

CONSISTENT CONDOM USE DYNAMICS AMONG SEX WORKERS IN CENTRAL AMERICA: 1997–2000

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Summary. The paper aims to provide evidence on consistent condom use dynamics among sex workers in Central America between 1997 and 2000, and to examine the most important predictors of use behaviour important for policy and programme interventions in the region. Data on 3500 sex workers, 1500 from 1997 and 2000 from the year 2000, were analysed. The samples represented sex workers in low socioeconomic neighbourhoods who met their clients at known sex establishments or by the roadside. Sex workers were more likely to have used condoms consistently in 2000 than in 1997 (Odds Ratio (OR)=1.4, $p \leq 0.05$). Sex workers who discussed condoms with their partners or lovers used them consistently with all clients more than those who did not (OR=1.3, $p \leq 0.10$). Knowledge of condom advantages had a positive influence on consistent use. Sex workers who reported using condoms to prevent pregnancy or STDs used them consistently with all clients more than those who did not (OR=1.2, and 1.3 respectively, $p \leq 0.10$). The source of condoms is an important predictor of consistent condom use. Sex workers who bought condoms from health establishments or from brothels used them consistently more than those who did not (both OR=1.3, $p \leq 0.10$, and $p \leq 0.05$, respectively). Self-efficacy had a positive effect on consistent condom use. Sex workers who reported that they would use condoms even if clients offered to pay more for unprotected sex used them consistently with all clients more than those who did not (OR=1.8, $p \leq 0.001$). The findings suggest that having condom skill is positively related to condom use. Sex workers who had all four skills used condoms more consistently than those who had none (OR=1.6, $p \leq 0.01$). In order to increase consistent condom use and avert more incidences of HIV/AIDS and other STIs, programme interventions need to use the most efficient way to provide quality information, and provide repeated training on condom negotiation and use skills to sex workers.

Introduction

In Central America HIV/AIDS is spreading among sex workers (SWs) more than in the general population. As far back as 1995, the estimated seroprevalence rate was as high as 21% among SWs in San Pedro Sula, the industrial capital city of Honduras, compared with 1.9% estimated for the general population in 1999 (US Census Bureau, 2000a). In 1994, the estimated HIV seroprevalence among SWs in Mazatenango, Guatemala, was 4% while it was 1.4% in the general population in 1999 (US Census Bureau, 2000b). In 1995, San Salvador City in El Salvador recorded 2% seroprevalence among SWs (both male and female) compared with 0.6% estimated for the general population (US Census Bureau, 2000c). Available evidence as far back as 1990 on seroprevalence among urban SWs in Managua, Nicaragua, was 1.5%, while the estimate for the general population was 0.2% in 1999 (US Census Bureau, 2000d). In 1995 in San Jose, Costa Rica, prevalence was 1% compared with 0.5% in the general population (US Census Bureau, 2000e). It is important to note that these estimates are likely to be underestimated because they were obtained from a few sentinel surveillance sites operating at the time, and the willingness to be tested was generally low among SWs and the general population.

In response to the rapid spread of HIV/AIDS in the region, governmental and non-governmental organizations have been providing intervention activities to reduce infection among SWs and other high-risk groups. Key goals of most intervention efforts include increasing the amount and quality of surveillance data, promoting prevention activities among high-risk groups (Latin American & Caribbean Epidemiological Network [LACEN], 2000), raising awareness, knowledge and condom use skills and behaviour change towards consistent condom use. This paper provides evidence to show whether these intervention efforts are achieving the desired results among SWs. It examines the most important predictors of consistent condom use among SWs using data sets obtained in 1997 and 2000.

Data and Methods

Sampling design

Data on 3500 SWs were analysed: 1500 from a survey conducted in 1997 and 2000 from a similar survey in the year 2000. Three hundred SWs were interviewed in each country in 1997 and 400 in the year 2000. The two surveys were conducted in the metropolitan areas of San Jose, Costa Rica; Managua, Nicaragua; San Salvador, El Salvador; San Pedro Sula, Honduras; and Guatemala City, Guatemala. The Pan American Social Marketing Organization (PASMO), the agency that funded the data collection, determined the choice of countries and cities. This was made to coincide with areas where PASMO had ongoing intervention activities at the time. The two samples included SWs who operated at known sex establishments (brothels, bars and taverns), and those who met their clients at known locations by the roadside.

As was expected for a transient and difficult population, there was no existing sampling frame on SWs in any of the countries. With technical assistance from Population Services International (PSI), the parent organization of PASMO based in Washington, DC, ILPES (Latinoamericano de Prevencion Educacion en Salud), the

local research agency based in Costa Rica, constructed two quasi-sampling frames, one for SWs who met clients at known sex establishments, and another for those who met their clients at known locations by the roadside. First, the research team compiled a list of all known sex establishments. The eligibility criteria for a sex establishment to be included were: (1) it must be located in a low-income area, and (2) it must be within the metropolitan areas in the city where PASMO had intervention activities. In total, an updated list of 102 sex establishments that met these characteristics were listed in 2000: Costa Rica 23, Nicaragua 18, El Salvador 25, Honduras 14 and Guatemala 22. The research team then visited each of these sex establishments to elicit the support and co-operation of the proprietors or administrators in charge, and to obtain information on the days of the week and hours that they opened; whether SWs resided there or lived elsewhere; the number of SWs who were resident; and the number of rooms in the sex establishment. The research team also obtained information on the number of SWs who lived outside, and an estimate of the number who worked per day. This information was used to estimate the total number of SWs who worked in each sex establishment and the average number that worked per day.

