Knowledge of AIDS and self-efficacy to high-risk sexual practices among Lebanese males in New York

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المعارف حول الإيـدز والكفـاءة الذاتية حـول الممارسـات الجنسية المرتفعة الاختطار بين اللبنانيين في نيويورك

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الخلاصـة: تمت دراسـة المعارف حـول الإيـدز والكفـاءة الذاتية لجابهة الممارسات الجنسية المرتفعة الاختطار بين اللبنانـين في نيويورك، فقام أفراد عينة ملائمة باستكمال استبيانات ذاتية التطبيق، ولو أن العلاقة بين المعارف حول الإيـدز والكفـاءة الذاتية والممارسات الجنسية المرتفعة الاختطار لم تكن ذات شأن نظراً لضآلة عـدد العينة والذي لا يزيد عن 25 من اللواطيين، أما المشاركون من غير اللواطيين، والذين بلغ عددهم 261 فكان لديهم علاقة يُعتدُّ بها إحصائياً بين المعارف حول الإيدز و9 من الممارسات الجنسية المرتفعة الاختطار، وبين الكفاءة الذاتية و18 من الممارسات الجنسية المرتفعة الاختطار. وبالنسبة لغير اللواطين ولدرجة أقل بالنسبة للواطين فإن الممارسات الجنسية المرتفعة الاختطار تزداد بازدياد السلوكيات المتعلقة بالمخدرات ومعاشرة البغايا. وينبغي تعلم المهارات العلمية لتغير السلوكيات المرتفعة الاختطار، وتشجيع الاستعفاف وتحمل المسؤوليات، والترويج لذلك كأحد المعايير الثقافية.

ABSTRACT The relationship of AIDS knowledge and self-efficacy to high-risk sexual practices among Lebanese males in New York was examined. Self-administered questionnaires were completed by a convenience sample. Relationships between AIDS-knowledge and self-efficacy and high-risk sexual practices for the 25 homosexual men were rarely significant, probably because of the small sample. The 261 heterosexual participants had statistically significant relationships between AIDS-knowledge and 9 high-risk sexual practices and between self-efficacy and 18 high-risk sexual practices. For heterosexuals, and to a lesser degree for homosexuals, high-risk sexual practices increased as drug-related behaviours and sex with prostitutes increased.

Connaissance du SIDA et auto-efficacité pour les pratiques sexuelles à haut risque chez des Libanais à New York

RESUME La relation entre la connaissance du SIDA et l'auto-efficacité pour les pratiques sexuelles à haut risque chez des hommes libanais à New York a été examinée. Des questionnaires auto-administrés ont été remplis dans un échantillon de commodité. La relation entre la connaissance du SIDA, l'auto-efficacité et les pratiques sexuelles à haut risque pour les 25 homosexuels était rarement significative, probablement du fait de la taille réduite de l'échantillon. Pour les 261 hétérosexuels, il y avait des relations statistiquement significatives entre la connaissance du SIDA et neuf pratiques sexuelles à haut risque et entre l'auto-efficacité et 18 pratiques sexuelles à haut risque. Pour les hétérosexuels, et à un degré moindre pour les homosexuels, les pratiques sexuelles à haut risque augmentaient avec les comportements associés à la drogue et les relations sexuelles avec des prostitué(e)s.

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Introduction

Over the decade 1988–1998, the incidence of acquired immune deficiency syndrome (AIDS) has risen in Lebanon despite advances in diagnosis and treatment (Lebanese Health Information and Education Department, unpublished data, 2001) [1]. The number of reported AIDS cases went from 3 to 147 between 1988 and 1998. If we include individuals with human immunodeficiency virus (HIV), the number of reported cases for the 10-year period rose from 21 to 529 (Lebanese Health Information and Education Department, unpublished data, 1998). The World Health Organization (WHO) estimated that the number of adults and children living with HIV/AIDS in Lebanon through the end of 1997 was even higher, at 1500 individuals [1]. The discrepancies between these reports indicate either under-reporting or over-estimation. In either case, the number of new HIV/AIDS cases in Lebanon continues to increase. Lebanese males are travelling more often to the United States of America and other countries because of economic difficulties that have resulted from the 20-year civil war and we surmise this places them at higher risk of contracting and transmitting HIV/AIDS.

One major reason for the rise of AIDS within a populace is ignorance about the deadly disease, especially about how it is contracted and transmitted [2–4]. Ignorance not only makes one more likely to contract AIDS, but also more likely to transmit it to others.

Self-efficacy refers to an individual's ability to execute a particular behaviour in order to deal with a prospective situation. It also refers to the individual's opinion of what he or she is capable of doing [5,6]. The ability to execute intended behaviours is essential for behavioural modification of high-risk sexual practices such as the failure to use a condom during intercourse.

