A PSYCHOSOCIAL STUDY OF HIGH RISK SUBJECTS FOR AIDS

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ABSTRACT

A psychosocial study of 5 high risk groups for AIDS (50 homosexuals, 50 drug addicts, 23 male to female transsexuals, 45 male patients at a sexually transmitted disease clinic, and 43 female prostitutes) and 5 matched control groups showed that the majority of the subjects were mostly single, with a secondary level of education and lived with family members. Although all had a high risk of AIDS, condom use was not prevalent. The subjects were less knowledgeable about AIDS than controls, were more anxious about getting AIDS and had a more hopeless and pessimistic outlook to life; however they appeared to be as altruistic and responsible as the controls.

Keywords : Knowledge of AIDS, anxiety, hopelessness, pessimism

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INTRODUCTION

AIDS can be said to be the scourge of the eighties and has generated great concern and fear among some sections of the population. Intense psychological stress is produced as a result of certain aspects of the illness ie. :

1) it is uncertain in subjects at risk when and if the illness will develop
2) the mortality rate is high and the patient is physically ravaged prior to his death.
3) it is transmitted through sexual contact, shared needles and by infected transfusions of blood and blood products
4) the incubation period is long and initial serological tests may be negative.

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Wolcott et al (1) stressed that the uncertainty about developing the disease, and the long periods of severe debility reduce the ability of AIDS patients to have control over their bodies and lifestyles and strain the resources of those having to help them. The sexually transmitted nature of the disease also increases guilt and causes relationship problems among many AIDS victims. Rejection by family and friends add to the distress of AIDS patient. Psychological reactions suffered by AIDS patients are severe anxiety, guilt, anger, anticipatory grief, hopelessness, depression.

In Singapore, the number of HIV positive persons has gradually risen from 2 cases in 1985 to 44 in January 1990 (2). The AIDS cases rate (ie. number of cases per hundred thousand population) rose from 0.1 in 1987 to 0.2 in 1988. This rate is much lower than that reported for Australia, the United Kingdom, USA but higher than that of Malaysia, and Japan (See Table I) (3).

Table I.

AIDS Case Rates in Selected Countries

	1987		1988*	
	Cases	Rates	Cases	Rates
Australia	358	2.3	444	2.8
Hong Kong	5	0.1	7	0.1
Japan	34	0.0	38	0.0
Malaysia	1	0.0	2	0.0
Philippines	9	0.0	8	0.0
Singapore	2	0.1	6	0.2
United Kingdom	649	1.1	762	1.3
U S A	24,274	10.1	25,132	10.5

* 1988 Reporting generally incomplete.
Adapted from Global Programme on AIDS, WHO (3), 1989.

Being a small island state at the crossroads of international travel paths, Singapore has a high volume of visitors per year, rising from 1.3 million in 1976 to 3.2 million in 1986 (4). As concern for the development of AIDS in vulnerable groups is considerable, it was decided to study 5 groups of subjects with a high risk for developing AIDS to ascertain their psychological stresses, awareness of AIDS and attitude to infecting others in order to better plan preventive strategies.

METHOD

A study of 3 months' duration in late 1988 was carried out on 5 high risk AIDS groups and controls matched for race, age and sex. The groups comprised:

a) 50 homosexual males in a major organisation and 59 matched controls who were in the same place of work.

b) 50 drug addicts who were currently detained at the Drug Rehabilitation Centre and 50 matched controls who were serving a non drug jail sentence.

c) 23 male to female transsexual prostitutes and a matched group of female controls attending a skin clinic.

d) 45 men who were receiving treatment at a sexually transmitted diseases clinic and 37 men attending a skin clinic who were not suffering from a sexually transmitted disease.

e) 43 female prostitutes and a control group of 37 women who were attending a skin clinic.

The instruments given were:

a) a general questionnaire dealing with demographic data.

b) a questionnaire specific for each group about sexual or drug practices.

c) an AIDS Anxiety Scale.

This was a questionnaire of 10 items devised by the authors to measure the anxiety about AIDS in a population that had not yet contracted AIDS. It was tested on 40 subjects (nurses and clerks) and was found to have good face validity and a split half reliability of 0.7.

d) an Attitude to Infecting Others Scale.

This scale of 8 items was devised to measure the attitude of a high risk group to affecting others. It was tested on 40 bargirls and prostitutes, was found to have a good face validity, and a split half reliability of 0.72.

e) AIDS knowledge A and B Scales.

These 2 scales were devised by the WHO to assess the knowledge of AIDS and were previously tested in the Singapore population (5).

f) Beck's Anxiety Inventory (1988)(6)

g) Hopelessness Scale (Beck et al 1974) (7)

h) Altruism Scale (Robinson and Shaver 1973)(8)

i) Loneliness Scale (Burns 1985)(9)

j) Scale for Suicidal Ideation (Beck 1979)(10)

The method employed in the survey was (a) an interview method for subjects who were not able to answer the questionnaire by themselves by interviewers who had experience with epidemiological surveys related to sexually transmitted diseasea or who were psychiatrically trained retired nurses, or (b) by a self administered questionnaire method for those who were literate and preferred to answer the questionnaires privately. The interviews or administration of questionnaires were carried out in the individuals' homes or at the clinics, at the place of work or in the Drug Rehabilitation Centre or in prison depending on the groups interviewed.

