



AIDS prevention training for pharmacy workers in Mexico City

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Abstract Mexican pharmacies play an important adjunct health care role in sexually transmitted disease prevention and treatment. In light of the rapid spread of the AIDS pandemic, research was initiated in 1989 to investigate the feasibility of pharmacies assisting in AIDS and STD prevention and control through community education and condom promotion. This study was implemented in three stages: a needs assessment, development of a training course and complementary materials, and an evaluation of the course and materials. The instruments used in the needs assessment were a KAP questionnaire and 'mystery shopper' visits to pharmacies. The evaluation design utilized pre- and post-tests, condom sales tracking and 'mystery shopper' visits. The needs assessment found that pharmacy employees have some basic knowledge about AIDS and STDs, but lack important information and do not communicate effectively with clients in spite of client interest in these topics. Pharmacy workers expressed great interest in learning more about AIDS and STDs. The evaluation of the intensive 8-hour course and supporting materials showed that, when given together, the course and materials increased short term knowledge about AIDS and condom use. However, the interventions were less successful in achieving longer term information retention, transfer of knowledge to clients or in influencing condom sales. Adjustments in the training course content and in participant recruitment strategies are recommended.

Introduction

AIDS in Mexico

Mexico has the third highest rate of AIDS cases in the Americas after the United States and Brazil and ranks fourteenth worldwide (World Health Organization, 1995). As of December 1994, 20,007 AIDS cases had been reported.

The principal means of HIV transmission in Mexico, since the disease was first reported in 1983, had been sexual intercourse between men. Prior to 1987, inadequate screening of blood donors was also a major form of HIV transmission, particularly among women (Volkow *et al.*, 1992). Few cases associated with intravenous drug use or perinatal transmission had been registered as of 1992 (Mohar *et al.*, 1992).

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Sentinel surveillance data from the Mexican National Council on AIDS Prevention and Control (CONASIDA) indicate a national seroprevalence rate of 0.04% (Family Health International, 1992). Short-term modelling projections estimate that between 43,000 and 115,000 Mexicans infected before June 1989 will ultimately develop AIDS (Mohar *et al.*, 1992). The General Directorate of Epidemiology of the Mexican Secretariat of Health reports that seroprevalence rates for men who have sex with men and bisexual men ranged from 2% to 25% in samples from six Mexican cities (Izazola-Licea *et al.*, 1991). As of 1991, surveys indicate a low seroprevalence of HIV-1 in the heterosexual population.

The AIDS pandemic in Mexico originally affected mostly men; however, the number of women who are HIV positive or have AIDS has grown steadily. In five years, the proportion of men with AIDS to women with AIDS has gone from 24:1 to 5:1 (CONASIDA, 1992). The national seroprevalence rate in Mexico suggests that AIDS incidence will rise dramatically in the 1990s.

The role of pharmacies

Latin American pharmacies serve as low-cost, easy access centres for medical diagnosis, counselling and treatment. Prescriptions are rarely required. Pharmacies are also an important source of condom purchases. In one study done in Ciudad Juárez, Mexico, 44% of homosexual and bisexual men surveyed bought condoms in a pharmacy or liquor store (Ramírez *et al.*, 1994). Self-medication to treat sexually transmitted diseases is also distributed through pharmacies in Latin America (Rizo, 1979), as are the majority of contraceptives. A study of Mexico, Brazil, Colombia, Paraguay and Egypt showed that over 60% of condom and contraceptive users acquired their method through pharmacies (Lande & Blackburn, 1989). Pick de Weiss *et al.* (1991c) found that 62% of adolescents in Mexico City using some type of contraceptive obtained the method in pharmacies. However, Mexican pharmacy workers rarely have adequate training to assume this degree of responsibility for clients' medical treatment or for family planning. The store managers and salespeople in pharmacies, who are the public's main point of contact, often have no specialized training (Crawford, 1991).

In light of the important adjunct health care role pharmacies play in disease treatment and the rapidity with which HIV is spreading in Mexico, the Mexican Institute for Research on Family and Population (IMIFAP), a nongovernmental organization, initiated research in 1989 to investigate the feasibility of pharmacies assisting in AIDS and STD prevention and control. Recognizing that increased condom use depends on education that prompts behavioural modification, an answer was sought for the following question: 'How can the pharmacy infrastructure more effectively be utilized in AIDS/HIV prevention education in order to achieve customer behavioural change?'

Objectives

The research was implemented in three stages. As a first step, IMIFAP did a needs assessment with the following objectives:

- To measure pharmacy workers' knowledge;
- To assess the quality and extent of information Mexico City pharmacy workers provide to clients regarding AIDS prevention methods (primarily condom use) and STDs;
- To examine how pharmacy workers market condoms;

	Pre-Test	Treatment	Post-Test
Group 1	*	Visit	*
Group 2	*	Visit and Materials	*
Group 3	*	Course and Materials	*
Group 4	*	Course	*

FIG. 1. Research design

—To assess pharmacy employees' interest in learning AIDS/STD prevention and control strategies.

