

Factors influencing venereal infection in a war environment

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Wartime conditions have always been conducive to promiscuity and its most obvious sequel, venereal disease. Studies reporting the sociological aspects of promiscuity in wartime are not common and have mostly originated from the second world war (*e.g.* Brody, 1948; Radcliffe, 1947; Watts and Wilson, 1945; Wittkower, 1948; Wittkower and Cowan, 1944; Stouffer, Suchman, DeVinney, Star, and Williams, 1949).

The present exploratory study, on Australian troops in Vietnam, was undertaken to provide more current information on the factors influencing venereal infection in wartime.

Method

Before returning to Australia after 12 months in Vietnam, soldiers were seen by a Medical Officer to be certified free from infectious disease. This offered an ideal opportunity to obtain data on their sexual behaviour in Vietnam. A series of 400 consecutive attenders was interviewed by direct questioning and the replies were recorded directly. Although a standardized format was used there was a good deal of flexibility to allow for differing responses and amplification of replies.

Each participant was asked his rank, age, marital status, and type of enlistment (volunteer or conscripted) and

whether or not he was circumcised. If he admitted intercourse in Vietnam, he was then asked how many times he had had intercourse, where, what prophylaxis he had used, whether alcohol contributed to his participation, and if venereal disease resulted from any of the episodes.

The soldier was then asked similar questions about his behaviour and any sequelae while on rest and recreation leave (7 days leave spent in Australia or other Asian centres). Finally he was asked the age at which he first had intercourse. If he denied intercourse in Vietnam he was asked the reason for his abstinence.

Officers and warrant officers were excluded from analysis because of their small number (24) and the reluctance of most to participate in the study. The remaining 376 soldiers, of the rank of sergeant and below, were very cooperative and the results from this group are briefly analysed. Significant differences between groups were determined from χ^2 calculations.

Results

(1) Over 85 per cent. of the soldiers were younger than 26, largely as a result of conscription, almost all the conscripts being aged between 20 and 22. A much larger proportion of NCOs (17.4 per cent.) than private soldiers (0.9 per cent.) were over 30 years old.

(2) Table I analyses the results according to rank, enlistment, and marital status. Overall, 246 (65.5 per cent.) soldiers had intercourse in Vietnam but the

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TABLE I *Relationship of intercourse incidence with rank, enlistment, and marital status*

Parameter	Total soldiers		Per cent. having intercourse		
	No.	Per cent.	Once	Multiple	
Rank	Private	209	55.5	18.5	52.5
	NCO	167	44.5	17	40
Terms of enlistment	Conscript	155	41.5	13.5	53.5
	Volunteer	221	58.5	21.5	42.5
Marital status	Married	143	38.0	21.5	29.5
	Single	233	62.0	16.5	58
Total	376	100	18.5	47	

rate was higher for private soldiers than for NCOs (71 to 57 per cent.; $P < 0.01$) and higher for single than for married soldiers (74.5 to 51 per cent.; $P < 0.001$). There was no significant difference between the participation of conscripts and volunteers (67 to 64 per cent.; $P > 0.30$).

(3) Six soldiers had never had intercourse, four first had intercourse in Vietnam, and six other soldiers had not had premarital intercourse. Very few had not had intercourse by the age of 20 and the mean age at first intercourse was 17 years.

(4) 74 per cent. of soldiers had been circumcised and these were evenly distributed among conscripts and volunteers.

(5) Venereal infection before service in Vietnam had been acquired by eight (5.2 per cent.) conscripts and 28 (12.7 per cent.) volunteers ($P < 0.02$), a total of 36 (9.6 per cent.).

(6) Table II demonstrates a much lower venereal disease rate among married conscripts by comparison with all other groups (7 per cent. compared to 27 per cent. overall) but the small numbers involved places some doubt on the significance of this finding ($0.05 < P < 0.10$). Seven soldiers (10.5 per cent. of those infected) were infected more than once.

TABLE II *The incidence of venereal infection in Vietnam*

Terms of enlistment	Marital status	Per cent. of those having intercourse	
		No. with V.D.	
Conscript	Single	25	28
	Married	1	7
Volunteer	Single	27	32.5
	Married	13	22
Total		66	27

(7) Table III demonstrates that single soldiers (15 per cent.) used a condom less frequently than married soldiers (39.5 per cent.; $P < 0.001$). Table IV

TABLE IV *Numbers of soldiers with and without V.D. related to number of exposures and prophylaxis used*

No. of exposures	No prophylaxis		Prophylaxis sometimes		Condom always	Wash always	
	V.D.	No V.D.	V.D.	No V.D.	No V.D.	V.D.	No V.D.
1	6	20	—	—	25	4	10
2	4	16	2	—	9	3	3
3	3	10	3	11	9	1	1
4	1	2	2	7	2	—	2
5	—	5	3	6	3	—	—
6 to 10	7	9	9	14	5	4	1
11 to 20	3	6	4	—	1	—	—
More than 20	2	2	5	—	1	—	—
Total	26	70	28	38	55	12	17

shows the relationship of venereal infection to prophylaxis used. No soldier who used a condom on all occasions acquired V.D.