Construction of the quasi-sampling frame for SWs who met their clients by the roadside was more challenging. For this group, known meeting locations were temporal, changing more rapidly in some countries than in others depending on whether the sites were prohibited, and how often law enforcement agents visited them. However, it was not difficult to track new locations since they were within the same geographic area. The research team visited these areas in the selected cities located in low socioeconomic neighbourhoods, and with the help of the SWs present at the time of visit compiled a list which included the names, and description of each of these locations and directions linking them from the main streets in the area. The SWs also provided information on the number of blocks on the street that they can be found, whether SWs who came to these locations usually spaced out geographically or were clustered around a specific block, the days that they worked, their schedule if any, and approximate number of SWs who usually came to the location. With this information the research team determined the number of SWs to be interviewed at each location with probability proportionate to the estimated number of SWs who usually visited the location.

After the number of SWs to be interviewed at each location (for both types of SWs) was determined, a minimum of five interviewers and one co-ordinator visited these locations at a randomly selected hour, to conduct the interview. The first five SWs who entered the sex establishment or who came to the roadside location were interviewed. This process of interview was repeated until a pre-determined number of SWs to be interviewed at a location was completed. The interview hour was randomized in order to reduce any bias that may be introduced if more SWs of the same characteristics visited the location at certain time every day. Had this sampling bias occurred, it would have affected SWs who met their clients by the roadside more than those who worked at sex establishments, many of whom lived there working full time, whereas those by the roadside were more likely to work part time. Another bias that was eliminated in the study design was the possibility of being interviewed twice since SWs were not selected from any known sampling frame. All SWs were asked at the beginning whether they had been interviewed recently on the same issues. The few who answered in the affirmative were not interviewed a second time.

Another possible source of sampling bias considered was the potential for introducing unequal probability of selecting SWs for the interview. Sex workers who visited the location frequently had a higher likelihood of been selected than those who visited occasionally. For example, SWs who resided at sex establishments were more likely to be interviewed than those who worked in the same establishment but who lived elsewhere, or those who met their clients by the roadside. The data sets were weighted to reduce this bias. Sex workers were asked, during interview, about the number of days in a month that they visited the location. The inverse of the frequency of visits per month was used to weight the data sets. Preliminary runs of background variables did not show any significant difference in the frequency distributions for weighted and unweighted data sets. In general, and in all countries, interviewers received 98% co-operation.

It is important to note that although the same research methodology was employed by ILPES, who did the data collection in the two study years, the two surveys are not a panel or a cohort study since they include independent samples of SWs at different points in time. Also, the cross-sectional nature of these two samples may have contributed to the unexplained variation by the predictors of consistent condom use among SWs mentioned in the results and discussion sections of this paper.

Dependent variables

The main objective of this study was to understand changes in consistent condom use behaviour among SWs. That is, whether they used condoms with both regular and casual clients at every sexual intercourse. A regular client is defined here as a man who visits the same SW frequently to have sexual intercourse in exchange for money. Regular clients are generally known to the SWs that they visit often as opposed to casual clients who at irregular times visit to transact sex with any SW available. The literature suggests that a lack of condom use increases SW's risk of contracting HIV (Ford *et al.*, 1998; Thuy *et al.*, 1998; Adetunji & Meekers, 2000). Consistent condom use is therefore an important factor in reducing the spread of the disease among SWs and in Central America.

Consistent condom use was measured by combining two questions that asked SWs whether they used condoms in the last sex acts with regular clients, and whether they used them with casual clients (irrespective of the type of sex act). The two questions were combined to form the variable 'used condoms in the last sex acts with all clients' (1=used with all clients vs 0=no and other). The assumption is that SWs who used condoms with both types of clients in the last sex acts most likely used them with all clients all of the time. Although this variable is a weak measure of consistency over a long period of time, it is a fairly good point-measure of consistent use of condoms.

Independent variables

Correct condom skills. With the everyday need to negotiate condom use with many clients, for some of whom time is an important consideration, it is imperative for SWs to master the act of using condoms skillfully and efficiently. Studies have showed that

condom skill is associated with increased condom use (De Zaluondo, 1991; De Bruyn, 1992; Meekers & Klein, 2002). Sex workers who have correct condom skills are more likely than those who do not have them to have used condoms with all clients in the last sex acts. Correct condom skills were measured using a dummy variable derived from a combination of four steps of correct skills demonstrated by SWs during the interview: (1) opening a condom wrapper with fingers at the corner, (2) preventing air by holding the condom at the tip with fingers, (3) rolling the condom completely to the base of a phallus, and (4) removing the condom from the phallus while holding the ring. Sex workers were asked to demonstrate their condom skills at the end of the interview and the interviewer recorded his/her observations. These four steps were combined to form levels of condom skills, one, two, three, and four skills for SWs who demonstrated all four steps correctly.

Perceived self-efficacy. Studies suggest that perceived self-efficacy is positively related to consistent condom use (Ford *et al.*, 1998; Oladosu & Ladipo, 2001). Self-efficacy is conceptualized as SWs' perceived ability to negotiate and use condoms with a partner during sexual intercourse. Sex workers were asked some conditional questions: whether they would insist on using condoms if a client offered to pay more for unprotected sex (yes vs no); whether they would use condoms with a partner or lover (yes vs no); and whether they would use condoms with a client who looked healthy (yes vs no).

Perceived condom attributes. Sex workers' perceptions about condom attributes influence their use of it (Rahman *et al.*, 1998). Sex workers who had favourable opinions about condom attributes were more likely to have used condoms with all clients than those who did not. Measures of perceived condom attributes were elicited by asking SWs whether condoms diminish or do not diminish sexual pleasure (yes, it diminishes; sometimes; it does not; it does not matter), and these responses were re-coded into two dummy variables: (1) condom sometimes diminishes pleasure=1, else=0; and (2) condom does not diminish pleasure=1, else=0.