After the initial needs assessment results were analysed, an AIDS prevention training programme was developed along with promotional and educational materials and a manual for pharmacy workers. The third step in this research was the evaluation of the programme and materials. In the evaluation phase of the project, the objective was to compare three training strategies—use of the training programme alone, distribution of the promotional/educational materials alone, and a combination of the training programme and distribution of materials—to determine how effectively they achieved the following results:

- Short-term knowledge retention about AIDS/HIV;
- Long-term ability and willingness to convey accurate knowledge to customers;
- Increases in condom sales at the pharmacies where trained pharmacy employees worked.

This article presents the results of both the initial needs assessment and the evaluation of the different training strategies. The research design is summarized in Figure 1.

Step 1: needs assessment

Methods

The principal instrument used for the needs assessment was a Knowledge, Attitudes and Practices survey, which was applied to 166 Mexico City pharmacy workers. The instrument was designed after pilot interviews with pharmacists, pharmacy workers, and distributors of pharmaceutical products. Eighty-four pharmacies in each of two Mexico City *Delegaciones*¹ (Venustiano Carranza and Cuauhtemoc)—a 20% sample of all the pharmacies in these two districts—were randomly selected to participate in the study. All the pharmacy workers asked to participate agreed to do so. One of the *delegaciones* is considered to have a lower-middle socio-economic status population and the other's residents have a primarily low SES (WILSA marketing plan of Mexico City).

The questionnaire items were open-ended. In order to test respondents' awareness, a question might solicit up to six answers. For example, each respondent was asked to list up to three modes of HIV transmission.

To supplement information retrieved through the formal survey, actors went to 84 pharmacies (a subset of the full sample of 166) and pretended to be clients with concerns

about AIDS and STDs. This was done to obtain a more realistic picture of the interchange that takes place between pharmacy employees and clients. The pharmacy employees' responses were rated according to four criteria: willingness to talk, embarrassment, initiative, and quality of information.

Analysis of results

Frequencies from the survey were analysed using size of pharmacy (large vs small) and gender of the respondent as independent variables. Small pharmacies were defined as having one or two employees. The ratings from the acting visits were averaged for male and female pharmacy employees to provide an approximate indication of the four criteria evaluated.

Results: needs assessment questionnaire

Informant characteristics. The pharmacy workers who responded to the needs assessment questionnaire were 62% male and 38% female. They were divided approximately in half between large and small pharmacies. Only 10.2% had any post-secondary education, while 19.3% had only elementary education. The largest group of workers had some secondary education (37.9%) or some high school or technical school education (32.6%). Approximately 70% of the informants had worked in their pharmacies for more than 3 years and 25% had been employed there for more than 9. They were relatively young—70.2% were under 35 and 19.2% were under 20.

Knowledge about HIV/AIDS. Virtually all the pharmacy employees (86.8%) knew of blood/needle and sexual transmission of HIV. However, only 5.8% of the males and 7.9% of the females named perinatal transmission as a route and 10.2% identified incorrect routes. Awareness of blood/needle transmission is probably due to intense publicity surrounding faulty blood bank procedures until nationwide protocols were mandated in 1988. Currently, IV and blood bank transmission is almost non-existent in Mexico; sexual transmission is practically the only form of HIV transmission, according to CONASIDA.

Condom use was correctly identified by most (73.5%) of the respondents as an AIDS prevention method. No one mentioned STD prevention and control, although approximately half the subjects identified partner reduction as a prevention strategy. Twenty-two subjects (13.3% of the total sample) either did not answer or answered incorrectly when asked about prevention methods.

Weight loss and diarrhoea, also known as the 'wasting syndrome', were the most frequently identified symptoms of AIDS. They were named by almost 40% of subjects. Thirty men and 19 women gave no answer whatsoever, indicating that 30% of the sample was utterly unaware of the opportunistic infections accompanying full-blown AIDS.

Two-thirds of the pharmacy employees had obtained information about AIDS from television and radio, half from print media (newspapers, magazines, pamphlets, posters) and 42% from formal courses or talks.

Interaction with clients about AIDS and STDs. Forty-one per cent of pharmacy employees said their clients asked for information on STDs. The most common question was what medicine to use (70.6%), followed by preventive methods (28.0%) and symptoms (20.6%). The

gender breakdown is notable here: only one in three women report information-seeking behaviour by clients, whereas half of the male pharmacy employees report client requests for information. In contrast, only 15% of the pharmacy employees reported that their clients asked for information on AIDS, specifically for facts on prevention methods (60.0%), symptoms (44.0%) and forms of transmission (24.0%). Therefore, these data show that some pharmacy employees are a source of information on STD treatment and, to a lesser extent, on AIDS prevention.

Most subjects (61.2%) said they had never given any information to clients on condoms because the information had not been requested. Out of the 64 pharmacy employees who had given some information, 17 had mentioned that condoms prevent STDs and pregnancy. The rest had concentrated on quality, brands, use, characteristics, and price.