TABLE III *Numbers of soldiers who used a condom during intercourse on all occasions*

Terms of enlistment	Marital status	No.	Per cent. of those having intercourse
Conscript	Single	13	14.5
	Married	7	50
Volunteer	Single	13	15.5
	Married	22	37.5
Total		55	22.5

(8) Table V shows that a higher proportion of married conscripts (50 per cent.) than of other groups (29 per cent.; $P < 0.10$) were usually influenced to have intercourse by the effects of alcohol.

TABLE V *Numbers of soldiers usually influenced into having intercourse by the effects of alcohol*

Terms of enlistment	Marital status	No.	Per cent. of those having intercourse
Conscript	Single	23	25.5
	Married	7	50
Volunteer	Single	24	29
	Married	17	29
Total		71	29

(9) Table VI (overleaf) outlines the major reasons for abstinence.

(10) Table VII (overleaf) outlines the incidence of intercourse and venereal infection at several rest and recreation centres.

Discussion

These findings, together with those of subsequent studies, indicate some of the important factors

TABLE VI *Reasons for abstinence*

Reason for abstinence	Married		Single	
	No.	Per cent.	No.	Per cent.
Fidelity	47	67	6	10
No opportunity	3	4.5	4	6.5
Fear of V.D.	5	7	9	15
Ethical or religious	7	10	3	5
Inconvenient	5	7	6	10
Fear of failure	—	—	5	8.5
Dislike Vietnamese	—	—	14	23
Don't know	3	4.5	13	22
Total	70	100	60	100

influencing the high incidence and morbidity of venereal disease in wartime.

(i) *Altered behaviour pattern*

Intercourse was not a new experience for the population studied, as only 2.7 per cent. had been abstainers, and premarital intercourse had been experienced by 95.7 per cent. However, in Vietnam, 65.5 per cent. of the soldiers, including 51 per cent. of married soldiers, had intercourse with prostitutes, the majority (72 per cent.) more than once. A later study on venereal disease patients from the same area (Hart, 1973b) showed that only 30 per cent. of those having intercourse with a prostitute in Vietnam had done so in Australia, and for the majority (67 per cent.) this had been an isolated experience.

A more direct comparison can be made for behaviour on rest and recreation leave (Table VII). Details of intercourse and V.D. during leave in Australia were not collected as most of the soldiers who had intercourse had wives or fiancées as partners. However, the study of V.D. patients (Hart 1973b)

quantitated this behaviour by showing that, of married soldiers having intercourse on leave, 92.5 per cent. had wives as partners and 2.5 per cent. had Asian prostitutes. Of single soldiers having intercourse on leave, 33 per cent. had fiancées or girlfriends as partners and 62 per cent. had an Asian prostitute. In this study 94.5 per cent. of soldiers visiting Asia on leave had intercourse.

This more promiscuous outlet in Asia is one manifestation of the environmental stress experienced by the soldiers. When separated from the stabilizing social code of their homeland, they could not resist the blatant prostitute seduction to which they were subjected.

Intercourse with prostitutes who are known to have a high rate of venereal infection (Willcox, 1962a) was reflected in a high V.D. rate—66 (27 per cent. of those exposed) being infected compared with only 36 (9.5 per cent.) in Australia (Table II).

(ii) *Prophylaxis*

The findings suggest that the condom is a highly effective prophylactic (all of the 55 soldiers who used this measure on all occasions escaped infection), and that washing the genitalia or other practices, as employed in this environment, are of doubtful value. Notwithstanding this fact, a condom was used routinely by only 22.5 per cent. of soldiers; married men used it more commonly than single men (39.5 compared to 15 per cent.).

The limitations of the condom are not denied, and its role in any control programme is strictly supportive, but the assessment that 'its effectiveness makes the condom useless as a prophylactic against gonorrhoea, and even under ideal conditions against

TABLE VII *Incidence of intercourse and venereal infection on rest and recuperation leave*

Place	Incidence	Conscript		Volunteer		Intercourse (per cent.)	V.D. (per cent.)
		Married	Single	Married	Single		
Australia*	Number	30	40	110	56		
						91	7
Hong Kong	Number	—	52	—	38		
	Intercourse	—	48	—	34		
	V.D.	—	—	—	6		
Bangkok	Number	—	10	—	7	100	30
	Intercourse	—	10	—	7		
	V.D.	—	5	—	—		
Taipei	Number	—	23	3	7	100	0
	Intercourse	—	23	3	7		
	V.D.	—	—	—	—		
Total		30	125	113	108	94.5 ^b	8 ^b

*See Discussion (i)

^bFor soldiers visiting Asia

syphilis' (Fiumara, 1971) is not supported by this study.