Sources of condoms and price. An important predictor of condom use is the ability to buy them at an affordable price (Davis & Agha, 1997; Agha & Meekers, 2000). Sex workers were asked where they usually bought condoms: in a pharmacy (yes vs no), health establishment (yes vs no) or brothel (yes vs no). In order to understand how condom price influences use, SWs were asked about their opinions on the price of condoms: whether expensive, regular (normal) or cheap. Responses were dummied into a dichotomous variable: expensive=1, else=0.

Risky sexual behaviour. An important precondition of consistent condom use by SWs is their perceived risk of contracting HIV/AIDS. Sex workers who think that they are at risk of contracting HIV/AIDS are more likely to use condoms consistently with all clients. Sex workers are exposed to the risk of HIV/AIDS on a daily bases because of their contact with multiple sexual partners. In this situation, a measure testing their persistence of protected sex over a period of time was hypothesized to be a good measure of their perception of risk of HIV/AIDS. This time-dependent

concept of risk was measured in this study by a question asking SWs whether they had unprotected vaginal sex in the last month preceding the survey (yes vs no).

Knowledge of condom advantages. Increased awareness and knowledge of HIV/AIDS leads to consistent condom use among SWs (Oladosu & Ladipo, 2001). This relationship holds when the information received does not exist simultaneously with misconceptions and myths about unsafe sexual practices. Knowledge of condom advantages was measured by asking SWs about their reasons for using condoms: whether to prevent pregnancy (yes vs no), STDs (yes vs no), AIDS (yes vs no) or for hygiene (yes vs no).

Exposure to condom information. Exposure to information about condoms leads to increased awareness and knowledge about their benefits. Exposure to condom information was examined in two dimensions: sources or channels of information and the content of the information about condoms. The literature suggests that exposure to multiple channels of information has a positive effect on behaviour change (Van Rossem & Meekers, 1999). This study examines exposure to information about condoms through TV, radio and other channels. Sex workers were asked whether they received information about condoms from: TV (yes vs no), radio (yes vs no), friends (yes vs no), and from talking with friends (yes vs no).

The content of information about condoms was measured by a question that asked SWs about the VIVE condom brand, which was being promoted by PASMO in all the five countries at the time. It has been argued in the literature that a targeted and sustained social marketing programme (SMP) is effective in changing behaviour, and in increasing condom use over time (Agha, 1998; Eloundou-Enyegue *et al.*, 1998; Karlyn, 2001). PASMO advertised VIVE condoms with the slogan *VIVE tu mejor momento*, which means 'live your best moment'. This slogan was on the sachet and in all advertisements about the condom brand. The content of condom information was measured by asking SWs whether they had seen or heard about the VIVE condom advertisement (yes vs no). It was assumed that those who had heard about or seen the advertisement had also heard about or read the slogan. This is a weak measure of the content of an advertisement or message. It was used for want of a better instrument in the questionnaire. Although the measure of advertisement content was weak, it was thought that its inclusion in the analysis might provide interesting information (either negative or positive) about consistent condom use.

Background characteristics. The literature suggests that some background characteristics are important predictors of consistent condom use among SWs (Thuy *et al.*, 1998). Selected background characteristics included in this study are: year of survey (1997 vs 2000), country of residence at the time of interview (Costa Rica, Nicaragua, El Salvador, Honduras or Guatemala), usual place of residence (metropolitan vs non-metropolitan), age in 5-year intervals, marital status (single/divorced/widowed vs married/living together), number of dependants (none, one or two, and three or more) and level of education (none, at most primary, and at least some secondary).

Sample description

This section presents basic characteristics of SWs in the study. Table 1 shows that the majority of SWs lived in a metropolitan area (85%), were young, i.e. mostly under 30 years of age (65%), were either single, divorced or widowed (76%), and most of them had at least one dependant (94%). About half of SWs had at most a primary education (52%), a third had at least some secondary education (33%), and only a small proportion had no education (15%). Most SWs received information about condoms from multiple sources: friends (68%), the TV (63%) and from the radio (58%). Less than a half talked with their partner or lover about condoms (47%). By the year 2000, only about a third of SWs had seen or heard advertisements about VIVE condoms (32%). Close to half (46%) of SWs had vaginal sex without using condoms a month before the survey. Also, Table 1 shows that SWs' knowledge was high on some condom advantages, such as on STD prevention (90%) and HIV prevention (74%). Sex workers' knowledge was low on use of condoms for pregnancy prevention (31%) and for hygiene purposes (14%), the lowest.

Sex workers were fairly well distributed among sources of condoms with brothels having the highest proportion (27%), followed by pharmacies (25%) and health establishments (16%). A few SWs think that condoms are expensive (20%). Only few SWs have negative perceptions about condom attributes (sometimes diminishes pleasure=17%, and does not diminish pleasure=28%). Most of the SWs who participated in this study had perceived self-efficacy to use condoms with clients. Most of them would use condoms even if clients offered more money (85%) or if clients looked healthy (81%). But the percentage dropped substantially when SWs were asked if they would use condoms with a partner or lover (41%). Although most SWs had at least one condom skill (85%), only a small proportion (24%) had all the four condom skills, but very few (15%) did not have any of the four skills. Most SWs used condoms with casual clients in the last sex acts (94%), and with regular clients (89%). A lower but fairly high percentage used condoms with all clients in the last sex act (74%).