RESULTS

I Demographic data

Table II shows the demographic data of the subjects and controls. As expected there were more single than married subjects but there was no significant difference between subjects and controls regarding marital status. The drug addicts and the prostitutes had a lower level of education compared to the other groups, and these 2 groups were significantly different from controls. Chinese was the main language of communication used by the drug addicts compared to the other groups (homosexuals, transsexual prostitutes, and sexually transmitted diseases groups who used more English). The majority of subjects (59%) lived in government flats compared to 81% of controls. Significantly more of the transsexual prostitutes and female prostitutes had private abodes compared to controls and most of the abodes of many of the sexually transmitted diseases group, drug addict and homosexual groups were purchased compared to the prostitutes and transsexuals who rented their abodes. Sixty-seven percent of the subjects lived with family members. The mean amount in the medisave account (a compulsory savings account for hospital medical care) could not be validly assessed as few gave replies to this question.

II Social data

(i) Transsexual prostitutes (n=23)

This group reported a surprisingly low mean average of clients per day ie. 1.2 and a median of 3. The reported average daily earnings was only $48.00 per day. Table III shows the sexual practices of subjects and controls most of which are significantly different, as expected, and reflects the nature of the subjects' occupations. Nine (39%) had clients who always used condoms, 19 (83%) performed oral sex on their clients and of these 10 (44%) experienced frequent ejaculations into their mouths. Six (26%) had oral sex performed by their clients and 16 (70%) had anal intercourse with them, during which only 5 (22%) of the clients used condoms. Five (22%) were beaten and injured during lovemaking by their clients and of these two (20%) had a history of bleeding. Nineteen (83%) had a history of gonorrhoea and 10 (44%) syphilis while only one (4%) had suffered from venereal warts and another from herpes.