Within Lebanon, males are more likely than females to contract HIV/AIDS and they account for 77.8% of all cases reported before November 1998 (Lebanese Health Information and Education Department, unpublished data, 1998). According to the Lebanese Consulate in New York, approximately 15 000–20 000 Lebanese males over the age of 18 reside in the New York City area. Our study focused on these men because:

- No study of HIV/AIDS has been done among this group. Most are expatriates who are unlikely to have received education about HIV/AIDS in their home country prior to their arrival in the USA according to the Lebanese Consulate in New York. One should keep in mind that New York City has a large number of HIV/AIDS infected individuals [1]. Lebanese men might be aware of their AIDS risk behaviours, but might not be willing to change to minimize risk of contracting and transmitting AIDS. For example, subjects might know that using chemical substances could lead to the desire for high-risk sexual practices with strangers, but they might believe that they are unable to avoid using the chemical substance. Therefore, one way to minimize the transmission of HIV/AIDS is to encourage safer sexual practices at all times [7].

While prostitution is legal in Lebanon, cultural and societal beliefs among the Lebanese oppose it. Since prostitutes in Lebanon are screened for sexually transmitted diseases including HIV/AIDS, legalized prostitution there does allow for safer-sex practices. However, prostitutes are not screened in the USA for sexually transmitted diseases. This

means that Lebanese men who have sexual encounters with prostitutes in New York City may be at higher risk for contracting and transmitting HIV/AIDS.

• Another aspect that might have contributed to the spread of AIDS in Lebanon is the use of drugs and alcohol. In Lebanon, the use of alcohol is legally acceptable but socially unacceptable. Alcohol, however, is legally and socially acceptable in New York City. Therefore, one could expect more Lebanese men in the USA to use alcohol prior to sexual activities with this resulting in riskier sexual practices.

• While the incidence of AIDS is low in Lebanon, it is steadily increasing. This could signal greater problems for Lebanon if the trend continues. AIDS risk behaviours in relationship to travel are important because 47.1% of Lebanese who contracted HIV/AIDS through 1998, contracted it while travelling (Lebanese Health Information and Education Department, unpublished data, 1998). Therefore, Lebanese males in the USA should be provided with information and encouraged to have self-efficacy in order to reduce risks.

Lebanese males living in the New York City area were therefore surveyed to determine the extent of their knowledge about AIDS, their degree of self-efficacy and whether or not they were of high-risk sexual orientation.

Study limitations

There were a number of limitations in this study. The sample exclusively comprised Lebanese men residing in the greater New York City area. Women were excluded from the study because cultural and religious beliefs shield them from sexual infor-

mation and because they are bound by their culture to abstain from sexual activities until they are married; they might, therefore, have been unwilling to release sexual information about themselves.

Furthermore, the results may not be generalized to Lebanese men residing in the other parts of the USA or in Lebanon because the study comprised a convenience sample only and because some degree of acculturation may have occurred among subjects.

Methods

The sample was selected from a population of approximately 20 000 Lebanese males living in the New York City area. These men spoke either Arabic or English; therefore, the research instruments, which were originally in English, were translated into Arabic for those who did not read English. To ensure the validity of the message, the instruments were translated back into English to confirm that the message was identical in both versions.

Based upon a power analysis, a sample of 300 Lebanese males was needed for power > 0.80 to detect a moderate effect in multiple regression analysis at 0.05 level of significance [8]. The investigator therefore visited places where Lebanese people gathered, such as social clubs, businesses, mosques, churches, food stores and restaurants and distributed the questionnaire to a convenience sample of 600 individuals.

The packet of materials given to each contained: (a) a questionnaire that comprised a knowledge instrument, a self-efficacy instrument, a high-risk practices instrument and a demographic information instrument; (b) an envelope stamped and self-addressed in which to return the completed questionnaire; (c) a letter explaining

the purpose of the study; (d) a statement that identities would be kept anonymous; and (e) a statement that participation was voluntary. Anonymity was assured by requesting that respondents not write their names or identify themselves on the survey instruments [8,9]. Because of the procedures of anonymity, the investigator did not include a consent form in the packet. Each instrument was coded per its place of distribution in order to describe the gathered information and to know where to return if further distribution of the questionnaire was needed, i.e. if the initial response rate was low.

The first 300 usable questionnaires returned to the investigator were analysed. The refusal rate was 20% (questionnaires from the original distribution of 600 that were not returned), perhaps because some feared revealing sexual preferences because of cultural and social issues. The 300 questionnaires used in the study. represented respondents from each place where questionnaires were originally distributed.