More than a quarter (27.7%) had explained to a client how to use a condom. Over a third (36.8%) of male pharmacy employees had explained condom use to clients, while only 12.7% of females had done so. Eighty-two per cent of pharmacy workers perceived adult men as the most frequent purchasers of condoms. Adolescent men were mentioned as condom buyers by 52.4%; adult women were mentioned by 27.7% of the interviewees. Female pharmacy employees were more likely than male employees to report that women purchased condoms.

Over half (57.2%) said it was difficult to talk to clients about the need for protection from AIDS and STDs. The percentage of women who answered in this way was higher (66.7%) than the percentage of men (51.5%).

Willingness to provide information/condoms. An overwhelming majority (97.6%) thought that condom promotional materials should be distributed in pharmacies. Nonetheless, 22.3% said they personally would not promote condom use under any condition. The remainder said they would promote condom use with varying types of support (courses, promotional articles, free condoms). Two-thirds (65.7%) of pharmacy employees said they would be willing to offer condoms to someone who was buying another product. The subjects were then asked to whom and under what conditions they would be willing to explain facts related to STDs, AIDS and prevention. More pharmacy workers (41.5%) said they would give information on STDs, AIDS and condoms to any adolescent man asking for information on condoms than to any other group (Table 1). Approximately one-third said they would give this information to anyone even if he/she did not ask for it. Only 29.5% said they would give this information to women (adolescent or adult), even if they had asked for it.

Finally, 90.4% of pharmacy employees interviewed said they would be interested in receiving talks on condoms.

Results of acting interviews

During the acting interviews, the pharmacists exhibited willingness to address the subjects of AIDS, STDs, and condoms as a prevention method, and showed a low level of embarrassment; however, they lacked adequate information. See Table 2 for men's and women's average scores.

In summary, the needs assessment research found that:

- (1) Pharmacy employees had basic knowledge about AIDS transmission and prevention and condom use as a preventive method. Nonetheless, their knowledge had some important gaps, including unfamiliarity with AIDS symptoms;

Table 1. *To whom would you be willing to give information on STDs, AIDS and condoms*

	Men (n = 103)		Women (n = 63)		Total (n = 166)	
	Freq.	%	Freq.	%	Freq.	%
To any adolescent man asking for information on condoms	46	44.7	23	36.5	69	41.6
To any adult man asking for information on condoms	34	33.0	13	20.6	47	28.3
To any adolescent woman asking for information	16	15.5	13	20.6	29	17.5
To any adult woman asking for information	10	9.7	10	15.9	20	12.1
To anyone, even if he/she does not ask for information on condoms	31	30.1	23	36.5	54	32.5
Only to clients buying contraceptives	19	18.5	15	23.8	34	20.5
No-one	6	5.8	1	1.6	7	4.2
Total mentions	162		98		260	

- (2) Some pharmacy employees were sources of information on AIDS, STDs, and condom use for their clients;
- (3) A majority of pharmacy employees were willing to give information on AIDS/STDs and to promote condom use aggressively, at least with certain groups of clients. However, only a minority had given relevant information to clients in the past;
- (4) In some cases, female pharmacy employees reported feeling less comfortable addressing these issues with their clients than did their male colleagues. In addition, female clients were not seen as requiring or open to the same level of condom promotion as males;
- (5) Almost all pharmacy employees were interested in receiving promotional materials and/or courses about condom use;
- (6) The acting interviews showed that pharmacists were willing to discuss AIDS-related topics when clients broached the topic. However, the information they gave was often incorrect.

Step 2: training course design

The needs assessment results were used to design an intensive, 8-hour training course for pharmacy employees. The course went beyond the basic facts on HIV transmission and prevention, which the workers had demonstrated they already knew. The course reviews the disease's development, emphasizing the different phases of HIV infection leading up to full-blown AIDS. A comprehensive discussion of symptoms is included, since the needs assessment showed that pharmacy workers were not familiar with this topic. Forms of transmission—blood-related, sexual, and perinatal—are covered and it is emphasized that

Table 2. *Results of acting interviews (average scores)*

Characteristics evaluated	Women	Men	Range
Willingness to talk	4.75	4.91	1-7
Embarrassment	2.47	3.33	1-7
Initiative	4.27	4.08	1-7
Quality of information	3.52	3.75	1-7

casual contact does not cause infection. The course explains in detail how HIV is transmitted through sexual contact. Drawings in the course manual demonstrate explicitly that vaginal, oral and anal sex can all lead to HIV transmission. The course mentions three principal forms of prevention against sexual transmission of HIV: abstinence, a monogamous relationship with an uninfected partner and condom use. Detailed instructions for condom use are provided and the manual contains clear illustrations.

A substantial portion of the course is dedicated to attitudes about HIV/AIDS, emphasizing the need to combat discrimination against people with the disease, the need for objective information, and the pharmacy worker's responsibilities to his/her clients in the age of AIDS. On the last point, pharmacy workers are informed about their responsibility to give accurate information, not to judge clients, and to refer clients to appropriate services if necessary. Finally, the manual contains a list of governmental and nongovernmental support services so that pharmacy workers can help refer clients to sources of assistance.