Table II. Demographic and Social Data

Variables	STD group Cases n=45		STD group Controls n=37		Transsexuals Cases n=23		Transsexuals Controls n=23		Homosexuals Cases n=50		Homosexuals Controls n=59		Prostitutes Cases n=43		Prostitutes Controls n=37		Drug Addicts Cases n=50		Drug Addicts Controls n=50	
1. Marital Status	Married	14(31%)	14(38%)		Married	1(4%)	6(26%)		Married	1(2%)	7(12%)		Married	3(7%)	18(49%)		Married	12(24%)	13(26%)	
	Single	29(64%)	23(62%)		Single	19(83%)	17(74%)		Single	47(96%)	52(88%)		Single	23(54%)	16(43%)		Single	33(66%)	32(64%)	
	Divorced	2(4%)	0		Divorced	1(4%)	0		Divorced	0			Divorced	13(30%)	3(8%)		Divorced	3(6%)	4(8%)	
					Unknown	2(8%)	0		Unknown	2(4%)			Widowed	4(9%)			Unknown	2		
				NS				NS				NS				p<.001				NS
2. Educational Status	Primary	5(11%)	5(14%)		Nil	1(4%)	0		Nil	1(2%)	0		Primary	31(72%)	7(19%)		Primary	21(42%)	33(66%)	
	Sec	31(69%)	25(68%)		Primary	9(39%)	4(17%)		Primary	1(2%)	4(7%)		Sec	12(28%)	22(59%)		Sec	5(10%)	16(32%)	
	Pre-U	6(13%)	1(3%)		Sec	13(57%)	15(65%)		Sec	14(20%)	18(31%)		Pre-U	0	5(14%)		Pre-U	19(38%)	1(2%)	
	Tertiary	3(6%)	6(16%)		Pre-U	0	3(13%)		Pre-U	20(40%)	18(31%)		Tertiary	0	2(3%)		Tertiary	4(8%)	0	
					Tertiary	0	1(4%)		Tertiary	14(28%)	19(31%)		Unknown	0	1(3%)		Unknown	1(2%)		
				NS				NS				NS				p<.001				p<.001
3. Language Used	English	30(67%)	22(60%)		English	10(44%)	12(52%)		English	34(69%)	44(75%)		English	20(67%)	25(68%)		English	10(23%)	15(30%)	
	Chinese	14(31%)	9(24%)		Chinese	9(39%)	8(35%)		Chinese	5(10%)	8(14%)		Chinese	14(31%)	8(22%)		Chinese	31(64%)	13(26%)	
	Malay	0(0%)	3(8%)		Malay	2(9%)	2(9%)		Both	10(20%)	3(5%)		Both	0	2(5%)		Both	6(12%)	5(10%)	
	Tamil	1(2%)	3(8%)		Indian	1(4%)	1(4%)		Malay	0	1(2%)		Malay	0	2(5%)		Malay	1(2%)	13(26%)	
					Unknown	1(4%)			Unknown	1(2%)	3(5%)		Tamil	1(2%)	0		Tamil	1(2%)	4(8%)	
													Unknown	8(19%)	0					
				NS				NS				NS				p<.02				NS
4. Occupation	Businessman	6(13%)	3(8%)		Bargirls/pros	23(100%)			Businessman	6(12%)	14(24%)		Pros	43(100%)	0		In Drug Rehab. Centre	50(100%)	Prison 50(100%)	
	Uniform gp	12(27%)	13(35%)		Clerk	0	9(39%)		Uniform gp	20(40%)	5(9%)		Businessman	0	3(8%)					
	Serv/sales	9(20%)	4(11%)		Service	0	3(13%)		Service	4(8%)	30(51%)		Uniform gp	0	2(5%)					
	Travel agents	2(4%)	0		Students	0	3(13%)		Techs	5(10%)	5(9%)		Clerical	0	12(32%)					
	Others	16(36%)	17(46%)		Housewives	0	2(9%)		Others	15(30%)	8(14%)		Service	0	5(14%)					
					Unemployed	0	3(13%)						Students	0	2(5%)					
					Others	0	3(13%)						Housewives	0	4(11%)					
													Others	0	9(24%)					
				NS				p<.001				p<.001				p<.001				NS
5. Housing	HDB	36(80%)	30(81%)		HDB	9(39%)	20(87%)		HDB	30(60%)	38(64%)		HDB	5(12%)	33(89%)		HDB	44(80%)	46(92%)	
	Pte hse	7(16%)	6(16%)		Pte Hse	13(57%)	2(17%)		Pte hse	19(38%)	18(31%)		Pte hse	30(70%)	4(11%)		Pte hse	4(8%)	1(2%)	
	Shophse/ zn/attap	2(4%)	1(3%)		Shophse/ zn/attap	1(4%)	1(4%)		Shophse/ zn/attap	0	2(3%)		Shophse/ zn/attap	7(16%)	0		Shophse/ zn/attap	2(4%)	2(4%)	
									Quarters	0	1(1%)		Unknown	1(2%)	0		Quarters	0	1(2%)	
									Unknown	1(2%)	0									
				NS				p<.01				NS				p<.001				NS
6. Living with	Family	42(93%)	36(97%)		Family	6(26%)	22(96%)		Family	39(90%)	42(71%)		Family	12(28%)	34(92%)		Family	42(84%)	43(86%)	
	Alone	3(7%)	1(3%)		Alone	8(35%)	1(4%)		Alone	2(4%)	9(15%)		Alone	25(58%)	2(5%)		Alone	4(8%)	4(8%)	
					Friends	9(39%)	0		Friends	8(16%)	8(14%)		Friends	6(14%)	1(3%)		Friends	3(6%)	3(6%)	
									Unknown	1(2%)							Unknown	1(2%)	0	
				NS				p<.001				NS				p<.001				NS
7. Purchase of flat	Purchase	38(84%)	31(84%)		Purchase	6(26%)	19(83%)		Purchase	31(63%)	40(68%)		Purchase	3(7%)	32(87%)		Purchase	29(58%)	30(60%)	
	Rented	7(16%)	6(16%)		Rented	17(74%)	4(17%)		Rented	18(36%)	19(32%)		Rented	40(93%)	5(13%)		Rented	21(42%)	20(40%)	
									Unknown	1(2%)										
				NS				p<.001				NS				p<.0001				NS

Table III

Transsexual Prostitutes

	Cases n=23	Controls n=23	p
Use of condoms by clients/partners			
Always	9 (39%)	0	.001
Oral sex on partner	19 (83%)	2 (9%)	.0001
Ejaculation into mouth	10 (53%)	0	.001
Oral sex by partner	6 (26%)	1 (4%)	.05
Anal sex	16 (70%)	1 (4%)	.0001
Use of condoms by partner during anal sex	5 (31%)	0	.02
Beating of client	5 (22%)	0	.02
Injury with bleeding	2 (20%)	0	NS
STD:			
Gonorrhoea	19 (83%)	1 (4%)	.0001
Syphilis	10 (44%)	1 (4%)	.01
Venereal warts	1 (4%)	0	NS
Herpes	1 (4%)	0	NS

Table IV

Prostitutes

	Cases n=43	Controls n=37	p
Use of condoms by clients/partners			
Always	24 (56%)	0	.001
Oral sex on clients/ partners	17 (40%)	1 (3%)	.001
Ejaculation into mouth	7 (41%)	0	.01
Oral sex by clients	10 (23%)	1 (3%)	NS
Anal sex	5 (12%)	0	NS
Use of condoms during anal sex			
Sometimes	2 (40%)	-	
Always	3 (60%)	-	
Beating/whipped by clients	4 (9%)	0	NS
Bleeding	0	0	-
Foreign clients	26 (60%)	0	.0001
Wish for change of occupation	27 (62%)	0	.0001
STD:			
Gonorrhoea	32 (74%)	1 (3%)	.0001
Syphilis	16 (37%)	0	.001
Herpes	0	0	-

(ii). Prostitutes (n=43)

