K. HIV and sexual risk behaviors among recognized high-risk groups in Bangladesh: need for a comprehensive prevention program. International Journal of Infectious Diseases 2008; 12: 363-70.
16. Statistical Yearbook of Health Republic of Turkey Ministry of Health. Distribution of AIDS cases and carriers by age group and sex. Department of Strategy Development's Publications 1985-2006. Ankara, 18, 2006.
17. CETAD (Society for Sexual Education Treatment and Research; Cinsel Eğitim Tedavi ve Araştırma Derneği) Advocating Sexual Health and Reproductive Health with National and Local Media which was also financed by the European Union and supported under the Ministry of Turkey Health Department's Turkey Reproduction Health Program, Commercial Sex File 2006.
18. Ankara Chamber of Commerce. File of Women with no life, 2004. Available from: URL: http://www.atonet.org.tr/yeni/index.php?p=201&l=1. (accessed 1 May 2008).
19. Association of Turkish Industries and Businessman, Analysis of Household Labour Force, Income, Expense and Poverty in Turkey. Available from: URL: www.tusiad.org. (accessed 3 March 2008).
20. Sedyaningsih-Mamahit ER. Female Commercial Sex workers in Kramt Tunggak, Jakarta, Indonesia. Social Science & Medicine 1999; 49: 1101-1114.
21. Barrientos JE, Bozon M, Ortiz E, Arredondo A. HIV prevalence, AIDS knowledge, and condom use among female sex workers in Santiago, Chile. Cad Saude Publica 2007; 23: 1777-84.
22. Marten L. Commercial sex workers: Victims, vectors or fighters of the HIV epidemic in Cambodia? Asia Pacific Viewpoint 2005; 46: 21-34.
23. Kenagy G. HIV among transgender people. AIDS Care 2002; 14: 127-134.
24. Markosyan KM, Babikian T, DiClement RJ, Hirsch JS, Grigoryan S, Rio C. Correlates of HIV risk and preventive behaviors in Armenian female sex workers. AIDS and Behavior 2007; 11: 325-34.

25. Wang C, Hawes SE, Gaye A, Sow PS, Ndoye I, Manhart LE et al. HIV prevalence, previous HIV testing, and condom use with clients and regular partners among Senegalese commercial sex workers. Sexually Transmitted Infections 2007; 83: 534-40.

26. Hesketh T, Zhang J, Qiang DJ. HIV knowledge and risk behaviour of female sex workers in Yunnan Province, China: Potential as bridging groups to the general population. AIDS Care 2005; 17: 958-66.

27. Lau JTF, Tsui HY, Siah PC, Zhang KL. A study on female sex workers in southern China (Shenzhen): HIV-related knowledge, condom use and STD history. AIDS Care 2002; 14: 219-33.

28. Pauw I, Brenner L. You are just whores - you can't be raped': barriers to safer sex practices among women street sex workers in Cape Town. Culture, Health and Sexuality 2003; 5: 465-81.

29. Schwandt M, Morris C, Ferguson A, Ngugi E, Moses S. Anal and dry sex in commercial sex work, and relation to risk for sexually transmitted infections and HIV in Meru, Kenya. Sexually Transmitted Infections 2006; 82: 392-6.

30. Stein ZA. HIV Prevention: The need for methods women can use. American Journal of Public Health 1990; 80: 460-62.