PREVALENCE OF DYSLIPIDAEMIA AMONG DOCTORS AND PARAMEDICAL STAFF- SINGLE CENTER STUDY

Deepesh Agrawal¹, Ramanand Prasad Sinha², Rajat Bohra³

¹Associate Professor, Department of Cardiology, Mahatma Gandhi Medical University, Sitapura, Jaipur, Rajasthan, India.

²Associate Professor, Department of Cardiology, Mahatma Gandhi Medical University, Sitapura, Jaipur, Rajasthan, India.

³Associate Professor, Department of Preventive Medicine, Mahatma Gandhi Medical University, Sitapura, Jaipur, Rajasthan, India.

ABSTRACT

BACKGROUND

Dyslipidaemia is very common risk factor for future cardiac events. We doctors and staff, always involve in various trials related to dyslipidaemia but remain unaware of the prevalence among us. Dyslipidaemia is now a days very prevalent among various population, due various life style related factors, significant risk for future atherothrombotic cardiovascular events and has important correlation with the working environment. The aim of this study was to determine the prevalence of dyslipidaemia among doctors and paramedical staff in our medical university as working environment in our hospital is very stressful.

MATERIALS AND METHODS

It was a single center cross sectional study. We recruited total 700 medical professions (220 doctors and 480 para medical staff). Detailed laboratory examination was done. Data was collected in Performa having questionnaires about physical activity, job stress, sleeping hours, working hours, alcoholism and smoking habits. Correlation with multistep regression analysis and coefficient of contingency were derived from the results.

RESULTS

Prevalence of increased total cholesterol, LDL cholesterol, triglycerides and decrease HDL was in 48.90%, 32.73% and 36.82% and 68.18% among doctors and 39.58 %, 39.59%, 40.42% and 58.33% among paramedical staff.

CONCLUSION

Our study has shown that due to increased job stress and other related factors among doctors and staff, decreased HDL and increased total cholesterol was found among doctors and paramedical staff. Females are more dyslipidemic versus males and dyslipidaemia increased with age. The prevalence of Dyslipidaemia was much more than the general population. This was due to effects of differences in life-style and behaviour such as physical inactivity, job stress, work load, altered sleep pattern, alcoholic consumption etc. in the general population.

KEY WORDS

Dyslipidaemia, Paramedical Staff.

HOW TO CITE THIS ARTICLE: Agrawal D, Sinha RP, Bohra R. Prevalence of dyslipidaemia among doctors and paramedical staff- single center study. J. Evolution Med. Dent. Sci. 2018;7(43):4648-4650, DOI: 10.14260/jemds/2018/1037

BACKGROUND

Cardiovascular disease (CVD) is the leading cause of death worldwide, and mortality due to CVD is higher in low and middle income countries.^{1,2} In India, there has been an alarming increase in the prevalence of CVD over the three decades so much so that it accounts for 24% of all deaths among adults aged 25-69 years.³ Asian Indians have been found to develop CVD at a younger age than other populations,⁴ the likely causes for the increase in the CVD rates include lifestyle changes associated with urbanization and the epidemiologic and nutritional transitions that accompany economic development.⁵ Dyslipidaemia has been closely linked to CVD and is a key independent modifiable

risk factor for cardiovascular disease.^{6,7} While Asian Indians are known to have a unique pattern of dyslipidaemia with lower HDL cholesterol, increased triglyceride levels and higher proportion of small dense LDL cholesterol.

Little information exists on prevalence of dyslipidaemia in India and especially in professional workers. The working population represents a large proportion of the general population. Employees spend most of the time of their life in their working place. Hospitals are an ideal environment to collect and disseminate information on quality of life and cardiovascular risk factors. Hospital workers are influenced by their work environment; lots of stress that's led to change in life style. In health care services, the value of determination of dyslipidaemia derives largely from its potential to reduce the risk of cardiovascular disease. So, we planned to study the prevalence of dyslipidaemia in among doctors and paramedical staff in Mahatma Gandhi Medical University, Jaipur.