There were 43 subjects in this group. The mean number of sexual partners was 5.7 and the median was 6. The average daily earnings were $146. Table IV shows the data on sexual habits of the prostitute group and their controls which are not surprisingly, significantly different. Twenty-four (56%) of subjects always insisted on their clients using condoms. Seventeen (40%) had oral sex with their clients. Of these 7 (41%) experienced ejaculation into their mouths. Ten (23%) of the group had clients who practiced cunnilingus. Only 5 (12%) had anal sex with their clients, compared with none of the controls. During lovemaking 4 (9%) had been whipped or beaten by customers, but none had bled. Twenty-six (60%) of them had foreign clients. The majority, 27 (62%) wished to change their occupation. Thirty-two (74%) had suffered from gonorrhoea previously, 16 (37%) from syphilis, and none from herpes. Only one of the controls had gonorrhoea.

(iii). Homosexuals (n=50)

Of the homosexual subjects, the mean number of partners over the past year was 4.5 and the median was 2.7 . Table V compared the difference between subjects and controls and indicates that in terms of sexual activities subjects are significantly different from controls. Significantly more subjects 39 (78%) restricted their number of partners because of the fear of AIDS than controls; as expected significantly more performed anal sex (both as insertor and insertee) compared to controls and about 70% of these subjects always used condoms. The practice of oral sex was significantly higher among the subjects of whom 39 (78%) performed fellatio and 35 (70%) had oral sex performed on them by their partners with ejaculation into their mouths. Thirteen (26%) had foreign sexual contacts and all but one had such contacts in Singapore. Five (10%) of the group had a history of STD. Almost all 47 (94%) discounted the possibility of their getting AIDS. The postulated reasons for this could be that the subjects could have the erroneous belief that AIDS affected other people and not themselves, or as their partners did not appear to be suffering from AIDS they were likely to be healthy, or a denial of the disease at an unconscious level.

Table V

Homosexuals

	Cases n=50	Controls n=59	p
Mean no. of sexual partners/year	4.5	1.6	
Meeting place of partners			
Private	10 (20%)	17 (29%)	NS
Places of interest	11 (22%)	18 (31%)	NS
Discos	3 (6%)	4 (7%)	NS
Swimming pools	1 (2%)	0	NS
Eating place	1 (2%)	3 (4%)	NS
No special place	23 (46%)	17 (29%)	0.05
Restricted partners/ fears	39 (78%)	28 (48%)	.001
Anal sex	29 (58%)	8 (14%)	.001
Always used condoms	17 (68%)	5 (21%)	.05
Oral sex to partner	39 (78%)	15 (26%)	.001
Oral sex by partner	35 (70%)	19 (33%)	.01
Foreign sex contacts	13 (26%)	5 (9%)	NS
Sexually transmitted disease	5 (10%)	0	.02
No possibility of getting AIDS	47 (94%)	5 (8%)	.001

(iv). Sexually transmitted disease group (n=45)

There were 45 male subjects and 37 matched controls. The mean number of sexual partners of subjects during the past year was 4.3 and the median was 2. The sexual practices of the subjects were not significantly different from controls as can be seen in Table VI.

About 6 (13%) admitted to having sexual relationships only with prostitutes as sexual partners, while 9 (20%) had relationships with prostitutes and other casual partners. Twelve (27%) always used condoms during sexual activity. Nine (20%) performed oral sex on their partners, and 17 (37%) had oral sex performed on them. Seven (15%) practised anal sex. Of these 5 (71%) used condoms. It was interesting that 3 (7%) of the subjects and 2 (5%) of the controls had homosexual experiences. Sixteen (35%) would inform their wives or partners if they had AIDS and a similar percentage would do likewise among the controls. As this was a hypothetical question posed to them, it was possible that the respondents were more worried about their wives knowing of their sexual activities than the implications of AIDS to themselves and their partners.

Table VI

Sexually Transmitted Disease Group

	Cases n=45	Controls n=37	p
Sex with casual partners (past 1 year)	15 (33%)	6 (10%)	NS
Used condoms with casual partners	12 (27%)	4 (11%)	NS
Cunnilingus	9 (20%)	3 (8%)	NS
Fellatio by partner	17 (37%)	3 (8%)	.01
Anal sex	7 (15%)	4 (11%)	NS
Use of condoms during anal sex	5 (71%)	2 (50%)	NS
Homosexual experiences	3 (7%)	2 (5%)	NS
Will inform wife if contracted AIDS	16 (35%)	13 (35%)	NS
Safe sexual practices	20 (44%)	15 (40%)	NS

(v). Drug subjects (n=50)

There were 50 subjects and 50 controls who were imprisoned for non drug related offence; of these 15 had a past history of substance abuse. There was no significant difference between the subjects and the controls on all behaviours except the sharing of needles (Table VII). Forty-six(92%) of subjects took opiod drugs and 2 (4%) benzodiazepines. Forty-three of them (86%) obtained the drugs from traffickers while 6 (12%) claimed to do so from doctors. Only 7 (14%) injected themselves regularly but 11 (22%) had experienced sharing needles with others before. Nineteen (38%) took drugs alone, 21 (42%) sometimes shared drugs with others and 8 (16%) always used drugs in a group setting.