Results

Bivariate

Table 2 shows the associations between condoms use in the last sex acts with all clients according to selected predictors. Results of the chi-squared test of the significance and strength of association at 0.10, 0.05, 0.01 and 0.001 levels are also presented in the table. The results suggest that over time, more SWs are using condoms with their clients. More SWs in the year 2000 than in 1997 used condoms in the last sex acts with all clients (77% vs 71%, $p \leq 0.001$).

The proportion of SWs who used condoms in last sex with clients differed significantly across countries (Table 2). Guatemala had the highest proportion of SWs who used condoms with all clients in the last sex acts (78%), followed by Costa Rica and Honduras (each, 75%), and El Salvador (74%), and the least, Nicaragua (70%, $p \leq 0.01$).

Table 1. Sample characteristics ($N=3500$)

	%
Residence	
Non-metropolitan	15
Metropolitan	85
Age group	
<20	15
20–24	30
25–29	20
30–34	14
35+	21
Marital status	
Single, divorced or widowed	76
Married/living with partner	24
Number of dependants	
None	6
Two or less	31
Three or more	63
Level of education	
None	15
At most primary	52
At least some secondary	33
Exposure to information about condoms	
Received info. from TV	63
Received info. from radio	58
Received info from friends	69
Talked with partner or lover	47
Exposure to information about VIVE condoms	
Seen or heard advertisement	32
Risky sexual behaviour	
Had vaginal sex last month without condoms	46
Knowledge of the advantages of condoms	
Used to prevent pregnancy	31
Used with clients to prevent STDs	90
Used with clients to prevent AIDS	74
Used with clients for hygiene	14
Condom source and price	
Pharmacy	25
Health establishment	16
Brothel	27
Consider expensive	20
Condom attributes	
Sometimes diminishes pleasure	17
Does not diminish pleasure	28

Table 1. *Continued*

	%
Self-efficacy	
Would use if clients paid more	85
Would use with partner or lover	41
Would use if client looked healthy	81
Condom skills	
No skills/did not participate	15
One skill	10
Two skills	19
Three skills	29
Four skills	27
Condom use with clients	
Casual	94
Regular	89
All clients (both regular and casual)	74

Consistent condom use varies by residence. More SWs who lived in a metropolitan area than those who lived in a non-metropolitan area used condoms with all clients in the last sex acts (78% vs 74%, $p \leq 0.05$).

Consistent condom use also varies by the age of SWs. The findings show that a higher proportion of younger SWs (20 years old or younger) used condoms with all clients in the last sex acts compared with those aged 35 or older (77% vs 70%, $p \leq 0.001$).

Education is associated with condom use. Sex workers who had at least some secondary education used condoms with all clients more than those who had no education (70% vs 77%, $p \leq 0.01$).

Source of information has a significant association with consistent condom use with clients. A higher percentage of SWs who received condom information from TV compared with those who did not, used condoms with all clients in the last sex acts (76% vs 72%, $p \leq 0.01$). Similarly, more SWs who received condom information from the radio used condoms in the last sex acts with all clients compared with their counterparts who did not (76% vs 72%, $p \leq 0.05$). A higher proportion of SWs who received information about condoms from friends than those who did not, used condoms with all clients in the last sex acts (76% vs 71%, $p \leq 0.001$). And more of the SWs who obtained information from a partner or lover than those who did not, used condoms with all clients in the last sex acts (78% vs 71%, $p \leq 0.001$).

The association between the content of the information received and condom use was examined. Table 2 shows that more SWs who had heard of or had seen a VIVE advertisement used condoms with all clients in the last sex acts than those who did not (77% vs 73%, $p \leq 0.01$).

Consistent condom use varies according to SWs' perceived risk of contracting HIV. Sex workers who did not have unprotected vaginal sex in the last month before

Table 2. Percentage of sex workers who used condoms in last sex acts with all clients, regular clients and casual clients according to selected background characteristics, indicators of exposure to condom information, risky sexual behaviour, knowledge about condom advantages, sources and price, attributes, self-efficacy and condom skills

	All (<i>N</i> =3452)	Regular (<i>N</i> =3159)	Casual (<i>N</i> =3334)
Year of survey			
1997	71	84	91
2000	77	93	94
<i>p</i> (χ^2)	0.000	0.000	0.000
Country			
Costa Rica	75	90	93
Nicaragua	70	93	96
El Salvador	74	87	93
Honduras	75	89	92
Guatemala	78	87	94
<i>p</i> (χ^2)	0.035	0.002	0.031
Residence			
Non-metropolitan	74	89	93
Metropolitan	78	89	95
<i>p</i> (χ^2)	0.025	0.838	0.178
Age group			
<20	77	93	93
20–24	78	94	96
25–29	74	88	94
30–34	73	86	94
35+	70	83	90
<i>p</i> (χ^2)	0.000	0.000	0.000
Marital status			
Single, divorced or widowed	74	89	93
Married/living with partner	77	91	94
<i>p</i> (χ^2)	0.097	0.131	0.775
Number of dependants			
None	70	86	87
One or two	74	89	93
Three or more	76	89	95
<i>p</i> (χ^2)	0.133	0.323	0.000
Level of education			
None	70	84	92
At most primary	74	89	93
At least some secondary	77	92	95
<i>p</i> (χ^2)	0.005	0.000	0.051