The AIDS knowledge instrument comprised 40 true–false statements. The higher the score, the greater was one's knowledge of AIDS [9]. The instrument covered 3 general topics: high-risk sexual and drug practices, risk reduction steps and misconceptions about HIV/AIDS. Kelly et al. reported the instrument's reliability and validity based on a sample of 360 heterosexual and 331 homosexual men with a mean age of 25.5 years [9]. Internal consistency with the Spearman–Brown split-half reliability prediction formula for scores on odd-numbered and even-numbered items was 0.73. The Kuder–Richardson formula, which is the average of all possible split-half coefficients, yielded a KR-20 reliability coefficient of 0.74. Using a test–retest coefficient at 2-weeks interval, the temporal stability of the instrument was

0.84. This indicated a high degree of temporal stability. In addition, items were analysed with point biserial item–to–whole correlation coefficients. The correlation of correct responses with total score exceeded 0.50 for every item indicating that subjects understood the instructions and that item wording was not misleading. Kelly et al. also reported content validity by having a panel of 10 national experts in AIDS prevention review the instrument [9]. The panel of public health physicians, epidemiologists and other AIDS prevention professionals reviewed the scale and completed the 44-item version of the test. The items were retained if 80% of the expert panel agreed upon the correct answer. This resulted in a 40-item instrument.

The second instrument, the 18-item self-efficacy for AIDS instrument, was designed to reflect the respondent's ability to execute a particular behaviour in a particular situation [6]. The 4-point Likert-type scale ranged from 1 (never), 2 (sometimes), 3 (often) to 4 (always). Scores were determined by the choices that indicated greatest self-efficacy: therefore, although some items were reverse coded to guard against acquiescence, the higher the score, the greater the self-efficacy. Lawrence, Kelly and Rubinson conducted a test-retest of the AIDS self-efficacy instrument with 2-weeks interval among pregnant teens and established stability [6]. They used a panel of 3 expert health educators and a senior social worker to determine content validity although no coefficient was reported for internal consistency.

This investigator created the high-risk sexual activity assessment instrument with items taken from statements in the literature [1,7]. The instrument comprised 30 items that reflected sexual activities that placed respondents at risk of contracting

and spreading HIV/AIDS. There were 5–6 answer choices for each of the 30 items in the questionnaire. Each answer was discrete and conveyed information about the participant's lifetime sexual history and sexual behaviour. The instrument had 2 scales of dependent variables: (a) high-risk sexual practices with same sex individuals and (b) high-risk sexual practices with opposite sex individuals. Items 13–28 were scaled and used in the reliability analysis while the remaining items were used to reflect frequencies, sexual characteristics and behaviours of the sample. To measure reliability, the high-risk sexual assessment instrument was tested–retested. Twenty (20) volunteer Lebanese males residing in the New York City area completed the questionnaire and were asked to make recommendations and comment on difficulty and time to complete it. The questionnaires were administered at 2-weeks interval to the same participants to determine stability. Stability about the mean for each item was determined by test–retest scale scores. Student t-test was set at significance < 0.05 level to determine significant changes from the mean. A panel of 5 health workers (2 medical doctors, 1 nurse, 1 medical technologist and 1 health educator) established validity. Items were retained only if 3 of the 5 panellists reported that they were important or very important. (The 4-point Likert scale ranged from 'not important' to 'somewhat important', 'important' and 'very important'.)

During data analysis, the investigator determined if the responses to each of the 3 tests were normally distributed. If distributions departed significantly from the norm, techniques to transform the data were pursued. In the descriptive analysis, demographic characteristics of the sample and answers to each of the research instruments were described by arithmetic mean, variance, standard deviation, median, mode, range, minimum score, maximum score, frequencies and percentages. Descriptive statistics and group comparisons were used to assess the vulnerability of this at-risk sample. To test the relationship between the 2 independent variables, AIDS-related knowledge and self-efficacy, and the dependent variable, high-risk sexual practices, a Pearson product-moment correlation test was performed for each independent variable and the dependent variable. Pearson product-moment correlation was also used to test relationships between the use of drugs and the dependent variable and between the use of prostitutes and the dependent variable. Regression analysis and beta-weight were used to analyse correlations between knowledge and self-efficacy for heterosexual and homosexual participants. Analysis of variance was used to compare the scores of participants who reported heterosexual activity. The results were used to determine if the 2 groups were significantly different. Alpha level of 0.05 was used throughout. Participants who reported bisexual activities were excluded from analysis because the study focused on exclusively homosexual or heterosexual behaviour.

Results

The average age of the 300 participants was 28.9 years (SD = 6.9 years), the median age was 28 years and the minimum and maximum ages were 18 and 63 years respectively. Most participants were between the ages of 20 and 35 years and, therefore, in their sexual prime. All respondents were born in Lebanon and living in the United States under different statuses. The average number of children in the birth family of the respondents was 6.4 (SD = 2.8).

The average number of years the respondents had been in the USA was 5.5 (SD = 3.7). Among the 300 respondents, 83% (*n* = 249) travelled to Lebanon annually. Respondents most commonly lived with 'roommates', followed by 'spouses/partners'. There were many occupations among the respondents, including accountants, physicians, students, merchants, sales personnel, waiters and taxicab drivers. The majority had their first sexual activities when they were older than 17 years (52.5%); the second commonest age was 15–16 years (22.7%). Most respondents had their first sexual activities in Lebanon (188, 62.7%), whereas 26.7% had their

first sexual encounter in the USA and 10.7% had their first sexual encounter elsewhere.