Four (8%) had a history of hepatitis and of these one had previously been hospitalized. Seventeen (34%) had donated blood before and of these only 2 (4%) had done so once, while the rest claimed to have donated blood on several occasions (one did it seven times). Only one of them admitted selling his blood.

Table VII

Drug Subjects

	Cases n=50	Controls (Prison inmates) n=50	p
History of taking drugs	50 (100%)	15 (30%)	
Opiod drugs	46 (92%)	14 (93%)	NS
Bensodiazepines/ barbiturates	2 (4%)	1 (6%)	NS
Obtained from traffickers	43 (86%)	13 (86%)	NS
From doctors	6 (12%)	2 (13%)	NS
Injected drugs	7 (14%)	10 (66%)	.001
Sharing needles	11 (22%)	2 (13%)	NS
Taking drugs alone	19 (38%)	4 (27%)	NS
Occasionally with others	21 (42%)	7 (46%)	NS
Always in group setting	8 (16%)	4 (27%)	NS
Past history of hepatitis	4 (8%)	0	.001
Blood donation	17 (34%)	10 (20%)	NS
Selling blood	1 (2%)	0	NS
Possibility of having AIDS	2 (5%)	5 (10%)	.NS

III PSYCHOLOGICAL MEASURES

Table VIII

T Scores of Total High Risk Groups and Controls

		No.	Mean	T	P
1. SUICIDE IDEATION SCALE					
a)	STD	43	0.4	0.87	NS
	Controls	35	0.2		
b)	Prostitutes	43	0.4	0.31	NS
	Controls	37	0.4		
c)	Transsexuals	23	0.2	-1.62	NS
	Controls	23	0.5		
d)	Homosexuals	49	4.5	2.6	0.01
	Controls	59	0.8		
e)	Drug addicts	50	0.5	-1.1	NS
	Controls	50	1.5		
2. HOPELESSNESS SCALE					
a)	STD	43	7.40	3.5	.001
	Controls	32	4.1		
b)	Prostitutes	43	7.41	3.2	NS
	Controls	34	4.2		
c)	Transsexuals	23	5.5	-2.9	NS
	Controls	23	9.7		
d)	Homosexuals	49	5.9	2.0	.04
	Controls	59	4.1		
e)	Drug addicts	50	5.4	-1.17	NS
	Controls	50	6.2		
3. LONELINESS SCALE					
a)	STD	43	13.8	2.9	.004
	Controls	35	10.7		
b)	Prostitutes	43	13.8	2.8	.006
	Controls	37	10.8		
c)	Transsexuals	23	11.3	-0.4	NS
	Controls	23	12.1		
d)	Homosexuals	49	15.2	2.6	.01
	Controls	59	12.7		
e)	Drug addicts	50	12.3	-1.8	NS
	Controls	50	14.9		
4. BECK'S ANXIETY SCALE					
a)	STD	43	8.5	3.0	.005
	Controls	34	3.9		
b)	Prostitutes	43	8.5	2.4	0.01
	Controls	36	4.5		
c)	Transsexuals	23	3.0	-2.5	0.01
	Controls	23	7.9		
d)	Homosexuals	49	5.1	0.3	NS
	Controls	59	5.0		
e)	Drug addicts	50	5.0	-0.6	NS
	Controls	50	6.0		
5. ALTRUISM SCALE					
a)	STD	42	20.2	-0.1	NS
	Controls	3	20.4		
b)	Prostitutes	42	20.2	-0.4	NS
	Controls	36	20.7		
c)	Transsexuals	23	20.7	-0.53	NS
	Controls	23	21.4		
d)	Homosexuals	49	20.0	-2.2	.02
	Controls	59	23.1		
e)	Drug addicts	50	20.1	0.7	NS
	Controls	50	20.8		

6. AID'S ANXIETY SCALE

a)	STD	42	26.5	5.6	.0001
	Controls	33	21.7		
b)	Prostitutes	42	26.5	5.7	0.0001
	Controls	35	21.7		
c)	Transsexuals	23	21.2	-5.7	.0001
	Controls	23	27.2		
d)	Homosexuals	49	23.6	1.3	NS
	Controls	59	22.6		
e)	Drug addicts	50	25.3	-0.6	NS
	Controls	50	25.7		

7. AIDS KNOWLEDGE A

a)	STD	43	21.4	-1.4	NS
	Controls	35	23.7		
b)	Prostitutes	43	21.4	-1.5	0.01
	Controls	37	23.8		
c)	Transsexuals	22	22.0	0.8	NS
	Controls	23	20.2		
d)	Homosexuals	49	26.2	-1.2	NS
	Controls	59	27.8		
e)	Drug addicts	50	21.5	-0.02	NS
	Controls	50	21.5		