Table 2. *Continued*

	All (<i>N</i> =3452)	Regular (<i>N</i> =3159)	Casual (<i>N</i> =3334)
Exposure to information about condoms			
Received info. from:			
TV			
No	72	87	94
Yes	76	89	93
<i>p</i> (χ^2)	0.010	0.523	0.833
Radio			
No	72	88	93
Yes	76	90	94
<i>p</i> (χ^2)	0.011	0.073	0.138
Friends			
No	71	86	93
Yes	76	89	94
<i>p</i> (χ^2)	0.001	0.529	0.208
Talking with partner/lover			
No	71	88	93
Yes	78	90	94
<i>p</i> (χ^2)	0.000	0.055	0.068
Exposure to information about VIVE condoms			
Have seen or heard VIVE condom advertisement:			
No	73	87	93
Yes	77	93	95
<i>p</i> (χ^2)	0.006	0.000	0.000
Risky sexual behaviour			
Had vaginal sex in last month without condoms:			
No	81	96	97
Yes	67	82	90
<i>p</i> (χ^2)	0.000	0.000	0.000
Knowledge of the advantages of condoms			
Used condoms with clients:			
To prevent pregnancy			
No	74	89	94
Yes	80	93	96
<i>p</i> (χ^2)	0.000	0.000	0.015
To prevent STDs			
No	68	83	90
Yes	76	91	95
<i>p</i> (χ^2)	0.001	0.000	0.001
To prevent AIDS			
No	72	85	93
Yes	77	92	95
<i>p</i> (χ^2)	0.008	0.000	0.013

Table 2. Continued

	All (N=3452)	Regular (N=3159)	Casual (N=3334)
Knowledge of the advantages of condoms continued			
For hygiene			
No	76	90	94
Yes	74	89	95
<i>p</i> (χ^2)	0.279	0.599	0.613
Condom source and price			
Buy condoms from:			
Pharmacy			
Others	76	90	94
Yes	73	90	93
<i>p</i> (χ^2)	0.186	0.972	0.227
Health establishment			
No	74	90	94
Yes	78	89	94
<i>p</i> (χ^2)	0.106	0.912	0.696
Brothel			
No	73	88	94
Yes	80	93	96
<i>p</i> (χ^2)	0.000	0.000	0.036
Condoms are expensive			
0=else	75	90	94
1=expensive	75	89	94
<i>p</i> (χ^2)	0.972	0.521	0.957
Opinion about condom attributes			
Sometimes diminishes pleasure			
0=else	74	89	93
1=sometimes	76	88	92
<i>p</i> (χ^2)	0.407	0.242	0.165
Does not diminish pleasure			
0=else	73	88	93
1=does not	79	93	96
<i>p</i> (χ^2)	0.000	0.000	0.000
Self-efficacy			
Would use condoms:			
If clients paid more			
No	56	70	80
Yes	78	93	96
<i>p</i> (χ^2)	0.000	0.000	0.000
With partner or lover			
No	72	86	92
Yes	79	94	95
<i>p</i> (χ^2)	0.000	0.000	0.001

Table 2. *Continued*

	All (N=3452)	Regular (N=3159)	Casual (N=3334)
Self-efficacy <i>continued</i>			
If client looked healthy			
No	63	78	84
Yes	78	92	96
<i>p</i> (χ^2)	0.000	0.000	0.000
Condom skills			
No skills/did not participate	63	87	91
One skill	74	86	90
Two skills	76	88	92
Three skills	76	90	95
Four skills	78	91	96
<i>p</i> (χ^2)	0.000	0.050	0.000

Significance was tested at four levels: $p \leq 0.10$, $p \leq 0.05$, $p \leq 0.01$ and $p \leq 0.001$.

the surveys used condoms with all clients in last sex acts more than those who had (81% vs 67%, $p \leq 0.001$).

The results show that all three indicators of knowledge of condom advantages are positively associated with consistent condom use. A higher percentage of SWs who reported pregnancy prevention as a benefit of using condoms used them with all clients in the last sex acts more than those who did not (80% vs 74%, $p \leq 0.001$). Also, SWs who reported that condoms prevent STDs or AIDS used them with all clients in the last sex acts more than those who did not (76% vs 68%, $p \leq 0.001$; 77% vs 72%, $p \leq 0.01$ respectively).

The findings suggest that source of condoms is associated with consistent use. A higher percentage of SWs who bought condoms from a brothel reported condom use with all clients in the last sex acts compared with those who did not (80% vs 73%, $p \leq 0.001$).

Perception about condom attributes was associated with use. More of the SWs who reported that condoms do not diminish sexual pleasure used them with all clients compared with those who did not (79% vs 73%, $p \leq 0.001$).

The results in Table 2 show that self-efficacy is strongly associated with condom use of clients. A significantly higher proportion of SWs who reported that they would use condoms if clients paid more used condoms with all clients in the last sex acts compared with those who did not (78% vs 56%, $p \leq 0.001$). Similar results were reported for SWs who would use condoms with regular or with casual clients (93% vs 70%, $p \leq 0.001$; 96% vs 80%, $p \leq 0.001$, respectively). A significantly higher proportion of SWs who would use condoms with a partner/lover or if clients looked healthy used with all clients in the last sex acts compared with those who would not (79% vs 72%, $p \leq 0.001$; 78% vs 63%, $p \leq 0.001$, respectively). Results for SWs who would use condoms with regular and casual clients given the same conditions were similar in the expected directions.

The findings show that condom use skill is positively associated with consistent use. More SWs who had one skill than those who had no skill, used condoms with all clients in the last sex acts (74% vs 63%, $p \leq 0.001$). The proportion of SWs who used condoms in the last sex acts with all clients increased with each additional skill (76%, 76%, and 78%, $p \leq 0.001$, respectively).