(iii) *Sociological background*

Although twice as many volunteers as conscripts had been infected in Australia no marked differences in infection rates in Vietnam were detected. A larger study (Hart, 1973a), however, revealed that certain sociological parameters were associated with venereal infection and, that in particular, professional soldiers made a disproportionate contribution to venereal disease both in their homeland and while at war.

In contrast to some civilian communities, where a small proportion of the population makes a large contribution to venereal disease (Willcox, 1962b; Lomholt and Berg, 1966), only 10.5 per cent. of patients in this study were infected more than once. Thus, in a war environment, a large proportion of soldiers are promiscuous and, although some groups make larger contributions than others, no single sociological group dominates the venereal disease problem.

(iv) *Circumcision*

The circumcision rate of 74 per cent. was much higher than that encountered in V.D. clinic attenders. For instance, only 23 per cent. of chancroid patients and 60 per cent. of gonorrhoea patients had been circumcised (Hart, 1973c). This relationship was also noted by Asin (1952), who found that only 4 per cent. of chancroid patients had been circumcised, and by Kerber, Rowe, and Gilbert (1968), who noted circumcision in 26 per cent. of chancroid patients and 52 per cent. of controls.

An array of other conditions, such as balanitis, paraphimosis, and preputial tears, were almost entirely confined to the uncircumcised. Furthermore, sustained preputial retraction, to allow drying of underlying lesions, hastened healing of all sub-preputial ulcers and was essential for cure in many cases.

In many civilian communities these conditions often provide a small proportion of clinic attenders but in wartime they may predominate. In the Australian clinic in Vietnam, in the course of one year, there were 269 cases of gonorrhoea and five of syphilis compared with 163 of chancroid and 246 due to preputial trauma, balanitis, or herpes genitalis. Hence, in wartime, circumcision may become a significant influence on the total morbidity resulting from sexual relations.

(v) *Alcohol*

In this study 29 per cent. of soldiers claimed that alcohol had an influence on their sexual activity. Alcohol may be a serious problem on its own account

and it may alleviate the problem of venereal disease by providing an alternative leisure activity or form of social escapism. Alternatively, it sometimes renders soldiers incapable of significant sexual activity. Generally, however, its influence is adverse, in that it influences many soldiers to have intercourse, hinders the effective use of prophylactics, and prevents the men from providing an accurate contact report. Thus alcohol not only increased the incidence of intercourse but effectively thwarted any personal or community preventive campaign.

Apart from the direct effects of alcohol, it has been postulated that both heavy alcohol intake and promiscuous behaviour depend on the underlying personality of the individual (Hart, 1973a). By this criterion, the heavy drinker is at greater risk than the moderate drinker, even if both are sober at the times of potential contact.

(vi) *Motivation of sexual behaviour*

To influence behaviour it is necessary to know the reasons motivating soldiers to abstain from intercourse. The reasons volunteered by the men studied in Vietnam offer a crude quantitative analysis of motivation, but they present some interesting features. Although many military leaders concentrate almost solely on fear of venereal disease in control campaigns, this was a major deterrent for only about 10 per cent. of soldiers. Fidelity, although the most socially acceptable response, was claimed by only 67 per cent. of married participants. No single reason predominated for unmarried soldiers, and opportunity was, most likely, a significant factor. This hypothesis is supported by the fact that when the men were on rest and recuperation leave, where entertainment was the only consideration, intercourse was almost universal for those visiting Asian centres.

Summary and conclusions

400 Australian soldiers in Vietnam were interviewed to assess some of the factors influencing the incidence of venereal infection in wartime. The responses of the 376 soldiers of sergeant's rank and below were analysed. Over 65 per cent. of them had intercourse with prostitutes in Vietnam and this practice was almost universal for those visiting an Asian centre for rest and recreation leave. This promiscuity with a heavily infected female population was reflected in a high venereal disease rate (27 per cent. of those exposed) in contrast to that (9.5 per cent. of those studied) contracted from partners in Australia.

The condom, in contrast to other prophylaxis in this environment, was found to be a highly effective prophylactic, but was used routinely by only 22.5 per cent. of the soldiers having intercourse.

Only 10.5 per cent. of patients acquired infection more than once and no single sociological group made an outstanding contribution to the total number of cases of venereal disease. Thus, in wartime, a large proportion of soldiers are promiscuous and the sequelae of this behaviour are widely distributed.