The majority of respondents identified themselves as 'heterosexuals' (261, 87%). Only 25 respondents identified themselves as 'homosexuals'. The remaining 4.7% of respondents were not included in the analysis.

Tables 1 and 2 show the results of Pearson correlations between knowledge of AIDS and high-risk sexual practices for heterosexuals and homosexuals. There were 9 statistically significant relationships between AIDS knowledge and high-risk sexual practices among heterosexuals. All

Table 1 Pearson correlations of AIDS-related knowledge and high-risk sexual practices of the heterosexual men (*n* = 261)

Item	High-risk sex practices	AIDS-related knowledge	
		r	*P*-value
4	Within the past 6 months, with how many people of the opposite sex have you had sexual activity?	−0.17	0.00
7	How many times have you gotten someone pregnant other than your wife?	−0.22	0.00
8	How many times have you been diagnosed with a sexually transmitted disease such as genital herpes, genital syphilis, genital warts, chlamydia, gonorrhoea or AIDS infection?	−0.13	0.03
18	Within the past 6 months, how many times have you used inhalant drugs before opposite-sex intercourse?	−0.14	0.02
19	Within the past 6 months, how many times have you used injected drugs before same-sex intercourse?	−0.15	0.02
20	Within the past 6 months, how many times have you used injected drugs before opposite-sex intercourse?	−0.19	0.00
22	Within the past 6 months, how many times have you had sex with an opposite-sex prostitute or stripper?	−0.20	0.00
24	Within the past 6 months, how many times have you had one-night stand opposite-sex intercourse?	−0.23	0.00
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	−0.13	0.03

r = *Pearson's correlation coefficient.*
P < 0.05 *is significant.*

Table 2 **Pearson correlations of AIDS-related knowledge and high-risk sexual practices of the homosexual men (n = 25)**

Item	High-risk sex practices	AIDS-related knowledge	
		r	P-value
4	Within the past 6 months, with how many people of the opposite sex have you had sexual activity?	−0.42	0.03

r = Pearson's correlation coefficient.
P < 0.05 is significant.

significant relationships were inverse, indicating that the risk behaviours decreased as AIDS-related knowledge increased. AIDS-related knowledge and high-risk sexual practices among homosexual respondents were only significantly related to item 4. The Pearson coefficient also indicated an inverse relationship between variables, i.e. the higher the AIDS-related knowledge, the fewer people with whom respondents had opposite sex relations. This was not surprising for a homosexual group. The remainder of the relationships between knowledge of AIDS and high-risk sexual practices may have been statistically insignificant as an artefact of the relatively small sample.

Tables 3 and 4 show the results of Pearson correlations between self-efficacy and high-risk sexual practices for heterosexuals and homosexuals. There were 18 significant relationships between self-efficacy and high-risk sexual practices among the heterosexual group. All were inverse, except for item 2. The large number of significant relationships for heterosexuals could in part reflect the relatively large sample size because the correlation coefficients were relatively weak. Nonetheless, the findings do suggest a relationship between these variables. There were 4 significant relationships between self-efficacy and high-risk sexual practices among the homosexual group. All of these relationships were inverse, meaning that the higher the

self-efficacy, the less frequent the high-risk practices. Drug and alcohol use were involved in 3 of the 4 significant relationships, suggesting that efficacy was effective at curtailing these behaviours.

Tables 5 and 6 show the 2 independent variables, AIDS-related knowledge and self-efficacy, correlated with the dependent variable, high-risk sexual practices. For heterosexual men, 22 high-risk sexual practice items were significantly related to the 2 independent variables, i.e. the independent variables accounted for more variance than expected by random chance and without a distinct pattern. The 2 independent variables did not explain a significant amount of variation in the dependent variable among the homosexual men. The sample, therefore, needs to be increased to determine more about the nature of these relationships.

The beta-weight of high-risk sexual practices versus knowledge and self-efficacy for homosexuals and heterosexuals was determined (Tables 7 and 8). The correlation between knowledge and self-efficacy was r = 0.25 for the 260 heterosexual men and r = 0.63 for the 25 homosexual men. In both cases, the correlations were statistically significant with P-values < 0.001. The interpretation is that self-efficacy increases for both groups as knowledge increases. For the heterosexual group, 23 high-risk sexual practice items were statistically significant and for the homosexual

Table 3 **Pearson correlations of self-efficacy and high-risk sexual practices of the heterosexual men (*n* = 261)**