The needs assessment demonstrated that pharmacy workers need information on STDs as well as on AIDS. However, due to lack of time, the decision was made to focus primarily on HIV/AIDS in this course.

The promotional/educational materials evaluated in this study were two pamphlets explaining correct condom use and four posters. They were developed based on 11 focus groups conducted with potential pharmacy clients and pharmacy workers.

Step 3: evaluation of the training programme

Pharmacy employees citywide were invited to training sessions, but were not told that the curricula and institutional methods would differ from one session to the next. The trainees were assigned to workshops according to their enrolment data preference. Three training sessions took place on weekdays and one on a Saturday. All took place from 9:00 a.m. to 4:30 p.m. and were held in a meeting room donated by a major pharmaceutical company.

Since the trainees were enrolled by session and not randomly, the different pedagogical methods had varying participant totals. The subjects were assigned to one of four groups: (1) a group receiving only the course ('course group', 26 participants); (2) a group receiving the course and materials ('course and materials group', 66 participants); (3) a group receiving only the materials ('materials group', 44 participants); and (4) a group who received neither the course nor the materials ('control group', 38 participants).

The 'course' and 'course plus materials' groups received the 1-day, 8-hour workshop. The manual *AIDS: Information for Pharmacy Customers—Pharmacy Employee Guide* was the basic text for the groups receiving the course ('course' and 'course + materials'). The 'materials' and 'course + materials' groups received the promotional pamphlets and posters developed via focus groups. The 'control' group's treatment consisted only of a pharmaceutical plant tour. All participants filled out demographic questionnaires about their own backgrounds (See Table 3).

The intervention's impact—and, indirectly, its cost-effectiveness—was measured in three ways:

(1) Pre- and post-workshop questionnaires were administered to all four groups at the beginning and end of each training session to measure short-term knowledge retention about AIDS/HIV. The pre/post-tests consisted of informational questions eliciting an answer or answers. The answers were grouped into categories that had been established during a pilot application of the instrument. Many questions elicited up to six answers and a perfect response would include up to six correct 'mentions' per trainee. The tables presented in this

article show knowledge changes in two ways: (1) the number of 'mentions' is shown for each individual response as well as for each category; and (2) the mean scores for each group before and after the intervention are shown. This measure allowed us to judge whether or not a significant change in short-term knowledge had occurred.

(2) Follow-up visits and interviews with pharmacy workers were done 3 months after the course to assess longer-term information retention and willingness to convey accurate knowledge to customers. Thirty-three pharmacies whose employees had participated in the training course and 35 whose employees had not were randomly selected to receive follow-up visits. Each pharmacy received two visits, the first by an incognito shopper who bought a condom while asking a series of question eliciting the employee's knowledge. In the second visit, the interviewer identified him/herself as such and asked direct questions regarding knowledge and experiences with customers. The interviewers did not know which training group the pharmacy employees belonged to, or if they had attended a training session at all.

(3) Condom sales and inventories were traced during the 6 months following the course to measure changes in condom sales at the pharmacies where trained pharmacy employees worked. Five audits of condom inventories were done between April and September 1992. The initial inventory, monthly purchases, and final inventory were tabulated in order to calculate sales using the following formula: 'initial inventory + purchases - final inventory = sales'.

Evaluation results

It is important to mention that it was very difficult to recruit pharmacy workers to attend the course. They were reluctant to miss work, particularly in smaller pharmacies with one or two employees. Therefore, those who did participate in this evaluation were more motivated to learn about AIDS than the average Mexico City pharmacy worker. These pharmacy employees had worked in their pharmacies longer, were more educated and more likely to work in large pharmacies than the sample who answered the needs assessment.

The 174-person sample is described in Table 3.

Assigning pharmacy workers to groups based on their enrolment data preference is obviously not ideal. It would have been preferable to assign them randomly. However, due to the difficulties in recruiting participants, this was simply not possible. As a result, there are some differences between the groups. The course group were younger, predominantly female, less experienced as pharmacists, and more educated. This seems to have been because this group was drawn from a different area of Mexico City. Comparisons between the 'course only' group and the others therefore have limited validity. In spite of some differences, the 'control', 'course + materials', and 'materials only' groups were comparable in all categories.

Pre- and post-test results

Forms of HIV transmission (Table 4). In the two groups taking the course, the number of correct mentions of elements of sexual transmission of HIV increased, while it remained constant in the control group. The means demonstrate that the 'course' and 'course + materials' groups experienced a significant improvement in overall knowledge, while the other two groups' knowledge declined or remained constant. The increase in knowledge was greatest for the course and materials group.