In wartime, conditions in which morbidity is influenced by circumcision (chancroid, balanitis, paraphimosis, preputial tears) may be relatively more common than in peacetime. In the environment studied, these cases exceeded those of gonorrhoea and syphilis combined, and circumcision had a significant influence on the total morbidity from sexual relations.

The influence of alcohol on sexual behaviour in 29 per cent. of soldiers indicates that, in the war environment, as in many others studied, the sale of sex and alcohol are symbiotic commercial practices.

Fear of venereal disease (10.5 per cent.) and ethical or religious factors (8 per cent.) caused few soldiers to abstain from intercourse. Fidelity, while socially the most acceptable response, was claimed as a reason for abstinence by only 67 per cent. of married abstainers. No single reason for abstinence predominated among the unmarried soldiers.

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References

- ASIN, J. (1952) *Amer. J. Syph.*, **36**, 483.
 BRODY, M. W. (1948) *J. vener. Dis. Inform.*, **29**, 334
 FIUMARA, N. J. (1971) *New Engl. J. Med.*, **285**, 972.
 HART, G. (1973a) *Brit. J. vener. Dis.*, **49**, 542
 — (1973b) *Soc. Sci. Med.*, **7**, 455
 — (1973c) *Med. J. Aust.*, **2**, 638.
 KERBER, R. E., ROWE, C. E., and GILBERT, K. R. (1968) *USARV Pam 40-9*, 35.
 LOMHOLT, G., and BERG, O. (1966) *Brit. J. vener. Dis.*, **42**, 1
 RADCLIFFE, T. A. (1947) *J. roy. Army med. Corps*, **89**, 122
 STOFFER, S. A., SUCHMAN, E. A., DEVINNEY, L. C., STAR, S. A., and WILLIAMS, R. M. (1949) 'The American Soldier'. Princeton University Press, New Jersey
 WATTS, G. O., and WILSON, R. A. (1945) *Canad. med. Ass. J.*, **53**, 119
- WILLCOX, R. R. (1962a) *Brit. J. vener. Dis.*, **38**, 37
 — (1962b) *Brit. J. prev. soc. Med.*, **16**, 113
 WITTKOWER, E. D. (1948) *Brit. J. vener. Dis.*, **24**, 59
 — and COWAN, J. (1944) *Psychosom. Med.*, **6**, 287

Facteurs influençant l'infection vénérienne dans un environnement de guerre

SOMMAIRE

Quatre cents soldats australiens au Vietnam furent interrogés pour estimer quelques uns des facteurs influençant l'incidence de l'infection vénérienne en temps de guerre. Les réponses de 376 soldats du grade de sergent et au-dessous furent analysées. Plus de 65 pour cent d'entre eux avaient eu des rapports avec des prostituées au Vietnam et cette pratique fut presque universelle chez ceux ayant séjourné dans un centre asiatique pour repos et permission de détente. Cette promiscuité avec une population féminine fortement infectée se refléta dans le haut taux des maladies vénériennes (27 pour cent de ceux qui s'y exposèrent) contre ceux qui furent vus (9,7 pour cent des cas étudiés) après contact avec des partenaires en Australie.

La préservatif, au contraire des autres moyens prophylactiques dans cet environnement, fut trouvé hautement efficace mais il n'était employé en routine que chez 22,5 pour cent des soldats.

10,5 pour cent seulement des malades avaient été atteints plus d'une fois et aucun groupe social particulier ne joua un rôle marquant vis-à-vis du nombre total du nombre de cas de maladies vénériennes. Ainsi, en temps de guerre, une forte proportion de soldats a des rapports multiples et les séquelles de ce comportement sont largement répandues.

En temps de guerre, les états pathologiques dus à des pertes de substance préputiales (chancres mou, balanites, paraphimosis, déchirures préputiales) peuvent être relativement plus fréquents qu'en temps de paix. Dans l'environnement étudié, ces cas furent plus nombreux que la somme des cas de gonococcies et de syphilis, et ces pertes de substance ont eu une influence significative sur la morbidité totale dépendant des relations sexuelles.

L'influence de l'alcool sur le comportement sexuel pour 29 pour cent des soldats indique que dans l'environnement de guerre, comme pour beaucoup d'autres sujets étudiés, la vente du sexe et de l'alcool s'exerce en symbiose commerciale.

La peur des maladies vénériennes (10,5 pour cent) et les facteurs éthiques ou religieux (8 pour cent) retinrent un petit nombre de soldats. La fidélité, quoique constituant socialement la réponse la plus acceptable, ne fut indiquée que par 67 pour cent des sujets mariés pour expliquer leur abstinence. Parmi les soldats non mariés, il n'y eut pas de raisons prédominantes pour l'expliquer.