Item	High-risk sex practices	*r*	*P*-value
1	During your life, with how many people of the same sex have you had sexual activity?	−0.16	0.01
2	During your life, with how many people of the opposite sex have you had sexual activity?	0.26	0.00
6	Within the past 6 months, how many times have you injected or inhaled drugs?	−0.21	0.00
9	How many times have you participated in same-sex activities before marriage?	−0.12	0.04
13	How many times have you had unprotected sexual intercourse with someone of the same sex?	−0.22	0.00
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	−0.23	0.00
16	Within the past 6 months, how many times have you had alcohol before having opposite-sex intercourse?	−0.21	0.00
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	−0.15	0.02
18	Within the past 6 months, how many times have you used inhalant drugs before opposite-sex intercourse?	−0.27	0.00
19	Within the past 6 months, how many times have you used injecting drugs before same-sex intercourse?	−0.27	0.00
20	Within the past 6 months, how many times have you used injecting drugs before opposite-sex intercourse?	−0.19	0.00
21	Within the past 6 months, how many times have you had sex with a same-sex prostitute or stripper?	−0.19	0.00
22	Within the past 6 months, how many times have you had sex with an opposite-sex prostitute or stripper?	−0.26	0.00
23	Within the past 6 months, how many times have you had one-night stand same-sex intercourse?	−0.19	0.00
24	Within the past 6 months, how many times have you had one-night stand opposite-sex intercourse?	−0.18	0.00
25	How many times have you had unprotected same-sex intercourse with someone you knew is HIV positive?	−0.16	0.01
26	How many times have you had unprotected opposite-sex intercourse with someone you knew is HIV positive?	−0.21	0.00
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	−0.21	0.00

r = Pearson's correlation coefficient.
P < 0.05 is significant.

Table 4 Pearson correlations of self-efficacy and high-risk sexual practices of the homosexual men ($n = 25$)

Item	High-risk sex practices	r	P-value
6	Within the past 6 months, how many times have you injected or inhaled drugs?	−0.47	0.02
8	How many times have you been diagnosed with a sexually transmitted disease such as genital herpes, genital syphilis, warts, chlamydia, gonorrhoea and AIDS infection?	−0.41	0.03
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	−0.51	0.01
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	−0.54	0.01

r = Pearson's correlation coefficient.
P < 0.05 is significant.

group, 3 high-risk sexual items were statistically significant (Tables 7 and 8). The heterosexual men may alter their high-risk sexual practices primarily through self-efficacy and secondarily through knowledge. For the homosexual men, however, neither knowledge nor self-efficacy was a predictor of high-risk sexual practices; this may be the result of the small size of the sample.

Two (2) supplemental questions were also asked: (1) What is the relationship of drug use, including alcohol, to high-risk sexual practices among Lebanese males who engage in same sex and opposite sex activities? (2) What is the relationship of prostitution to high-risk sexual practices among Lebanese males who engage in same sex and opposite sex activities? For the homosexual men, 8 items on the high-risk sexual practices instrument that contained questions about drug or alcohol use were correlated respectively with each remaining item on the instrument (except for those pertaining to sex with prostitutes, which were analysed for supplemental question 2). Using the Pearson coefficient, the 8 'drug items' were significantly related at alpha ≤ 0.05 to each remaining item on

the high-risk instrument. Only 1 high-risk behaviour (item 24) was unrelated to any drug item. In no instance were there more than 4 significant relationships between the drug items and the other pertinent items on the instrument and in most instances there were 2 or fewer such relationships. Among the heterosexual men, drug items and other pertinent high-risk sexual practices were more positively related. All high-risk sexual practices items were related to at least 1 drug item and most high-risk items were related to 4 or more drug items. This, however, suggests there is either something about heterosexuals that account for these relationships, that the results are an artefact of the larger sample, or both.

In addition, items on the high-risk practices instrument that contained questions about sex with prostitutes were identified and were correlated respectively with each remaining item on the instrument (except for those pertaining to drug use, which were analysed for supplemental question 1). There was only 1 significant relationship, involving items 1 and 21 (sex with the same sex and sex with same-sex prostitute) high-risk practices among homosexuals.

Table 5 **Relationships between AIDS-related knowledge and self-efficacy and high-risk sexual practices of the heterosexual men (n = 261)**

Item	High-risk sex practice items	F-value	R-value	P-value
1	During your life, with how many people of the same sex have you had sexual activity?	5.30	0.04	0.01
2	During your life, with how many people of the opposite sex have you had sexual activity?	10.52	0.07	0.00
3	Within the past 6 months, with how many people of the same sex have you had sexual activity?	3.21	0.02	0.04
4	Within the past 6 months, with how many people of the opposite sex have you had sexual activity?	4.16	0.03	0.02
6	Within the past 6 months, how many times have you injected or inhaled drugs?	6.07	0.04	0.00
7	How many times have you gotten someone pregnant other than your wife?	6.87	0.05	0.00
8	How many times have you been diagnosed with a sexually transmitted disease such as genital herpes, genital syphilis, warts, chlamydia, gonorrhoea or AIDS infection?	3.11	0.02	0.05
9	How many times have you participated in same-sex activities before marriage?	3.33	0.02	0.04
13	How many times have you had unprotected sexual intercourse with someone of the same sex?	6.95	0.05	0.00
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	7.68	0.06	0.00
16	Within the past 6 months, how many times have you had alcohol before having opposite-sex intercourse?	6.12	0.05	0.00
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	2.98	0.02	0.05
18	Within the past 6 months, how many times have you used inhalant drugs before opposite-sex intercourse?	11.63	0.08	0.00
19	Within the past 6 months, how many times have you used injected drugs before same-sex intercourse?	11.43	0.08	0.00
20	Within the past 6 months, how many times have you used injected drugs before opposite-sex intercourse?	7.99	0.06	0.00
21	Within the past 6 months, how many times have you had sex with a same-sex prostitute or stripper?	4.90	0.04	0.01
22	Within the past 6 months, how many times have you had sex with an opposite-sex prostitute or stripper?	11.88	0.08	0.00
23	Within the past 6 months, how many times have you had a one-nightstand same-sex intercourse?	5.01	0.04	0.01
24	Within the past 6 months, how many times have you had a one-nightstand opposite-sex intercourse?	9.86	0.07	0.00