Table 3. Characteristics of evaluation participants

Characteristics	Control	Materials	Course and	Course
	% (n = 38)	% (n = 44)	Materials	% (n = 26)
Sex				
Men	57.9	50.0	50.8	34.6
Women	42.1	50.0	49.2	65.4
Education				
Elementary (some or complete)	13.5	14.0	13.8	3.8
Secondary (some or complete)	35.1	22.6	24.6	38.5
High school or technical school (some or complete)	43.3	44.8	44.7	42.3
University	8.1	16.3	15.4	15.4
Other	—	2.3	1.5	—
Age				
14-20	23.7	20.5	15.2	33.3
21-25	15.8	31.8	19.7	20.8
26-35	26.3	20.5	27.3	29.2
36-45	18.4	13.6	27.3	12.5
46 and over	15.8	13.6	10.6	4.2
Length of time working in pharmacy				
1 to 2 years	7.9	14.0	3.0	3.8
3 to 4 years	2.6	4.7	1.5	11.5
5 to 8 years	44.7	39.5	57.6	53.8
9 or more years	44.7	41.9	37.9	30.8
Pharmacy size				
Large	73.7	75.0	71.2	96.2
Small	18.4	22.7	27.3	3.8

AIDS prevention (Table 5). The 'course' and 'course + materials' group showed the greatest increase in number of subjects mentioning condom use as a preventive method against HIV infection (36-48 and 16-21, respectively). This increase was significant for the 'course + materials' group (significance = 0.013). In the other two groups the number of mentions remained almost exactly the same. In addition, the number of total mentions related to 'safe sex' jumped from 56 to 79 in the 'course + materials' group and from 24 to

Table 4. Modes of HIV transmission named by subjects (six answers solicited)

Mode of transmission	Control n = 38		Materials n = 44		Course + materials n = 66		Course n = 26	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Perinatal	3	—	5	3	10	11	2	2
Sexual*	37	36	39	41	61	87	27	38
Blood†	41	45	56	52	76	95	34	35
Incorrect responses or 'don't know'	4	3	—	—	3	1	—	—
Total correct mentions	81	81	100	96	147	193	63	75
Mean	2.13	2.13	2.27	2.18	2.22	2.92	2.42	2.88
τ	0.00		0.81		-5.11		-2.48	
p	1.00		0.420		0.000		0.020	
Range	1-6							

*Including responses of 'sexual contact', 'blood-semen contact', 'blood-vaginal fluid contact', 'semen', 'vaginal fluid', 'oral sex', 'sex without a condom'.

†Including responses of 'syringes', 'contaminated material', 'transfusion', 'organ transplant', 'blood/blood contact'.

Table 5. HIV prevention method named by subjects (five answers solicited)

Mode of transmission	Control n = 38		Materials n = 44		Course + materials n = 66		Course n = 26	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Safe sex								
Condom use	22	22	22	23	36	48	16	21
Safe sex	1	—	—	1	—	15	2	6
Communication with partner	1	—	—	—	—	1	—	—
Sex education	8	15	13	15	20	15	6	8
Total safe sex	32	37	35	39	56	79	24	35
Partner reduction								
Monogamy	7	4	9	5	8	14	4	2
Abstinence	—	—	1	1	—	13	—	4
Total partner reduction	7	4	10	6	8	27	4	6
Disposable needles/safe blood								
Not share needles	5	5	6	6	10	10	6	6
Examine transfusion blood	4	1	4	1	5	3	3	1
Total needles/blood	9	6	10	7	15	13	9	7
Incorrect responses or 'don't know'	—	2	2	1	3	—	2	1
Total correct mentions	49	47	55	52	79	119	37	48
Mean	1.26	1.23	1.25	1.18	1.19	1.80	1.42	1.84
t		0.19		0.62		-4.44		-2.10
p		0.850		0.538		0.000		0.046
Range						1-5		

35 in the 'course' group, while it remained more stable in the other two groups. This change was significant for the course and materials group (significance = 0.000) and for the course group (0.059).

The number of participants answering that abstinence and monogamy are prevention methods rose sharply in the course and materials group. This is probably due to the fact that the course stated that there are three ways to prevent HIV transmission: abstinence, monogamy with an uninfected partner and condom use.

The means demonstrate that overall knowledge, while significantly improved in the 'course + materials' and 'course' groups after the intervention, remained quite low. In no group did the mean go above two, even after the intervention, out of a possible five. One possible explanation is that the course heavily emphasized safe sex prevention methods. Therefore, the number of responses related to syringes and the blood supply was actually lower in the post-test than in the pre-test for the course and materials group.

Steps in correct condom use (Table 6). The results showed that the course significantly increased knowledge, and that the combined course and materials dramatically improved subjects' ability to name steps in correct condom use. For example, only one subject in the 'course + materials' group mentioned checking the condom's expiration date in the pre-test, and 43 (78.2%) did so in the post-test; 20 mentioned unrolling the condom with the penis erect in the pre-test versus 35 (63.6%) in the post-test; two mentioned holding the condom at its edge in the pre-test and 28 (50.9%) did so in the post-test.