Multivariate

This section discusses the relationship between the dependent variable, consistent condom use, and each predictor of use controlling for others. Table 3 presents the odds that SWs consistently used condoms in the last sex acts with all clients by predictors. Model 1 shows the odds that SWs consistently used condoms with all clients according to background predictors. The results of this model were compared with those of Model 3 in order to understand whether these background predictors affect consistent condom use irrespective of or through other predictors, or if they directly influence it. Model 2 presents the odds that SWs used condoms with all clients by the predictors of exposure to condom information. This model was included in order to tease out the direct and indirect relationships, if any, between exposure to condom information and consistent condom use. Model 3 is a full model showing the relationship between each of the selected important predictors and consistent condom use, others being held constant. The increased chi-squared and the reduced $-2 \log$ likelihood in Model 3 compared with those of Models 1 and 2 shows that Model 3 is the best fit. This fact is evident from the increase in explained variation (pseudo R^2) from 0.03% in Model 1 to 12% in Model 3.

Effects of selected background characteristics. The year of survey is an important predictor of consistent condom use because it helps to compare the behaviour of SWs at two points in time. It also controls for changes in behaviour over time that may affect the relationship of consistent condom use with other predictors. Table 3, Model 1, shows that SWs in 2000 were 1.4 times as likely as those in 1997 to have used condoms with all clients in the last sex acts. This relationship was sustained even after controlling for other predictors in Model 3.

The country of residence at the time of interview represents a country-level factor that could impinge on consistent condom use. Model 1 shows that SWs who lived in Nicaragua were 0.7 times as likely as those who lived in Costa Rica to have used condoms with clients in the last sex acts. Those who lived in Guatemala were 1.3 times as likely as those who lived in Costa Rica to have used condoms with all clients. The results were slightly different in terms of countries with significant relationships in Model 3. Sex workers who lived in Nicaragua were 0.7 times as likely as those in Costa Rica to have used condoms with all clients in last sex acts. Those who lived in Honduras were 1.4 times as likely as the reference category to have used condoms with clients in last sex acts (Guatemala's significant relationship disappeared in Model 3).

Contrary to expectations, SWs in the metropolitan areas were 0.8 times as likely as those in non-metropolitan areas to have used condoms in the last sex acts with all clients. This effect persisted after adding other controls in Model 3.

Table 3. Relative odds that sex workers used condoms in last sex acts with both regular and casual clients according to selected background characteristics, indicators of exposure to condom information, risky sexual behaviour, knowledge about condom advantages, sources and price, attributes, self-efficacy and condom skills

	Model 1	Model 2	Model 3
Year of survey			
1997 (ref.)			
2000	1.38****	—	1.39**
Country			
Costa Rica (ref.)			
Nicaragua	0.74**	—	0.73*
El Salvador	1.02	—	1.08
Honduras	1.12	—	1.42**
Guatemala	1.28*	—	1.20
Residence			
Non-metropolitan (ref.)			
Metropolitan	0.79*	—	0.72**
Age group			
<20 (ref.)			
20–24	1.01	—	0.98
25–29	0.74**	—	0.72**
30–34	0.69**	—	0.64**
35+	0.57****	—	0.69**
Marital status			
Single, divorced or widowed (ref.)			
Married/living with partner	1.13	—	1.37***
Number of dependants			
None (ref.)			
One or two	1.20	—	1.01
Three or more	1.41**	—	1.19
Level of education			
None (ref.)			
At most primary	1.17	—	1.07
At least some secondary	1.34**	—	1.18
Exposure to information about condoms			
Received info. from:			
TV			
No (ref.)			
Yes	—	1.08	1.14
Radio			
No (ref.)			
Yes	—	1.02	1.02
Friends			
No (ref.)			
Yes	—	1.12	1.14

Table 3. *Continued*

	Model 1	Model 2	Model 3
Exposure to information about condoms <i>continued</i>			
Received info. from:			
TV			
No (ref.)			
Yes	—	1·08	1·14
Radio			
No (ref.)			
Yes	—	1·02	1·02
Friends			
No (ref.)			
Yes	—	1·12	1·14
Talking with partner/lover			
No (ref.)			
Yes	—	1·32***	1·23*
Exposure to information about VIVE condoms			
Have seen or heard VIVE condom advertisement:			
No (ref.)			
Yes	—	1·19*	0·93
Risky sexual behaviour			
Had vaginal sex in last month without condoms:			
No (ref.)			
Yes	—	—	0·63****
Knowledge of the advantages of condoms			
Used condoms with clients:			
To prevent pregnancy			
No (ref.)			
Yes	—	—	1·23*
To prevent STDs			
No (ref.)			
Yes	—	—	1·33*
To prevent AIDS			
No (ref.)			
Yes	—	—	1·05
For hygiene			
No (ref.)			
Yes	—	—	0·75**
Condom sources and price			
Buy condoms from:			
Pharmacy			
Other (ref.)			
Yes	—	—	0·88
Health establishment			
No (ref.)			
Yes	—	—	1·32*

Table 3. Continued

	Model 1	Model 2	Model 3
Condom sources and price continued			
Brothel			
No (ref.)			
Yes	—	—	1.32**
Condoms are expensive			
0=else (ref.)			
1=expensive	—	—	0.90
Opinion about condom attributes			
Sometimes diminishes pleasure			
0=else (ref.)			
1=sometimes	—	—	1.20
Does not diminish pleasure			
0=else (ref.)			
1=does not	—	—	1.03
Self-efficacy			
Would use condoms:			
If clients paid more			
No (ref.)			
Yes	—	—	1.81****
With partner or lover			
No (ref.)			
Yes	—	—	1.23**
If client looked healthy			
No (ref.)			
Yes	—	—	1.44***
Condom skills			
No skills/did not participate (ref.)			
One skill	—	—	1.53**
Two skills	—	—	1.78****
Three skills	—	—	1.63****
Four skills	—	—	1.58***
Number of cases in analysis	3420	3467	2894
Chi-squared	77.19	29.60	250.68
− 2 log likelihood	3801.79	3909.23	2930.74
Pseudo R^2	0.03	0.01	0.12

ref.=reference category

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$; **** $p \leq 0.001$.