Table 5 Relationships between AIDS-related knowledge and self-efficacy and high-risk sexual practices of the heterosexual men ($n = 261$) *(concluded)*

Item	High-risk sex practice items	*F*-value	*R*-value	*P*-value
25	How many times have you had unprotected same-sex intercourse with someone you knew is HIV positive?	4.03	0.03	0.02
26	How many times have you had unprotected opposite-sex intercourse with someone you knew is HIV positive?	6.65	0.05	0.00
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	7.09	0.05	0.00

P < 0.05 is significant.

For the heterosexual group, sex with prostitutes was significantly related to all other pertinent high-risk practices except items 1, 3, 9 and 12. The only apparent pattern was that 3 of these 4 items pertained to same sex activities. This is not surprising since the data were from the heterosexual group.

Discussion

The first objective of this study was to examine the relationship between AIDS-related knowledge and high risk sexual practices among Lebanese males engaging in same sex and opposite sex activities in the New York City area. Significant relationships for the two groups were markedly different.

AIDS-related knowledge was statistically significant in relation to 9 high-risk sexual practices for the heterosexual participants, or those who engaged in opposite sex activities. All relationships were inverse, which meant that as the subject's knowledge increased, his behaviours decreased. The 9 significant relationships revealed a discernible pattern involving either the specific type of knowledge or high-risk sexual practice.

For the homosexual group, only one relationship was significant between knowl-

Table 6 Relationships between AIDS-related knowledge and self-efficacy and high-risk sexual practices for the homosexual men ($n = 25$)

Item	High-risk sex practices	*F*-value	*R*-value	*P*-value
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	4.10	0.28	0.03
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	4.31	0.30	0.02
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	3.47	0.25	0.05

P < 0.05 is significant.

Table 7 Regression analysis and beta-weight of high-risk sexual practices versus knowledge and self-efficacy for the heterosexual men ($n = 261$)

Item	High-risk sex practices	Regression analysis	Knowledge		Self-efficacy	
			Beta-weight	P-value	Beta-weight	P-value
1	During your life, with how many people of the same sex have you had sexual activity?	0.01	1.46	0.07	−0.74	0.00
2	During your life, with how many people of the opposite sex have you had sexual activity?	0.00	−1.61	0.28	2.10	0.00
3	Within the past 6 months, with how many people of the same sex have you had sexual activity?	0.04	1.18	0.08	−0.45	0.03
4	Within the past 6 months, with how many people of the opposite sex have you had sexual activity?	0.02	−4.21	0.01	−0.05	0.91
6	Within the past 6 months, how many times have you injected or inhaled drugs?	0.00	−0.31	0.60	−0.59	0.00
7	How many times have you gotten someone pregnant other than your wife?	0.00	−1.28	0.00	−0.07	0.57
9	How many times have you participated in same-sex activities before marriage?	0.04	1.22	0.12	−0.56	0.02
12	How many times have you participated in opposite-sex extra-marital sexual affairs?	0.06	−1.59	0.24	0.94	0.02
13	How many times have you had unprotected sexual intercourse with someone of the same sex?	0.00	0.34	0.60	−0.73	0.00
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	0.00	0.51	0.46	−0.86	0.00
16	Within the past 6 months, how many times have you had alcohol before having opposite-sex intercourse?	0.00	−1.05	0.39	−1.15	0.00
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	0.05	−0.14	0.77	−0.33	0.02
18	Within the past 6 months, how many times have you used inhalant drugs before opposite-sex intercourse?	0.00	−0.89	0.22	−0.95	0.00
19	Within the past 6 months, how many times have you used injected drugs before same-sex intercourse?	0.00	−0.61	0.17	−0.56	0.00
20	Within the past 6 months, how many times have you used injected drugs before opposite-sex intercourse?	0.00	−1.27	0.02	−0.40	0.02

Table 7 **Regression analysis and beta-weight of high-risk sexual practices versus knowledge and self-efficacy for the heterosexual men ($n = 261$)** *(concluded)*