This table, more than any other, indicates the locus of information transfer that occurred during the span of time from course pre-test through post-test. The learning demonstrated

Table 6. Correct steps in the use of a condom named by subjects*

Answers	Course and materials (55 subjects)		Course (17 subjects)	
	Pre-test	Post-test	Pre-test	Post-test
Check expiration date	1	43	2	15
Check that the package is hermetically sealed	8	37	2	6
Open carefully to avoid damaging condom	2	26	0	5
Verify that it's on right side out	2	16	1	8
Put on a drop of jelly	1	21	1	12
Pull back the foreskin	—	9	1	—
Unroll the condom with the penis erect	20	35	3	10
Check that once on there are no air bubbles	2	16	2	3
During intercourse, check that the condom's edge is at the penis's end	1	8	—	—
Withdraw the penis before losing the erection	2	8	1	4
Upon withdrawal, hold the condom at its edge	2	28	2	8
Use a condom each time one has intercourse	7	28	4	9
Total correct answers	48	275	19	80
Mean	0.72	4.08	0.94	2.77
t		-8.90		-3.33
p		0.000		0.004
Range			1-12	

*The questions concerning condom usage were only asked during two out of the four training sessions held. Therefore, they were only asked of subgroups of the 'course' and 'course & materials' groups.

by the participants was principally in the area of condom usage, and less so in transmission and other prevention methods.

Risk factors (Figures 2 & 3). The course emphasized that behaviour, not membership in any particular group, determined risk. This message seems to have been understood best by those who took the course and received materials, since over two-thirds said 'any person' was at risk in the post-test. Another indication that this group learned that behaviour and not group membership determines risk is that mentions of members of specific population groups (prostitutes, homosexuals, drug addicts) fell from 73 to 14 in the post-test, while mentions of behaviour-related answers (e.g. people not using condoms or people using unsterilized needles) rose slightly. In the 'course' group, the message that anyone is at risk of AIDS was transmitted successfully as well. The number of participants relating risky behaviour rather than identity to risk of AIDS rose from 14 to 33. In contrast, in the 'control' and 'materials only' groups, the numbers mentioning group membership as a risk factor for AIDS stayed constant or rose.

Figure 2 shows the change between the pre- and post-tests of the 'course and materials' group and the 'course' group in the number of subjects who said 'any person' is at risk plus those who mentioned behaviour-related responses (these are the more 'correct' answers). Figure 3 shows change between the pre- and post-tests of the same two groups in the number of responses related to members of certain population groups (or 'incorrect' answers).

AIDS symptoms. Since chronically occurring infections may be indicators of AIDS-associated

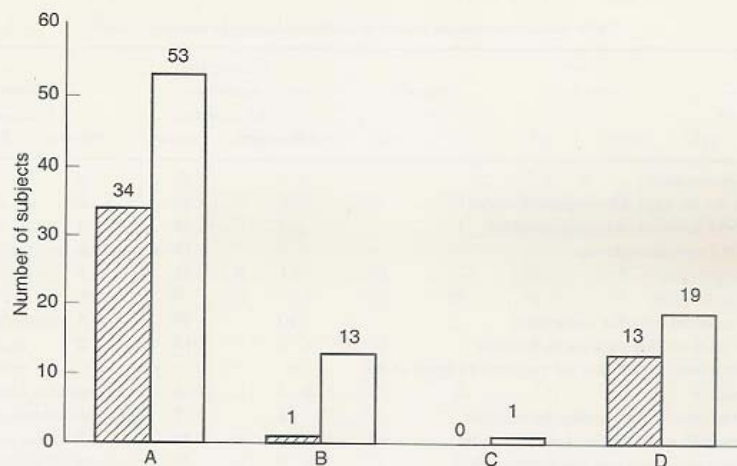


FIG. 2. Behaviour related pre- and post-test answer to the question "Who is likely to get AIDS?" ('course and materials' + 'course'). A. Any person; B. People who do not use condoms; C. People who do not use sterilized needles; D. People who do not have information (▨ pre-test; □ post-test).

opportunistic infections, pharmacy employees should be able to recognize signs of immune deficiency. Those taking the 'course' and 'course plus materials' experienced the greatest increase by far in knowledge of the principal symptoms of full-blown AIDS. In the 'course plus materials' group, the number of correct mentions of AIDS symptoms increased from 117 to 268. In the 'course' group, the correct mentions went from 62 to 131. In the post-test, over 80% of both course groups correctly named diarrhoea as a symptom, and over 75% named weight loss. The number of correct mentions of symptoms increased very slightly in