MATERIALS AND METHODS

This was a cross sectional epidemiological study investigating prevalence of dyslipidaemia among doctors and staff working in Mahatma Gandhi Medical University and Hospital, Jaipur. All the doctors and paramedical staff were included in the

'Financial or Other Competing Interest': None.

Submission 02-09-2018, Peer Review 05-10-2018,

Acceptance 11-10-2018, Published 22-10-2018.

Corresponding Author:

Dr. Ramanand Prasad Sinha,

Department of Cardiology,

Mahatma Gandhi Medical University,

Sitapura, Tonk Road, Jaipur-302022,

Rajasthan, India.

E-mail: rama100012@yahoo.com

DOI: 10.14260/jemds/2018/1037

study. Out of 232 doctors working in the hospital, 12 didn't give their consent while out of 780 staff members, 300 didn't give their consent. Thus, 220 doctors and 480 paramedical staff members who participated in the study, were examined in Department of General Medicine and Department of Cardiology. All participants were more than 28 years of age. Data was collected on a specially designed Performa having multiple questionnaires describing baseline demographic profile, personal habits and physical exercise (IPAQ Protocol)⁸ job stress⁹, work load and sleep pattern. Participants underwent detailed physical and laboratory testing. Laboratory measurement were done after at least 12 hours of fasting. Venous blood sample was collected to estimate lipid profile levels and finally analysed by standard enzymatic methods. Various enzymes were used for estimation total cholesterol, total triglyceride and level of LDL and HDL.

Statistical Analyses

Analyses were completed using SUDANN (version 8.0) to take into account sample weights and design effects. The data was analysed and expressed in number and percentages. For quantitative data, mean and standard deviation (SD) were calculated.

RESULTS

In our study, mean age in doctors was 43.66 ± 23.86 and in paramedical staff 46.48 ± 21.84 . Triglyceride 168.62 ± 36.14 in doctors versus 158.43 ± 24.7 in paramedical staff, HDL 42.16 ± 32.14 in doctors versus 41.43 ± 23.2 in paramedical staff; total cholesterol 206.35 ± 23.14 in doctors versus 198.13 ± 22.13 in paramedical staff; LDL cholesterol level 136.12 ± 18.14 in doctors versus 143.12 ± 18.14 in paramedical staff (table 1).

Variables (Unit)	Doctors (Mean SD)	Staff (Mean SD)
Age (years)	43.66 $\pm$ 23.86	46.48 $\pm$ 21.84
TG (mg/dl)	168.62 $\pm$ 36.14	158.43 $\pm$ 24.7
HDL (mg/dl)	42.16 $\pm$ 32.14	41.43 $\pm$ 23.2
TC (mg/dl)	206.35 $\pm$ 23.14	198.13 $\pm$ 22.13
LDL (mg/dl)	136.12 $\pm$ 18.14	143.12 $\pm$ 18.14

Table 1. Demographic Profile of the Study Population

For total cholesterol levels, 90 doctors out of 220 had increased total cholesterol and prevalence is 40.90%. 190 paramedical staff out of 480 had increased total cholesterol and prevalence is 39.58%.

For LDL cholesterol level, 72 doctors out of 220 had increased LDL and prevalence in 32.73%. 190 paramedical staff out of 480 had increased LDL and prevalence is 39.59%.

For triglycerides level, 81 doctors out of 220 had increased triglyceride and prevalence in 36.82%. 194 paramedical staff out of 480 had increased triglycerides and prevalence is 40.42%.

For HDL level, 150 doctors out of 220 had decreased HDL and prevalence was 68.18%. 280 paramedical staff out of 480 had decreased HDL levels and prevalence was 58.33 %.

For total cholesterol level, age group of ≤ 40 , 40-60 and >60 , prevalence of increased total cholesterol was 35.00%, 22.07% and 35.00% respectively among all (Doctor + Paramedical Staff). For HDL levels, in the age group of ≤ 40 , 40-60 and >60 , prevalence of decreased HDL cholesterol was 67.50%, 61.53% and 56.66% respectively.

For triglycerides levels in the age group of <40 , 40-60 and >60 , prevalence of increased triglyceride in 31.87, 43.08% and 43.34% respectively.