Item	High-risk sex practices	Regression analysis	Knowledge Beta-weight	P-value	Self-efficacy Beta-weight	P-value
21	Within the past 6 months, how many times have you had sex with a same-sex prostitute or stripper?	0.01	0.20	0.55	−0.33	0.00
22	Within the past 6 months, how many times have you had sex with an opposite-sex prostitute or stripper?	0.00	−1.81	0.02	−0.86	0.00
23	Within the past 6 months, how many times have you had one-night stand same-sex intercourse?	0.01	−0.23	0.74	−0.67	0.00
24	Within the past 6 months, how many times have you had one-night stand opposite-sex intercourse?	0.00	−3.51	0.00	−0.72	0.03
25	How many times have you had unprotected same-sex intercourse with someone you knew is HIV positive?	0.02	0.17	0.46	−0.21	0.01
26	How many times have you had unprotected opposite-sex intercourse with someone you knew is HIV positive?	0.00	−0.47	0.40	−0.55	0.00
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	0.00	−0.94	0.17	−0.64	0.00
29	The last time you had sexual intercourse with someone of the same sex, what method did you or your partner use to prevent contracting AIDS?	0.01	−0.30	0.34	−0.27	0.01

P < 0.05 is significant.

edge and high-risk sexual practices; i.e., 'Within the past 6 months, with how many people of the opposite sex have you had sexual activity?' (Table 2). The inverse relationship meant the more knowledge, the less frequent the risk activity. It may be noted that this involved opposite sex activity among homosexually oriented subjects, suggesting that an increase in knowledge decreased the tendency for such activity. Of course, the enigma of this answer is

why any participants in this group would have had opposite-sex activities. One reason could be they felt pressure to respond to social norms, typified by sexual activity with women. Another possibility is that the men answered untruthfully, because, for example, they wanted to present themselves as heterosexual to some degree even if they were exclusively homosexual or because they feared their identities would not be kept confidential and they wanted to

Table 8 Regression analysis and beta-weight of high-risk sexual practices versus knowledge and self-efficacy of the homosexual men ($n = 25$)

Item	High-risk sex practices	Regression analysis	Knowledge Beta-weight	P-value	Self-efficacy Beta-weight	P-value
15	Within the past 6 months, how many times have you had alcohol before having same-sex intercourse?	0.03	3.87	0.43	−4.72	0.02
17	Within the past 6 months, how many times have you used inhalant drugs before same-sex intercourse?	0.02	2.78	0.55	−4.56	0.01
27	How often have you had sex with a same-sex Lebanese person believing Lebanese are HIV negative?	0.05	11.43	0.03	−4.39	0.03

$P < 0.05$ is significant.

make it difficult for others to draw conclusions by presenting an ambiguous picture of themselves.

Knowledge, however, was not related to any other high-risk sexual practices among the homosexual participants. This might suggest that these individuals respond to factors other than knowledge when making decisions about sexual practices or that the lack of significance might reflect the small size of the sample. Despite this, no correlation coefficient was higher than 0.26, except for the sole statistically significant result reported above (Table 2, Item 4). In addition, relationships were both positive and negative depending upon the risk item in question, thereby suggesting no consistent relationship between knowledge and risk practices for this group.

The second aim of the study was to examine the relationship between self-efficacy and high-risk sexual practices among Lebanese males who engage in same sex and opposite sex activities in the New York City area. The study showed 4 significant

relationships for the same-sex group and 18 significant relationships for the opposite-sex group (Tables 3 and 4). All relationships for both groups were inverse, except for item 2 for the heterosexual group: as self-efficacy increased, the number of opposite-sex partners for them increased. For the other significant relationships in both groups, however, the inverse relationships meant that as self-efficacy increased, the number of high-risk activities decreased. For the same-sex group, 3 significant relationships involved using drugs or alcohol, which suggested that self-efficacy can play an important role in curtailing these behaviours. This conclusion was reinforced because the same relationships were significant for the heterosexual group.

Similar observations and questions arise for both groups as with the first research objective. Again most relationships were inverse and weakly statistically significant with no correlation coefficient for either group exceeding 0.54 and with the great majority at 0.30 or less. Also, the heterosexual group had more significant relation-

ships than did the homosexual group despite similarities in the magnitude of the correlation coefficients. This suggests that sample size might be responsible for differences between the 2 groups.

Regarding self-efficacy, many respondents had difficulty discussing sex with their partners. The 4 questions with the highest percentage of low self-efficacy scores were:

• Can you tell your partner if you had sex with a bisexual? (68% answered 'never' or 'sometimes'.)

• Can you ask your partner if he or she has had anal sex with someone else? (66% answered 'never' or 'sometimes'.)

• Can you ask a sex partner if he or she had sex with a male or female prostitute? (64% answered 'never' or 'sometimes'.)

• Can you tell your partner the number of people you had been with before him/her? (70% answered 'never' or 'sometimes'.)

