

Prevalence and Epidemiological Distribution of certain Coronary Risk Factors among Air Force Personnel

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A study on 200 randomly selected Air Force Personnel revealed that 73.5% were having one (25%) or multiple (48.5%) coronary risk factors. Cigarette smoking was found to be the commonest risk factor (46.5%) followed by lack of regular physical exercise (44.5%), hypercholesterolaemia (42%), excessive dietary intake of cholesterol (35.5%), overweight (23%) and raised blood pressure (9%). The population mean cholesterol level was also found to be higher than the WHO recommended level. Prevalence of "excessive dietary intake of cholesterol" and "lack of regular physical exercise" were found to be associated with rank/branch/trade and the prevalence of the former was found significantly higher among officers.

Keywords : IHD, tobacco smoking, hypercholesterolemia, physical exercise

Ischemic Heart Disease (IHD) has established itself as one of the leading causes of mortality and morbidity in the Indian Armed Forces. It imposes a loss of trained man power and puts a heavy load on medical resources¹.

A number of "risk factors" which place an individual at a high risk of developing IHD have been identified. Most of these risk factors are amenable to preventive efforts. The present study was carried out among Air Force Personnel of Air Force Station, Ambala with the objectives of (i) determining the prevalence of coronary risk factors viz tobacco smoking, raised blood pressure, hypercholesterolaemia, high intake of dietary cholesterol, overweight, and lack of regular physical exercise and (ii) studying the association, if any, between the above mentioned risk factors and the epidemiological variables viz age, rank, branch and trade.

Material and Method

Two hundred Air Force Personnel were selected by random sampling from various units/sections of Air Force Station, Ambala. They were interviewed personally by the worker using a pretested proforma. The questions related to intake of various food items and their quantities during the past 3 days (using a recall method),

physical exercises undertaken and their duration and frequency, and smoking habits. Physical examination included measurement of height, weight and blood pressure. Serum cholesterol estimation was carried out on a 25% subsample (50 subjects), selected by systematic random sampling from the main sample.

The following cut off points were taken for risk factors :-

Tobacco smoking : Current smokers were taken to be at risk. Smokers were again divided into sub groups depending on their average cigarette/bidi consumption per day².

Raised blood pressure : Blood pressure >140/90 mm Hg³

Hypercholesterolaemia :
i. For individual cases : $\geq 240\text{mg/dl}$ ³
ii. For population mean level : $\geq 200\text{mg/dl}$ ⁴

Intake of dietary cholesterol : >300mg/day^{4,5}.

Overweight: Weight 10% over ideal weight for age and height as laid down in Indian Armed Forces Standards.

Regular physical exercise : Personnel undertaking physical exercise less than twice a week were taken to be at risk.

Chi - square test was used for the statistical analysis of the data. Analysis was made between the risk factors and rank/branch/trade.

Findings

Prevalence of risk factors : 73.5% of the subjects were found to be having one or more of the risk factors. 25% had only one risk factor while 48.5% had two or more risk factors. The details are presented in Table-1.

Table-I Prevalence of Risk Factors According to Rank and Branch/Trade [No (%)]

Number of risk factor(s)	Officers		Airmen		Total
	Aircrew	G. duty	Technical	Non tech	
Nil	9(30.0)	7(23.3)	22(24.4)	15(30.0)	53(26.5)
Only One	10(33.3)	11(36.7)	18(20.0)	11(22.0)	50(25.0)
Two	9(16.7)	7(23.3)	18(20.0)	9(18.0)	39(19.5)
Three or more	6(20.0)	5(16.7)	32(35.6)	15(30.0)	58(29.0)
Total	30(100)	30(100)	90(100)	50(100)	200(100)

The distribution of subjects according to various risk factors and rank/branch/trade and χ^2 analysis of the data are presented in Table-II.

