

RESTING B.P. AND COLD PRESSOR TEST IN POLICEMEN IN DHULE CITY

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ABSTRACT

Background: Present study was carried out on 135 policemen of Dhule city who came voluntarily as subjects for the project. **Aim:** To find level of cardio vascular status. **Objective:** To measure Resting B.P., response to stress by cold presser test. **Material:** 135 policemen who came voluntarily as subjects for the project. **Setting and Design:** It was a cross sectional study. Out of 135 policemen 18 were between 20-30 years age, 41 were between 31-40 years age, 55 between 41 to 50 years age and 21 were between 51 to 60 years age. **Method:** Resting B.P measured using mercury sphygmomanometer, Response to stress using Cold presser test. **Results:** were tabulated based on age groups. It was found that prevalence of Hypertension was 24.44% Associated risk factors such as obesity i.e.(BMI>25kg/m².) was 37.03%,cold presser test abnormal in 47.40%, Indicating vulnerability of this population to cardiac disorders. **Conclusion:** The background of increase obesity&stressful life adds burden on cardiovascular system leading to increase prevalence of cardio-vascular disorders in policemen compared to general population.

Key word: policemen, cardio vascular, ,B.P.

INTRODUCTION

Physical fitness determines the performance of individual in his day to day life. The main job of policemen is to maintain law & order and to maintain peace in society. For that fitness remains the key factor in their job. At the entry in police force, they are subjected to tough tests as per the norms of physical fitness. But once they enter in force, only different types of exercise are given to them, but whether this exercise is improving their performance or not is not assessed.

At present the incidence of cardio-vascular disorder is gradually increasing in the society due to

increased stress and strain in day to day life. One of the common presentations of cardiovascular diseases is in the form of hypertension. Raised B.P. is a common condition that does not have specific clinical manifestation until target organ damage develops¹. The importance of hypertension lies in the fact that it forms one of the risk factors for coronary heart diseases, stroke, arteriosclerosis, and peripheral vascular diseases. With increase in incidences of overweight and obesity both in children and adults, it is likely that the incidence of hypertension will increase². So finding the risk factors and taking appropriate measures in time could prevent major life threatening complication. The Policemen are constantly under stress and strain since their entry in police force.

Considering above facts we have planned a project to determine cardio-vascular status in policemen of Dhule city with following aims and objectives.

Aims:

To find cardio-vascular status in policemen

Objective

- 1) To determine Resting B.P.
- 2) To determine response to stress by cold presser test.

MATERIALS

It was requested to the Superintendent of police Dhule city to send four policemen daily for assessment. 135 policemen were examined for the study. The Permission of institutional Ethical committee was sought through proper channel. Each subject was explained the procedure properly then with verbal consent the examination was carried out.

Then they were categorized in four groups based on age.

Group-I- Age 20 to 30 yrs

Group-II- 31 to 40 yrs

Group-III- 41 to 50 yrs

Group-IV- Above 51 yrs

Method: Resting B.P was recorded using mercury Sphygmomanometer as per the prescribed instructions of American Heart Association^{3,4}. Every effort was made to calm down subject which included 5 minutes of complete bed rest. Sphygmomanometer cuff was wrapped and secured snugly with midline of bladder over brachial arterial pulsation. Cuff was inflated rapidly to 70 mm of Hg and then by 10 mm increment while palpating radial pulse. Reading at which pulse disappeared pressure further elevated 20-30 mm above. Then bladder deflated at 2mm/sec while listening for appearance of korotkoff's sound using stethoscope. The systolic (phase I) and diastolic (phase V) pressure recorded immediately to the nearest 2mm of Hg. 2nd reading repeated after 30 sec and mean of the two readings noted.

2. Cold presser test. First Resting B.P. is recorded & cuff placed in situ. Then subject immerses his non-dominant hand up to wrist in ice-cold water of 4^o c. for 1 min^{5,6}. At the end of 50 seconds. Mercury column is raised, so that immediately at end of 1 min. B.P. is recorded. Degree of rise in B.P. is noted. After that subject takes out the hand.

OBSERVATIONS

	n	Normal	High B.P	% abnormal
Gr.I	18	18	0	0
Gr.II	41	32	9	21.95
Gr.III	55	36	19	34.54
Gr.IV	21	16	5	23.80
Total	135	102	33	24.44

Table No. I : RESTING BLOOD PRESSURE

Footnote: S.B.P. normal up to 139mm of Hg, ≥ 140 mm of Hg abnormal and D.B.P. normal up to 89mm of Hg, ≥ 90 mm of Hg abnormal⁷

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	n	Normal	Obese	% abnormal
Gr.I	18	16	2	11.11
Gr.II	41	28	13	31.70
Gr.III	55	29	26	47.27
Gr.IV	21	12	9	42.85
Total	135	85	50	37.03