The third objective of the study was to examine the relationship between AIDS-related knowledge, self-efficacy and high-risk sexual practices among the Lebanese males in the New York City area. Multiple regression analysis again revealed a striking difference in the significant relationships for the 2 groups. For the same-sex group, the independent variables, AIDS-related knowledge and self-efficacy, together accounted for a statistically significant variance in 3 of the 28 high-risk sexual practices, 2 of which involved alcohol and drugs; in contrast, for the opposite-sex group, the independent variables together accounted for a statistically significant variance in 22 of the 28 high-risk sexual practices. This was consistent with the 2 previous research questions in which the

opposite-sex group had many more significant relationships than the same-sex group. Once again, the magnitude of the significant statistics was similar for both groups, suggesting that the differences in the significant results lie in the discrepant sample sizes. At best, variations in almost any type of high-risk sexual practice among heterosexuals could be significantly related to AIDS knowledge and self-efficacy.

Supplemental question 1 asked, 'What is the relationship of drug and alcohol use to high-risk sexual practices among Lebanese males who engage in same sex and opposite sex activities in the New York City area?' For the heterosexual group, between 1 and 4 of the 8 drug items on the high-risk sexual practices instrument were significantly and positively related to every high-risk sexual practice in the analysis, except for item 24 ('Within the past 6 months, how many times have you had one-night stand opposite-sex sexual intercourse?'). For the homosexual group, between 1 and 7 of the 8 drug items were significantly and positively related to every high-risk sexual practice in the analysis; however, for every high-risk sexual practice except 1, at least 4 drug items were significantly related, and in many cases, 5–7 drug items were related. Compared to the previous research questions, the 2 groups were much more similar in this respect with variation only in the number of drug items related to high-risk sexual practices rather than the number of significantly related high-risk practices. For both groups, relationships were positive.

Supplemental question 2 asked, 'What is the relationship of sex with prostitutes to high-risk practices among Lebanese males who engage in same-sex and opposite sex activities in the New York city area?' Only 1 high-risk practice was involved in a signifi-

cant, positive relationship for the hetero-
sexual group but 14 high-risk practices
were involved in significant, positive rela-
tionships for the homosexual group. Signif-
icantly, as sex with prostitutes increased,
the frequency of other high-risk sexual
practices increased. In contrast to the het-
erosexual men, the homosexual Lebanese
men were not likely, of course, to seek sex
with female prostitutes, and since their na-
tive culture does not allow or encourage
same-sex prostitution, they might have
been unlikely to seek sexual encounters
with male prostitutes in New York City.
This may mean that the frequency of same-
sex relations with prostitutes is lower on
average than for the heterosexually-orient-
ed men, but it does not necessarily mean
they engage in less risky practices when
they do have such encounters. Further re-
search with a larger sample would clarify
this.

The literature contains studies of HIV/
AIDS that focus on diverse groups and cul-
tures and facets of the AIDS phenomenon
including risk perception, risk taking and
self-efficacy related to sexual practices
[10]. None of these studies to the investiga-
tor's knowledge has assessed HIV/AIDS-
related high-risk sexual practices and
self-efficacy among Lebanese males living
in the New York City area or in Lebanon. It
is important to emphasize that the current
study cannot be generalized to other Leba-
nese males in the USA, Lebanon or any oth-
er place because it was based on a
convenience sample only. Nonetheless, a
literature review of the subject found no
significant differences with the results of
this study [11].

HIV/AIDS prevention programmes
might be more effective if they were de-
signed to change high-risk sexual practices
with implementation skills in addition to in-
creasing HIV/AIDS cognitive knowledge.

In the current study, self-efficacy was a
more effective predictor than knowledge of
high-risk sexual practices. Therefore,
health education programmes in the USA or
Lebanon targeted toward increasing self-
efficacy would be appropriate for preven-
tion efforts for this population in order to
reduce the risk of contracting and spread-
ing HIV/AIDS infection.

Recommendations

This study has several implications for fur-
ther research in the development of HIV/
AIDS prevention programmes targeted at
Lebanese males in the New York City area.
These recommendations are:

• First, the study should be replicated
  with random sampling and should com-
  pare groups in other parts of the USA
  and in Lebanon with those in the New
  York City area.

• Second, in a replication study the sam-
  ple of homosexual individuals should
  equal the number of heterosexual indi-
  viduals.

• Third, HIV/AIDS prevention pro-
  grammes should be developed to target
  low self-efficacy of individuals.

• Fourth, new health education pro-
  grammes should take into consideration
  the education levels of target popula-
  tions so more effective interventions
  can be planned.

To increase safer sex practices among
Lebanese males, both abstinence and re-
sponsibility in sexual relationships need to
be promoted as norms for the group. Ef-
forts must be made to inhibit the commer-
cialization of sexuality that we see in our
society. Towards achieving this goal, ap-
propriate HIV/AIDS education needs to be
mandated from the earliest age at the indi-

vidual, family, school, community, state and national levels. Lebanese males, like all members of society, have the right to be informed about HIV/AIDS and to live in an environment that protects them from HIV, the deadly virus that causes AIDS and eventually death.

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