Table-II Distribution of Subjects According to various Risk Factors and Rank and Branch/Trade [No (%)]

Risk Factors	Officers		Airmen		Total (n=200)	χ^2 analysis
	Aircrew (n=30)	Ground duty (n=30)	Technical (n=90)	Non-technical (n=50)		
I. Smoking						
Non smoker	16(53.4)	13(43.3)	51(56.7)	27(54.0)	107(53.5)	$\chi^2=1.62$ df=3 P < 0.05(NS)
Smokers						
upto 10/day	7(23.3)	14(46.7)	30(33.3)	20(40.0)	71(35.5)	
> 10/day	7(23.3)	3(10.0)	9(10.0)	3(6.0)	22(11.0)	
II Blood Pressure						
< 140/90mmHg	30(100%)	27(90%)	81(90%)	44(88%)	182(91%)	Not done due to small no.
> 140/90mmHg	—	3(10%)	9(10%)	6(12%)	18(9%)	
III Dietary Cholesterol						
Upto 300 mg/day	13(43.3)	14(46.7)	64(71.1)	38(76%)	129(64.5)	$\chi^2=14.65$ df=3 P < 0.01
> 300 mg/day	17(56.7)	16(53.3)	26(28.9)	12(24.0)	71(35.5)	
IV Body weight						
Within normal limits	25(83.3)	22(73.3)	72(80%)	35(70%)	107(77%)	$\chi^2=2.75$ df=3 P > 0.05(NS)
Over weight	5(16.7)	8(26.7)	18(20%)	15(30%)	46(23%)	
V Physical Exercise undertaken						
Regularly	12(40%)	17(56.7)	59(65.6)	23(46%)	111(55.5)	$\chi^2=8.47$ df=3 P < 0.05
Irregularly/ Not at all	18(60%)	13(43.3)	31(34.4)	27(54%)	89(44.5)	

Tobacco smoking : 46.5% of the personnel were found to be smokers; 35.5% were light smokers, while 11% were heavy smokers (10 cigarettes/Bidis per day). There was no statistically significant association between smoking and rank/branch/trade.

Raised blood pressure : 9% of the subjects were found to be having raised Blood Pressure.

Statistical tests could not be applied because of the small sample size.

Dietary intake of cholesterol : 35.5% of the subjects were found to consume 300 mg of dietary cholesterol per day. χ^2 analysis of the data indicated a highly significant association of this risk factor with rank/trade/branch. A larger proportion of officers had this risk factor as compared to airmen. The population mean cholesterol level (n=50) was found to be 240mg/dl with a range of 160mg/dl to 325 mg/dl. On an individual basis, 42% of the subjects examined for serum cholesterol had values 240 mg/dl.

Body weight : 23% of the subjects were found to be overweight. There was no significant difference between body weight and rank/branch/trade.

Lack of regular physical exercise : 45.5% of the subjects were not undertaking regular physical exercise. This risk factor was found significantly associated with rank/trade/branch.

Age and risk factors : Age was not found to be statistically related to any of the risk factors.

Discussion

The study has revealed that 73.5% of the personnel had one or more risk factors, 25% had one risk factor and 48.5% had multiple risk factors. The USA pooling project study indicated that as much as 80% of the subjects were at risk with 40% having more than one major risk factor⁶.

Tobacco smoking (46.5%) has been identified as the commonest risk factor in this study. In comparison, 36% of the adult males were found to be smokers in USA⁷. Lack of regular physical exercises (44.5%) was identified as the second commonest risk factor followed by hypercholesterolaemia (42%). The population mean cholesterol level in this series was found to be 240 mg/dl which is much higher than the WHO recommendations of 200 mg/dl. Also, a large proportion (35.5%) of the subjects were found to be consuming high amounts of dietary cholesterol. 23% of the subjects were found to be overweight. The prevalence of "overweight" in advanced countries like Britain, Canada and USA has been found to be 19-47%⁸.

In the present study, raised blood pressure was found to be the least common risk factor (9%). This is much less as compared to the industrialised societies, where as much as 25% of the adults have been reported to have diastolic blood pressure above 90mm Hg⁹.

The finding that a large number of the subject population are having one or more of the coronary risk factors indicates a need for concerted preventive efforts. Two types of

strategies are recommended viz. i) Population Strategy : by suitable indoctrination of all our personnel and families about the coronary risk factors and motivating them to adopt healthy life style and eating habits, and ii) High-Risk-Strategy : by identifying those who are at risk and providing them extra care and follow-up.

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