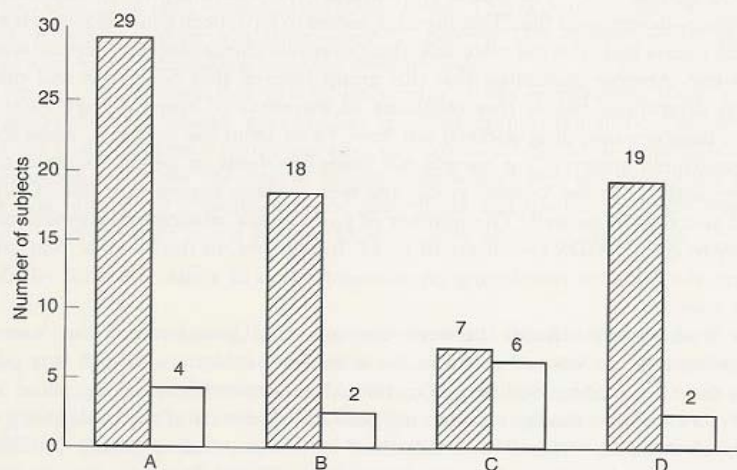


FIG. 3. Population related pre- and post-test answers to the question "Who is likely to get AIDS?" ('course and materials' + 'course'). A. Homosexuals; B. Prostitutes; C. Drug addicts; D. People with more than one sexual partner (▨ pre-test; □ post-test).

Table 7. Number of condoms sold April-August 1992

	April	May	June	July	August	% change in sales
Total course and materials	10,833	9,756	9,716	11,034	12,558	+ 16
Total materials	9,139	7,636	7,854	9,156	9,544	+ 04
Total course	1,962	1,647	1,765	2,119	2,178	+ 11
Total control	2,727	2,321	2,504	2,882	3,012	+ 10
Total	24,661	21,360	21,839	25,191	27,292	

the 'control' and visit groups. Recognition of AIDS symptoms remained very low in these two groups with no more than 40% recognizing any individual symptom.

Follow-up results

The 3-month follow-up 'mystery shopper' visit showed a slight tendency by pharmacy employees who had taken the course to volunteer more information and treat condom buyers with a more open attitude. Of the pharmacists who had taken the course, 15.2% volunteered some information to a client purchasing a condom; only 5.7% of the pharmacists who had not taken the course gave any information. However, very few pharmacy employees from either group volunteered information to the clients. The course group gave more accurate information more often than the non-course group. The only four pharmacy employees who explained that condoms prevent pregnancy and sexually-transmitted diseases were all from the course group. In addition, 15.2% of the pharmacy workers who had taken the course gave the client instructions on how to use the condom, versus 2.9% of the non-course subjects. Nonetheless, the follow-up was disappointing, in that most of the pharmacy workers who had participated in the course did not volunteer information.

The direct follow-up interviews, done with the same sample of pharmacists as the 'mystery shopper' visits, showed some knowledge retention after 3 months. When asked how HIV was transmitted, all of the pharmacy workers who had taken the course gave at least one correct answer. Over 80% mentioned sexual contact with an infected person. In contrast, in the control group, more than 20% did not know any mode of transmission and 65.7% mentioned sexual transmission of the virus. Of the pharmacy workers who had taken the course, 85% knew that always using a condom would prevent HIV transmission, while only 43% of the control group answered this way. In addition, all of the workers who had taken the course answered affirmatively when asked if condoms prevented AIDS transmission. Among the control group, 71% answered this question correctly.

Condom sales (Table 7). Condom sales dipped and then increased across the period studied for all groups. This can be attributed to condom manufacturers' more aggressive sales efforts at both the wholesale and retail levels.

The results do not show significant differences that allow a true comparison between the four groups; however, sales for the 'course and materials' group did increase more rapidly than in the other three groups. This result indicates that the pharmacy employees who received both the course and the materials were better able to take advantage of condom manufacturers' aggressive sales strategies, which seem to have been the principal cause of the general rise in condom sales.

Conclusions

This study shows that short, intense training—reinforced by appropriate instructional and promotional materials—can increase pharmacy employees' short-term knowledge significantly regarding correct usage, HIV transmission and prevention methods, and AIDS symptoms. In addition, the course plus materials improved awareness of risk behaviours vs membership in a particular group as determinants of HIV transmission.

The printed materials alone does not have a substantial impact on short-term knowledge or condom sales.

The 'course' group was so distinctive in demographic characteristics as to invalidate comparison with the other three groups. Therefore, this evaluation does not prove whether or not the materials are an essential complement to the course.

The evaluation showed that the course and materials did not seem to accomplish a longer-term willingness or ability to transfer knowledge to clients.

Condom sale volume can be correlated with participation in the training programme for the 'course plus material' group only.

Recommendations

Given the suspected sero- and STD prevalence in Mexico, efforts to train adjunct health workers in prevention are essential. This study demonstrated that pharmacy employees are interested in awareness and prevention training and that they gained short-term knowledge from this course. However, it also became obvious that pharmacy workers require additional reinforcement before they will be willing and able to volunteer information to the clients. The possibility of using peer educators to reinforce a short course needs to be explored. Pharmacy employees' availability to attend courses is an important barrier that prevented follow-up training as well as random allocation to intervention groups during the evaluation. This barrier must be addressed in future studies and course implementation.

It would be useful to do a needs assessment with pharmacy customers to supplement the information gathered from pharmacy employees. Clients' suggestions could then be integrated into training programmes.