Table No. III : BODY MASS INDEX

Footnote: Obesity assessed using B.M.I unit kg/m², B.M.I. normal 20-25kg/m², >25 kg/m² overweight⁹

RESULTS

As per W.H.O International Society of Hypertension systolic B.P. ≥ 140 mm of Hg or diastolic B.P. ≥ 90 mm of Hg are labeled as hypertensive⁷. Now out of 135, 32 persons have high B.P. (Table No. I). These subjects were referred to department of medicine for further investigation and they were later labeled as hypertensive. High B.P. is mainly in 30-60 yrs. age group in ascending order. So almost 24.44% have high B.P., which is more than national average in general population which is 5-7%¹⁰. Almost 47.40% subjects (Table No. II) were hyper reactors indicating vulnerability of this population to Hypertension.

DISCUSSION

The results of our study reveal that prevalence of Hypertension in policemen was 24.44%. S.S.Reddy et-al (in 2005)¹¹ have found prevalence of hypertension 8.6% in residents of urban slum area of Tirupati town in A.P. S.V.Joshi et al in 2000¹² found prevalence of hypertension 7.75% in urban population attending OPD of medicine in Mumbai. These all studies indicate that prevalence of HT is quit high in policemen compared with general population in different parts of country. The cold presser test, which is a good predictor of hypertension¹³ and one of test of sympathetic function, was abnormal in 47.40%. That means 47.40% policemen are hyper reactor to stress, indicating vulnerability of this population to hypertension in near future.

There is still much uncertainty about the pathophysiology of hypertension. A small number of patients (2-5%) have an underlying renal or adrenal disease as cause for hypertension. In the remainder no single identifiable cause is found. Among the factors that have been intensively studied are salt

intake, obesity, insulin resistance, imbalance in the rennin-angiotensin system and sympathetic nervous system¹⁴. Rennin is also released in response to sympathetic stimulation. Psychological stress elicits measurable changes in sympathetic and parasympathetic balance and the tone of hypothalamic –pituitary-adrenal axis which might negatively affect cardiovascular system both acutely by precipitating myocardial infarction, Left ventricular dysfunction, dysrhythmia and chronically by accelerating atherosclerosis process

This high prevalence of hypertension could be due to the associated risk factors found in current study. BMI (Quetlet index) normal range is 20-25kg/m². WHO⁹ have classified overweight in three grades based on BMI.

Grade – I	B.M.I	25 to 29.99 kg/m ²
Grade – II		30 to 39.99 kg/m ²
Grade – III		above 40 kg/m ²

Total prevalence of obesity was found to be 37.03%. The incidence again gradually increased with age. Out of that 64.40% were in Grade-I overweight & 33.89% were Grade-II overweight & 1.69% in Grade –III overweight. It has been estimated that 60-70% of hypertension is attributable to adiposity with 5mm of Hg increase in systolic Blood Pressure for every 5 kg weight gain¹⁵. Similar findings were observed by Stamford et al. They found with age cardio-respiratory fitness decreased and body weight & body fatness progressively increased in police officers¹⁶. Also Sorensen L et al in 2000¹⁷ found body weight increased approximately 0.5 Kg /year in Finnish police officers. So we found high B.P., abnormal C.P.T and Obesity in majority of policemen.

The main reason behind all these appears to be lack of regular exercise and stress. After entry in police force policemen are exposed constantly to various types of stress & strains.

1. Prolong duty hours and no fix schedule
2. Inadequate sleep
3. Continuous stressful schedule without any relaxation in-between during bandobast.
4. Improper and inadequate diet

5. Physical and psychological stress e.g. Riots, Political pressure, pressure from senior officers, Encounters

Stressful life motivates person towards addiction like Alcoholism, smoking, tobacco, Gutkha and so on. To maintain physical fitness each policeman gets twice or thrice monthly chances to attend parade which is not enough exercise to maintain fitness. Also due to improper duty hours they develop bad food habit, inadequate sleep. Lack of exercise & poor dietary habits have lead to increase in % body fat leading to obesity. The background of increase body fat & stressful life adds burden on cardiovascular system leading to increase prevalence of Hypertension in policemen. Lack of regular exercise also decreases bodies reserve capacities and stamina leading to reduced respiratory fitness.

SUGGESTIONS

So looking at the above finding we suggest certain measure for police force.

- i) Regular aerobic exercise in morning or evening at least thrice weekly for each police right from entry in police force till retirement.
- ii) Yoga and meditation
- iii) Duties should be arranged in three shifts in 24 hours with 8 hours each, so that proper time for sleep is provided.
- iv) Regular health check & screening for cardiovascular diseases
- v) Regular weight checkup and BMI should be maintained within standard limit of 18 to 25 kgm²

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