8. AIDS KNOWLEDGE B

a)	STD	43	39.7	-1.5	NS
	Controls	35	44.2		
b)	Prostitutes	43	39.7	-1.5	NS
	Controls	36	44.3		
c)	Transsexuals	23	43.1	0.8	NS
	Controls	23	40.3		
d)	Homosexuals	49	47.2	0.1	NS
	Controls	59	47.5		
e)	Drug addicts	50	44.0	1.3	NS
	Controls	50	41.0		

9. ATTITUDE TO INFECTING OTHERS SCALE

a)	STD	43	18.2	0.5	NS
	Controls	35	20.5		
b)	Prostitutes	43	18.2	0.48	NS
	Controls	37	20.0		
c)	Transsexuals	23	19.3	-0.7	NS
	Control	23	23.7		
d)	Homosexuals	49	14.5	-2.0	0.04
	Controls	59	15.9		
e)	Drug addicts	50	19.1	-0.1	NS
	Controls	50	19.2		

Table VIII shows the **T** scores of the subjects compared to the controls and Table IX, a summary of the significant differences on test scores in the individual groups.

Table IX

Significant T Scores in Individual Groups

Subjects	N	Scale	Mean	T test	P
STD group	S = 43 C =32	Hopelessness Scale	7.4 4.1	3.5	.0008
	S = 43 C = 35	Loneliness Scale	13.8 10.7	2.91	0.0047
	S = 43 C = 34	Beck's Anxiety Scale	8.51 3.0	3.02	.0001
	S = 42 C = 33	AIDS Anxiety Scale	26.5 21.7	5.6	.0001
Homosexuals	S = 49 C = 59	Hopelessness Scale	4.5 0.8	2.6	.01
		Loneliness Scale	15.2 12.7	2.5	0.01
		Suicidal Scale	20 23.1	-2.2	0.02
Transsexuals	S = 23) C = 23)	Hopelessness Scale	9.7 5.5	+2.9	.005
	)	AIDS Anxiety Scale	27.2 21.2	+5.7	.0001
	)	Beck's Anxiety Scale	7.9 3.0	+2.55	0.01
Drug Addicts	S = 50 C = 50	Loneliness Scale	12.4 14.9	-1.8	0.06
Prostitutes	S = 42 C = 35	AIDS Anxiety Scale	26.5 21.7	5.7	.0001
	S = 43) C = 37)	Hopelessness Scale	7.4 4.2	3.28	0.001
	)	Loneliness Scale	13.8 10.8	74.6	0.006
	)	Beck's Anxiety Scale	8.5 4.5	2.48	0.01

Tables X and XI indicate that there was low correlation between AIDS Anxiety and other factors and a multiple regression, stepwise analysis showed that the variables of Hopelessness, AIDS Knowledge A and B, Loneliness and Anxiety as measured by Beck's Anxiety Index only contributed to 2% of the AIDS Anxiety.

Table X

Correlation Coefficient of AIDS Anxiety and Other Variables

	AIDS Anxiety	AIDS Knowledge A	AIDS Knowledge B	Hope-lessness Scale	Beck's Anxiety Scale	Lone-liness Scale
AIDS Anxiety	1.00000					
AIDS Knowledge A	-0.04223	1.00000				
AIDS Knowledge B	-0.05865	0.65886	1.00000			
Hopeless-ness Scale	0.10824	-0.29076	-0.35993	1.00000		
Beck's Anxiety Scale	0.10408	-0.12873	-0.26283	0.47376	1.00000	
Loneliness Scale	0.07850	-0.03587	0.01531	0.19666	0.02155	1.00000

Table XI

Multiple Regression Analyses of AIDS Anxiety Score and Other Variables

Independent variables:	AIDS anxiety
Dependent variables:	AIDS Knowledge A & B
	Beck's Anxiety Score
	Hopelessness Score
	Loneliness Score
Multiple R = 10.14053	
R square = 0.01975	
F 0.83 (NS)	

Tables XIIa and XIIb show that condoms are not always used by these high risk group of subjects.

Table XII

(a) Condom Use

(a)	Transsexual Prostitutes	Prostitutes	Homosexuals	STD Group
Always	9 (39%)	24 (56%)	8 (32%)	12 (27%)
Occasionally	14 (61%)	18 (42%)	17 (68%)	-

Table XII

(b) Condom Usage and Sexual Activity

(b)	Trans. Pros.	Con.	Pros.	Con.	Homosex.	Con.	STD	Con.
Vaginal inter-course	9 (39%)	0	24 (56%)	0	-	-	12 (27%)	4 (11%)
Anal inter-course	5 (31%)	0	3 (60%)	0	17 (68%)	-	5 (71%)	2 (50%)

Con. = Controls
Trans. Pros. = Transsexual prostitutes

DISCUSSION

At present AIDS is an incurable and a fatal disease. WHO estimates that at least 5 million persons worldwide are already infected with HIV (11), and the number of AIDS cases reported to WHO from 149 countries are about 150,000 (12). A large number of people are disproportionately afraid of the disease (13) and delusions of having AIDS have been described (14). Among homosexuals there is a close association between bereavement of friends or acquaintances from AIDS and traumatic stress response, demoralization, sleep problems, recreational drug use, sedation drug use and psychological help seeking behaviour (15). Realization of the risk of the disease, and the concern about a fatal illness are factors associated with the psychological reaction. Common symptoms are anxiety attacks, panic reactions, obsessive compulsive disorder and hypochondriasis.