The results show that younger SWs were more likely than older ones to have used condoms with all clients in the last sex acts. The findings in Model 1 show that those in age group 25–29 were 0.7 times as likely as those aged 20 and younger to have used condoms with clients in the last sex acts. For age groups 30–34, and 35 and older the odds were 0.7 and 0.6 times as likely respectively.

Marital status is an important predictor of condom use among SWs. For those who were married or living with a partner, the odds were 1.4 times as likely compared with those who were single, divorced or widowed, to have used condoms with all clients in the last sex acts.

The number of dependants that SWs have is positively related to consistent condom use. Sex workers who had three or more dependants were 1.4 times as likely as those who had no dependants to have used condoms with clients in the last sex acts (Model 1). But this relationship may be working through other predictors because it was not sustained in Model 3 after introducing other controls.

SWs' level of education may be another predictor of consistent condom use working through other predictors. Model 1 shows that SWs who had at least a secondary schooling were 1.3 times as likely as those who had no education to have used condoms with clients in the last sex acts. But this relationship disappeared in Model 3.

Exposure to information about condoms. Because information dissemination is an important component of most intervention programmes, this study examined the effect of exposure to condom information and consistent condom use separately in Model 2. This relationship was examined with respect to two dimensions of exposure to condom information: source and content. On the source of information, findings suggest that interpersonal communication involving SWs and their partners or lovers is one important predictor of condom use among SWs. Those who got information about condoms from talking with their partners or lovers were 1.3 times as likely as those who did not to have used condoms with clients in the last sex acts. This relationship persisted after controlling for other predictors in Model 3. On the content of the information, having seen or heard about VIVE condoms (SMP branded) was significant in the expected directions in Model 2, but not sustained in Model 3. Sex workers who had seen or heard a VIVE advertisement were 1.2 times as likely as those who did not to have used condoms with all clients in the last sex acts.

Risky sexual behaviour in last month before survey. As expected, SWs who had vaginal sex without using condoms in the last month prior to the survey were 0.6 times as likely as those who did not, to have used condoms with clients in the last sex acts. Sex workers who engaged in risky sexual behaviour, as these results suggest, were at a higher risk of contracting HIV/AIDS and other STIs.

Effects of knowledge of condom advantages. In general, the results of this study suggest that knowledge of condom advantages is an important predictor of consistent use. Sex workers who reported that condoms prevent pregnancy were 1.2 times as likely as those who did not to have used condoms in the last sex acts with all clients. Those who reported that condoms prevent STDs were 1.3 times as likely as those who did not to have used with all clients in the last sex acts. Unexpectedly, the advantage of using condoms for hygiene was not positively related to consistent use. Sex workers who reported that condoms have hygiene advantages were 0.75 times as likely as those who did not to have used condoms in the last sex act with all clients.

Condom source and price. The source of condoms is an important predictor of use. Table 3 clearly shows that SWs preferred buying condoms from health establishments and brothels. Those who bought condoms from health establishments were 1.3 times as likely as those who did not to have used condoms with all clients in the last sex acts. Also, those who bought condoms from brothels were 1.3 times as likely as those who did not to have used condoms in the last sex act with all clients.

Perceived ability to use condoms. The results in Table 3 suggest that perceived ability to use condoms is an important determinant of use. Sex workers who reported that they would use condoms even if clients offered to pay more for unprotected sex were 1.8 times as likely as those who did not to have used condoms with all clients in the last sex acts. Sex workers who reported that they would use condoms with a partner or lover were 1.2 times as likely as those who did not to have used condoms with all clients in the last sex acts. And those who would use condoms even if a client looked healthy were 1.4 times as likely as those who would not to have used condoms in the last sex acts with all clients.

Condom skill and consistent use. Condom skill is positively related to consistent use. Sex workers who had one skill were 1.5 times as likely as those who had none to have used condoms with clients in the last sex acts (Table 3). Those who had two skills were 1.8 times as likely as those who had none to have used condoms with all clients in the last sex act, and SWs who had three skills were 1.6 times as likely as those who had no skill to have used condoms with all clients in the last sex act. Sex workers who had all four skills were 1.6 times as likely as those who had none to have used condoms with clients in the last sex acts.

Discussions and Conclusions

The aim of this study is to provide evidence on changes in condom use behaviour among sex workers in Central America, and to determine the main predictors of consistent condom use. This information should enable governmental and non-governmental organizations working in the region to improve on their programme interventions. The findings showed that the proportion of SWs who consistently used condoms with all clients increased between 1997 and 2000. These results imply that some cases of HIV/AIDS and other STIs may have been averted among SWs and their clients, and perhaps, also in the general population. If the observed trend in consistent condom use continues, the incidence of HIV and STIs among SWs will be considerably reduced, and spread to their clients may be considerably attenuated in the long run.

