

# Coronary Artery Disease Risk Factors among Employees of Shahid Gangalal National Heart Centre, Kathmandu, Nepal

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## Abstract

**Background and Aims:** As employees spent most part of their time at the worksite, it provides a venue to address multiple individual risk factors and promote health. We aim to assess the prevalence of risk factors for coronary artery disease among the employees of Shahid Gangalal National Heart Centre, Kathmandu, Nepal.

**Methods:** It was a prospective, single centre study conducted among randomly selected 129 (35.15%) out of 367 employees of our centre. All selected employees were subjected to detailed blood pressure, anthropometric and metabolic parameters measurement to identify risk factors.

Results: Among the 129 participant 85(65.9%) were female and 44(34.1%) were male. Mean age was 25.8 years. Most of the patients 93(72%) were below the age of 40 years. Based upon BMI, 64(49.6%) were overweight, 20 (15.5%) were Obese, normal BMI was found in 38(29.9 %) where as underweight was found in 7(5.4%) employee. Based upon Central waist circumference Central waist obesity was common in female than male. Only 10(7.8%) of the employee were found to be hypertensive. Nineteen (14.7%) employee had RBS of  $\geq 125$ mg/dl.

**Conclusions:** The high prevalence of risk factors of coronary artery disease is alarming. There should be the urgent and targeted interventions to prevent, treat and control non communicable diseases and their risk factors.

**Key words:** Cardiovascular Diseases, Employee, Risk Factors

## Introduction

The conventional risk factors for Coronary Artery disease (CAD) can be divided into non-modifiable and modifiable risk factors. The former include age, sex and family history, while the latter include diabetes mellitus (DM), smoking, dyslipidemia, hypertension and obesity.<sup>1</sup>

Settings-based approach for health promotion has been proposed by World Health Organization for improving the population health. One of the components of this approach is to focus on health of employees' workplaces by conducting risk factor surveillance.<sup>2</sup> We aim to study prevalence of CAD risk factors among employees of Shahid Gangalal national Heart Centre (SGNHC), Kathmandu, Nepal.

## Methods

It was a prospective, single centre study conducted at SGNHC from September to October 2013 among employees at hospital. Ethical approval was taken from

Intuitional Review Board of SGNHC. Informed consent was taken from the participated employees.

Among a total of 367 employees in the centre 129 (35 %) employees were randomly selected and included in this study. As per World Health Organization protocol, waist circumference (inch) was measured at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest, using a flexible, stretch resistant tape that provides a constant tension. Random blood sugar level was measured using standard Glucometer (One- Touch, Ultra Smart, Blood Glucose Monitoring System, and USA) after taking aseptic precaution. Blood pressure was measured using sphygmomanometer in right upper arm in supine position after five minutes of rest. Reading of phase-I Korotkoff sound was taken as systolic blood pressure (SBP) and phase-v as diastolic BP (DBP) respectively. BP was measured three times with thirty seconds interval. The average of second and third measurements was used in analysis. Based upon BP measurement employee with BP of  $\leq 120/8$ mmHg were considered as normal, BP in between 121-139/81-89mmHg were classified as Pre-hypertensive, where are

employee with BP of  $\geq 140/90$  mmHg were classified as Hypertensive.

Height and weight was measured using standardized techniques and equipments. Body Mass Index (BMI) was calculated by dividing weight by height squared ( $\text{kg}/\text{m}^2$ ) and it was classified as normal range ( $18.5$ - $22.9$   $\text{kg}/\text{m}^2$ ), Underweight ( $<18.5$   $\text{kg}/\text{m}^2$ ), overweight ( $23$ - $26.9$   $\text{kg}/\text{m}^2$ ), obese ( $\geq 27$   $\text{kg}/\text{m}^2$ )

The received data was coded, entered and analyzed with SPSS version 20.0. Descriptive statistics were computed and presented as mean  $\pm$  standard deviations for continuous variables, categorical variables were reported in percentages

## Result

Among the 129 participant 85(65.9%) were female and 44(34.1%) were males. Mean age was 25.8 years. Most of the patients 93(72%) were below the age of 40 years as shown in table 1.

Based upon BMI 64(49.6%) were overweight, 20 (15.5%) were Obese, normal BMI was found in 38(29.9 %) where as underweight was found in 7(5.4%) employee as shown in table 2. Based upon Central waist circumference Central waist obesity was common in female than male as shown in table 3.