Many aspects unique to AIDS are important issues, like youth of the victims, the stigma and infectiousness of the disease (16). Fear of AIDS is pervasive, and sometimes abstract but in high risk groups the fear is very real and sometimes excessive (16, 17).

In this study, the subjects all had a high risk of AIDS. On psychological measures they had significantly different scores on only 3 scales viz.

a) Hopelessness scale ($p < 0.002$)

b) AIDS Anxiety scale ($p < .0001$)

c) AIDS knowledge A scale ($p < .01$)

From the results it was apparent that the controls had higher scores on the AIDS Knowledge Scales than the subjects (AIDS Knowledge A and B Scales). This was an unexpected finding and although the differences was only significant for the A scale, the implication for future health education was obvious. As expected the AIDS Anxiety Scale was significantly higher in the subjects but this was not reflected in the Beck's Anxiety Scale - ie. although they were worried about various aspects of AIDS, they did not manifest any significantly greater number of symptoms of anxiety than controls. Also, the subjects appeared to have a significantly higher level of hopelessness than the controls yet this was not reflected in the suicidal ideation score, which interestingly showed

controls having a marginally higher mean score. This seemed to indicate that although their sense of hoplessness about their lives was higher than the controls it was not reflected in an increase in preoccupation with thoughts or actions aimed at ending their lives. Subjects had higher scores on the Altruism Scale than controls, although not significantly so. They were also more lonely.

In 4 groups of subjects (STD group, homosexuals, prostitutes and transsexuals) the Hopelessness Scale score was significantly different. Hopelessness is a measure of pessimism to life and is part of the triad of depressive symptoms (Beck et al 1979) (18); it was surprising that the STD group had higher scores on this than controls, although in the other 3 groups it was more understandable. The Loneliness Scale scores were also raised in 3 groups (STD, homosexuals and prostitutes), anxiety scores (Beck's Anxiety Inventory scores) was higher than controls in 3 groups (STD, transsexuals and prostitutes) and also scores on the AIDS Anxiety Scale in 3 groups (STD, transsexuals and prostitutes).

A multiple regression analysis of the significant variables showed that the correlation between AIDS anxiety, hopelessness, loneliness, generalized anxiety and AIDS knowledge was low and in fact the latter 4 variables only contributed to 2% of the AIDS anxiety. Thus it would appear that other factors were related to the high levels of AIDS anxiety and it is possible that these could be fears of disfigurement or death. It was interesting that the correlation between AIDS anxiety and hopelessness was also not high, thus indicating that it was not worry about AIDS per se that made these subjects feel hopeless - but other factors did. Although the correlation between the Hoplessness and Suicidal ideation score in this group of subjects is low, it is likely that in future should they develop either a positive HIV result or the disease itself suicidal behaviour could arise. Ang et al (1988) (20) in a study of 10 HIV positive subjects found depression to be part of the adjustment reaction of the subjects. Among AIDS subjects in the States, suicidal behaviour was common, as was a loss of self-esteem, feelings of alienation and violation (13).

The loneliness score was not significantly higher in the total group of subjects, but in individual groups (STD group, homosexuals and prostitutes) it was. This could have been related to the predominantly single state of these subjects - Burns (1985) (9) found that in his subjects, the divorced were the most lonely and the married were the least. The lack of lasting relationships in the Singapore subjects could have resulted in their multi-partner sexual behaviour ie. among STD subjects and homosexuals (this was probably not so among prostitutes who would be more likely to do it for other reasons). Should AIDS develop in these subjects, the loneliness would very likely increase. It has been pointed out that when patients develop AIDS, those who are not part of a social circle and are already isolated and lonely would find it increasingly so because of the nature of AIDS and the public attitude to it (19). The question therefore is whether a possible increase in loneliness in future would result in these subjects seeking more sexual partners. Although this could occur it was however found that the Altruism score was not significantly different in the subjects compared to the controls, although it was slightly higher.

The Attitude to infecting others was also not significantly different between subjects and controls. This appears encouraging, and seems to indicate that they would perhaps not react in a very irresponsible way, should they develop the disease. One of the fears from the public health point of view is that such subjects may seek to revenge themselves on society or displace their anger and bitterness by acting purposely to infect others, and it remains to be seen whether these 2 Scales have any predictive value. In the study of HIV positive subjects by Ang et al (20) anal and oral sex was practised by fewer of the subjects, the use of condoms increased and the frequency of sexual activity decreased after their diagnosis; thus this study indicated that with knowledge of their condition, subjects showed more responsible behaviour.