The increase in consistent condom use among SWs between 1997 and 2000 suggests that programme intervention among this vulnerable group may be having the desired effect. Sex workers who are at the forefront of consistent condom use may be described as those who live in non-metropolitan areas, of fairly young age, married, with dependants. It was not clear from this study why SWs in the metropolitan areas were less likely than those in non-metropolitan areas to consistently use condoms. The reason may be that SWs in metropolitan areas have a high volume of clients and less

time to successfully negotiate condom use with all clients. Or it may be that the environment in which they operate, especially for SWs who meet clients by the roadside, is not conducive for such negotiation. Also, it is unclear why older SWs were less likely than their younger counterparts to consistently use condoms. It may be that older SWs already had set ways of unprotected sex and they had more difficulty changing their behaviour.

Another important point to note is that level of education was not a major factor responsible for consistent condom use among SWs. It seems that literacy, specifically the ability to speak and understand Spanish, may be more essential than formal education for communicating with this high-risk group. These findings on the relationship between consistent condom use and background characteristics of SWs should enable effective programming and market segmentation that focuses more on changing the condom use behaviours of older, single or divorced SWs living in metropolitan areas, with due consideration for the contextual and environmental conditions existing in each country in the region. Environmental conditions may include the availability and use of stimulants (alcohol, drugs, etc), lack of privacy, lack of protection from sex establishment, fear of arrest, and clients' violence (Asthana & Oostvogels, 1996).

Television and radio were not significant sources of condom information for SWs in this study. It may be that the information provided through these sources did not specifically target SWs, or messages were not frequently aired in a timely fashion to gain their attention. In contrast, interpersonal discussion with partners and lovers was an effective source of condom information for SWs who consistently used condoms with all clients. This finding seems to imply that trust may have played a significant role in the source of the information that SWs believe and act upon. This is most likely since trust is an important factor in love relationships. Future research should examine the role of trust in SWs' relationships with their lovers or partners, and reasons why SWs may trust one source of information and not another. Future intervention programmes may be more effective if a multi-source approach is used to communicate with SWs, with emphasis on interpersonal discussion as the main source. How to make TV and radio a more effective source of condom information among SWs should also be explored since this may be more cost-effective in the long run.

It is not surprising that the content of messages heard by SWs was not an important deciding factor for consistent condom use in this study. Having seen or heard of VIVE condoms is a weak measure that occludes getting at the real meaning of the information about the condom brand to SWs. Further research is necessary on the content of information, especially on what SWs make of information received from the different sources and what type of information would elicit their trust.

More SWs who reported condom advantages used condoms consistently than those who did not. Programme intervention that enriched the content of messages by providing SWs with more information about the advantages and disadvantages of condoms may increase the number of consistent users in the future. Although misinformation was not part of the findings in this study, it may explain why SWs who consistently used condoms did not appreciate their hygienic advantage. This calls for further investigation on how to make information clearer and better understood

by SWs. In sum, information about condom advantages and disadvantages should be clear, and specifically tailored to dispel myths and negative attributes about condoms, and provide a link between hygiene and the contracting of HIV and STIs.

This study showed that brothels and health establishments are the two main sources of condoms for SWs in Central America. The brothel may be a favourable source of condoms because of its convenience and proximity to the locations where transactional sex takes place, or it may be that some sex establishment administrators have incorporated condom provision into their daily operation. It is unclear from the findings why health establishments are a main source of condoms to SWs. It may be because according to anecdotal evidence, government agencies in some of the countries provided free or cheap condoms to the general public, including SWs, at the time of the study. In order to increase consistent condom use in the future, it may be necessary to explore ways of strengthening these two main sources to maintain a constant supply of various brands of condoms. Condom use may increase if other sources such as pharmacies are made more accessible through research-based information on what makes SWs obtain condoms from one source and not another.

The findings of this study support those in the literature that self-efficacy has a positive effect on consistent condom use (Ford *et al.*, 1998; Oladosu & Ladipo, 2001). The nature and condition of the job exposes SWs to men of various dispositions and character. It is imperative therefore that SWs who want to, should be able to exercise control on condom use at all times. It may be necessary for programme intervention to include training sessions on condom negotiation skills, confidence building strategies, and the will necessary to insist on condom use at all times.

Clearly, condom use skills have a significant positive effect on consistent use among SWs (Meekers & Klein, 2001). Programme interventions should incorporate and intensify condom demonstration skills along with condom negotiation skills. Sex workers should be taken through repeated condom negotiation and skills demonstrations in order to master the swiftness and efficiency necessary to use condoms at short notice. According to social learning theory, repeated activity can lead to mastery of such activity and permanent imprints in the unconscious cognitive memory (Walden *et al.*, 1999). Sex workers should also be encouraged to practise condom negotiation and demonstration skills with their partners or lovers who may be able to comment on aspects that they need to improve on. If possible, the training of SWs should include their partners or lovers, who should be encouraged to participate by emphasizing the health benefits of their involvement.

It is necessary to point out some weaknesses and highlight key areas in condom use dynamics not adequately addressed here for further research. First, the cross-sectional nature of the two samples may have incorporated unexplained variance in the analysis. Secondly, the weaknesses of some of the predictors, such as source of condom information (weak measure of content of messages), and knowledge about condom advantages (no measure on misinformation), may have, in general, reduced the predictive power of the models. In addition, some important predictors that may have boosted the explained variance in consistent condom use, such as trust of the source of condom information, and environmental factors – use of stimulants, attitudes of sex establishment owners/managers, fear of arrest, and violence from clients – need further research.

Consistent condom use behaviour will continue to gain more acceptance among SWs in the countries of Central America now and in the future. In addition, HIV and STIs will continue to be averted in these countries if programme interventions continue to be efficient in utilizing evidence-based research to provide information through the most efficient medium of communication, giving particular attention to the content of the information, and continued training and improvement in condom negotiation and use skills.

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