Most of the employee were either non-hypertensive 75(58.1%) or Pre hypertensive 44(34.1%), only 10(7.8%) of the employee were found to be hypertensive. as shown in table 4.

Among randomly selected employee most 110(85.3%) had RBS within the 70-125mg/dl, only 19 (14.7%) employee had RBS of  $\geq 125$ mg/dl. Out of 19 employees with high RBS 11(8.5%) were previously diagnosed as DM.

Age range	n	%
20-29	48	37
30-39	45	35
40-49	22	17
50-59	11	9
60 and above	3	2

Category	n	%
Underweight ( $<18.5$ )	7	5.4
Normal range ( $18.5$ - $22.9$ )	38	29.5
Overweight ( $23$ - $26.9$ )	64	49.6
Obese ( $\geq 27$ )	20	15.5

**Table 3** Central obesity based upon waist circumference

Category	n	%
$<35.5$ inch Male	16	12.4
$>35.5$ inch Male	10	7.8
$<31.5$ inch Female	48	37.2
$>31.5$ inch Female	55	42.6

**Table 4** Employee classification based upon BP

Category	n	%
Normal	75	58.1
Pre Hypertensive	44	34.1
Hypertensive	10	7.8

## Discussion

Our study helped us to understand the presence of CAD risk factors among our employee. It may help us to start preventive program among our employee in coming years. Our study clearly demonstrates that obesity is common in our employee. Hypertension and DM are present is very few of our employee.

The present results can be compared with the findings with cross-sectional study on Solapur railway division employees, high SBP was present in 33% males and 26% females. High DBP was present in 34% males and 30% females. High BMI was present in 19% males and 59% females and DM was present in 8% males and 2% females.<sup>3</sup>

Similar results were found by a study on CVD risk factors among employees of tertiary care hospital in south India: hypertension 38.8%, history of diabetes mellitus 13.2% such as, age, gender, physical inactivity, obesity, and family history of hypertension were found to be independently associated with hypertension. Four percent participants had a  $>10\%$  risk of developing CVD in next 10 years compared with 12.3% in the present study.<sup>4</sup>

A study in 2014 to identify the prevalence of cardiovascular health risk behaviors in an outback community of Nepal found that among 406 participants of age 20 to 50 years, 25.6% had high waist circumference, 37.4% had overweight and obesity. Hypertension was detected in 12.3%.<sup>5</sup>

A cross sectional study done on hospital workers in Bahrain found that overweight and obesity was found in 78.4% employee where as hypertension was found in 36.9%.<sup>6</sup> Though overweight and obesity is our study is quite same as this study but hypertensive employee are more in their study.

Single centre study without factors like family history of CAD, tobacco consumption and dyslipidemia are the limitation of our study.

### Conclusion

Prevalence of CAD risk factors among our employees reflected alarming public health concerns. Awareness programs on regular CAD risk factors screening and modification are needed urgently. Free worksite program such as fitness should be encouraged to the employees at each hospital.

### REFERENCE

1. T Sekhri, R S Kanwar, R Wilfred, et al. Prevalence of risk factors for coronary artery disease in an Urban Indian population. *BMJ open*.2014;4:1-7.
2. World Health Organization. Action plan for the global strategy for the prevention and control of non communicable diseases.2013.[Online]. Available From: [http://www.who.int/global-coordination-](http://www.who.int/global-coordination-mechanism/publications/global-action-plan-ncds-eng.pdf?ua=1)
3. Virendra C. Patil, G. P. Parale, P. M. Kulkarni et al. Relation of anthropometric variables to coronary artery disease risk factors. *Indian J Endocrinol Metab* 2011; 15(1): 31–37.
4. K Aswin, Arun G. Ghorpade, Sitanshu Sekhar Kar et al. Cardiovascular Disease Risk Factor Profiling of Group C Employees in JIPMER, Puducherry. *Journal of Family Medicine and Primary Care* 2014; 3(3): 255–259.
5. Raja Ram Dhungana, Surya Devkota, Mahesh Kumar Khanal et al. Prevalence of cardiovascular health risk behaviors in a remote rural community of Sindhuli district, Nepal. *BMC Cardiovascular Disorders* 2014; 14:92.
6. Ameera Ali AL-Nooh, Abdulhussain Abdulabbas Abdulla Alajmi, et al. The Prevalence of Cardiovascular Disease Risk Factors among Employees in the Kingdom of Bahrain between October 2010 and March 2011: A Cross-Sectional Study from a Workplace Health Campaign. *Cardiology Research and Practice* 2014; 9:1-9.

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