CONCLUSION

In summary then, 5 high risk groups comprising 50 drug addicts, 50 homosexual males, 23 male to female transsexual prostitutes, 45 men attending a sexually transmitted diseases clinic and 43 female prostitutes and matched control groups were assessed on several psychosocial variables. The subjects were mostly single, with the majority (68%) having a secondary level of education. About half were able to communicate comfortably in English. The majority (67%) lived with their family members in government subsidized flats (HDB flats). Although they were a high risk group, precautionary measures like the use of condoms were not taken by the majority of subjects.

Among drug addicts, a worrying factor was that a third of them had donated blood on more than one occasion. The subjects were less knowledgeable about AIDS than controls and were also more anxious about getting AIDS and had a more hopeless and pessimistic outlook to life than subjects. Loneliness was also significantly greater in the promiscuous heterosexuals and prostitutes than controls. However they appeared to be as altruisitic and responsible as the controls.

In view of the above findings certain precautions could be taken to decrease the risk of AIDS in these groups and in society as a whole:

1) High risk groups should receive more education about AIDS as the subjects were significantly less well informed than controls on Scale A of the AIDS Knowledge Scale. This could be done by organising regular educational sessions eg. talks, video presentations at STD clinics or centres and the distribution of pamphlets, booklets or regular newsletters to
   a) all government and general practitioner clinics, and clinics for women
   b) bars or places of entertainment known to be frequented by homosexuals or transsexuals
   c) certain organistions known to have large numbers of homosexual men
   d) drug rehabilitation centres

   The educational campaigns should be done collaboratively by both government and non government organisations.

2) Drug subjects at the Drug Rehabilatation Centres and those attending Aftercare Programmes should be educated on the risk of shared needles. In addition education programmes using the popular media (TV, radio, newspapers) targeted at the population as a whole could be increased. The media could run a regular feature like "AIDS Information" to disseminate current news about AIDS, and to act as a constant reminder to those susceptible to AIDS to use precautions all the time.

3) Clients of prostitutes and transsexuals, sexually transmitted diseases patients and homosexuals should be strongly advised on the use of precautions especially during lovemaking with casual partners. This counselling could be done on an AIDS Hotline phone service for the subjects who actively seek counselling or by health care members whenever they seek treatment for disorders associated with high risk behaviour.

4) Those attending the Blood Transfusion Service who are found to have high risk behaviour should also be counselled and followed up if possible.

5) Group counselling sessions should be conducted for subjects known to be of high risk who persistently refuse to take precautions.

6) All the psychological measures and especially the measures of altruism should be repeated in these groups to ascertain whether there would be changes in the scores (with a corresponding increase in irresponsible behaviour) should the subjects develop positive HIV results.

REFERENCES

1 Wolcott DL, Namir S, et al: Illness concerns attitudes towards homosexuality and special support in gay men with AIDS. Gen Hosp Psychiatr 1986; 8: 395-403.

2 Ministry of Health, January 1990.

3 WHO global programme on AIDS - Update: AIDS cases reported to Surveillance, Forecasting and Impact Assessment Unit. 30 April 1989. Geneva.

4 Yearbook of Statistics, Singapore 1988.

5 Ministry of Health, October 1988.

6 Beck AT et al: An inventory for measuring clinical anxiety: Psychometric properties. J Consult Clin Psychol 1988; 56 :893-7.

7 Beck AT, Weissman A, et al: The measurement of pessimism: The Hopelessness Scale. J Consult Clin Psychol 1974; 42: 861-5.

8 Robinson JP, Shaver PB: Altruism Scale. In Measures of Socio Psychological Attitudes. Univ of Michigan Press, 1973; 603-11.

9 Burns DD: Loneliness Scale. In "Intimate Connections" New Am Library 1985; 4-7.

10 Beck At, Kovacs M et al: Assessment of suicidal intention: The scale for suicidal ideation. J Consult Clin Psychol 1979; 47 : 343-2.

11 WHO global programme on AIDS and tuberculosis programme - Statement on AIDS and tuberculosis. March 1989, Geneva.

12 WHO: New estimates on HIV/AIDS by the year 2000. CDC AIDS weekly. 5 June 1989; 3-4.

13 Friedlander AH, Ranson JA: A diagnosis of AIDS - Understanding the psychosocial impact. Oral Surg 1988; 65: 680-4.

14 Mahorney SL et al: A view of lively delusion: the complaint of having AIDS. Am J Psych 1988; 145: 1130-2.

15 Martin JL: Psychological consequences of AIDS related bereavement among gay men. J Consult Clin Psychol 1988; 56:856-62.

16 Ebbesen P et al: Fear of AIDS. Scand J Soc Med 1986; 14: 113-8.

17 Lippert GP: Excessive concern about AIDS in 2 bisexual men. Can J Psychiatry 1986; 31 (1): 63-5.

18 Beck AT et al: Cognitive therapy of depression. New York: Guilford Press, 1979.

19 Miller D. Psychology, AIDS, ARC and PGL. In : Miller D,Weller J, Green J. eds. The Management of AIDS patients. England: Macmillan Press, 1986.

20 Ang AL et al: A psychosocial study of HIV infected persons in Singapore 1988 (unpublished).