The needs assessment showed that clients ask more often for information on STDs than on HIV/AIDS. Therefore, a training programme that integrates STD symptoms and prevention with information on HIV/AIDS might be more immediately relevant to pharmacy workers.

This intervention's failure to change pharmacy employee behaviour at the worksite suggests alternative strategies. In an effort to make participant recruitment easier, one possibility would be to solicit more active involvement from the Ministry of Health or other government agencies. An Ecuadorian non-governmental organization, Fundación Futura, directed a similar effort to train pharmacy employees in Guayaquil. With the sanction of the Ministry of Health, all pharmacies faced the loss of their permit to operate a business unless each sent a trainee. As a result, virtually every one of the 800 pharmacies sent a representative to the trainings (Córdova *et al.*). With greater numbers participating in courses, it would be possible to enrol participants randomly in treatment groups and conduct a better evaluation. Evidence from other studies suggest that a greater behavioural change occurs when interventions emphasize the promotion and merchandising of condoms first, and information about disease transmission and prevention second (Córdova *et al.*). This approach needs to be evaluated for Mexico.

The National AIDS Prevention and Control Agency (CONASIDA) provided partial

support for this training programme. They are interested in continuing to support pharmacy employees' role as a source of information on AIDS, condoms and STDs. The ultimate goal is not for pharmacy workers to diagnose or treat people with HIV/AIDS. They do not have the training or education to take on that role. Rather, their potential role is to educate their communities on condom use and prevention methods and to refer people with HIV or AIDS or those who fear they might have been exposed to the disease to CONASIDA's testing, treatment and support services. Course methods will continue to be modified and improved so that pharmacy workers can fulfil this essential role.

Acknowledgements

The authors wish to thank the following colleagues for their critical review of the transcripts: Beverly Tucker, Laurie Fox, David Hubacher, and Barbara Janowitz.

Notes

[1] Mexico City is divided into 16 *delegaciones*, which each have political representation in the city government.

References

- CONASIDA (1992, December 1). SIDA: una responsabilidad comunitaria.
- CRAWFORD, N.S. (1991). Organizing pharmacists to help fight AIDS. *American Pharmacy*, NS31, 44-47.
- FAMILY HEALTH INTERNATIONAL (1992). *Network: condoms prevent HIV transmission*, 12(4), 2-3.
- IZAZOLA-LICEA, J.A., VALDESPINO-GÓMEZ, J.L., GORTMAKER, S.L., TOWNSEND, J., PALACIOS-MARTINEZ, M., MUELLER, N.E. & SEPÚLVEDA-AMOR, J. (1991). HIV-1 seropositivity and behavioural and sociological risks among homosexual and bisexual men in six Mexican cities. *Journal of Acquired Immune Deficiency Syndromes*, 4, 614-621.
- LANDE, R.E. & BLACKBURN, R. (1989). Pharmacists and family planning. *Population Reports. Series 37*, 1-31.
- MOHAR, A., DE GRUTTOIA, V., MUELLER, N. & SEPÚLVEDA, J. (1992). A model for the AIDS epidemic in Mexico: short-term projections. *Journal of Acquired Immune Deficiency Syndromes*, 5, 265-269.
- PICK DE WEISS, S., ANDRADE-PALOS, P., ALVAREZ, M. & WEISS, E. (1991a). *Attitudes and knowledge regarding AIDS, STDs and condom use among pharmacists in Mexico City*. Paper presented at the Psychosocial Workshop, Population Association of America Conference, Washington.
- PICK DE WEISS, S., ANDRADE, P., ALVAREZ, M., WEISS, E., WELSH, M., SHEDLIN, M. & OLIVER, R. (1991b). *Pharmacies and STD/AIDS prevention*. Poster presented at the VII International Conference on AIDS, Florence, Italy.
- PICK DE WEISS, S., ATKIN, L.C., GRIBBLE, J.N. & ANDRADE-PALOS, P. (1991c). Sex, contraception, and pregnancy among adolescents in Mexico City. *Studies in Family Planning*, 22, 74-82.
- POPULATION INFORMATION PROGRAM (1989). *Population reports: family planning programs*. November, J(37): 1-31.
- RAMIREZ, J., SUAREZ, E., DE LA ROSA, G., CASTRO, M. & ZIMMERMAN, M.A. (1994). AIDS knowledge and sexual behavior among Mexican gay and bisexual men. *AIDS Education and Prevention*, 6, 163-174.
- RIZO, A. (1979). *Drugsstore employees and family planning in Latin America*. Pathpapers No. 5. Chesnut Hill, MA: Pathfinder Fund.
- VOLKOW, P., DEL RIO, C. & MOHAR, A. (1992). *Epidemiological profile and trends of the AIDS epidemic in Mexico: the role of paid donors on HIV-1 transmissions*. CONASIDA.
- WORLD HEALTH ORGANIZATION, GLOBAL PROGRAMME ON AIDS. (1995, January 3). *The current global situation of the HIV/AIDS pandemic*. Geneva: WHO.