For LDL levels, in the age group of <40 , 40-60 and >60 , prevalence of increased LDL cholesterol is 31.57%, 43.08% and 44.17% respectively.

Profession	Total Cholesterol (mg/dl)				HDL Cholesterol (mg/dl)				LDL Cholesterol (mg/dl)				Triglyceride (mg/dl)			
	<200		≥ 200		<40		≥ 40		<100		≥ 100		≤ 150		>150	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Doctor (n=220)	130	59.09	90	40.90	150	68.18	70	31.82	148	67.27	72	32.73	139	63.18	81	36.82
Paramedical staff (n=480)	290	60.41	190	39.58	280	58.33	200	41.67	290	60.41	190	39.59	286	59.58	194	40.42

Table 2. Prevalence of Dyslipidaemia as per Profession

Profession	Total Cholesterol (mg/dl)				HDL Cholesterol (mg/dl)				LDL Cholesterol (mg/dl)				Triglyceride (mg/dl)			
	<200		≥ 200		<40		≥ 40		≤ 100		>100		≤ 150			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
<40 (N=320)	208	65.00	112	35.00	216	67.50	104	32.50	219	68.43	101	31.57	218	68.125	102	31.87
40-60 (N=260)	201	77.30	59	22.7	160	61.53	100	38.46	148	56.92	112	43.08	148	56.92	112	43.08
>60 (N=120)	78	65.00	42	35	68	56.66	52	43.34	67	55.83	53	44.17	68	56.66	52	43.34

Table 3. Prevalence of Dyslipidaemia as per Age Group

DISCUSSION

The aim of the present study was to focus on the prevalence of dyslipidaemia in medical professionals. In our study, overall prevalence of dyslipidaemia i.e., decrease HDL and increase total cholesterol was more common in doctors versus paramedical staff; females versus males and increased

with age. The prevalence of dyslipidaemia was much more than in general population. Effect of differences in life-style and behaviour such as physical inactivity, job stress, work load, altered sleep pattern, alcoholic consumption etc. are the major determining factors.

Triglyceride value was deranged in 36.82% in doctors and 40.42% among paramedical staff. That favours the other general population studies in our country. Triglyceride and HDL are the most common deranged lipids in our country, also known as Indian pattern of Dyslipidaemia. Karnodi et al.¹⁰ found high triglyceride levels in 28.4%. Garrido et al.¹¹ also found less derangement in triglycerides in comparison to our study. This can be explained by characteristic Indian pattern of dyslipidaemia.

The prevalence of abnormal HDL profile required for dyslipidaemia diagnosis was deranged in 68.18% in doctors and 58.33% among paramedical staff. Konradi et al.¹⁰ low high-density lipoprotein cholesterol (HDL-C) levels in 23.9% while Garrido et al.¹¹ found deranged lipid profile in 80% of cases, that is very high than in our study and Konradi et al study.

It has been observed that in comparison to western population a relatively lower level of cholesterol appears to predispose Indians to coronary artery disease.¹² Also, in a Chennai based hospital study, it was shown that around 75% of patients with myocardial infarction had TC levels <200 mg/dl indicating that the threshold for the TC levels above which it poses a risk for coronary artery disease is low in Indians.¹³ The contributing factor for hypertriglyceridaemia in our population could be our diet rich in carbohydrates.¹⁴ high TG levels have been associated with increased levels of small dense LDL which are considered to be highly atherogenic.¹⁵ Enas et al. found that only 4%-5% Indians have optimal HDL level.¹⁶ Low HDL-C levels are stronger predictor of occurrence and reoccurrence of MI and stroke and are also associated with premature and severe CAD. Oxidative modification of LDL-C is a key process of atherosclerosis and elevated LDL-C has been recognized as a primary risk factor for CAD by NCEP-ATPIII.¹⁷

There were several limitations to our study. The sample size in our study should have been large. In the coming future, a large prospective study is required to describe the medical occupation benefits versus hazards on individual's personal and social life. There is an emerging need to modify the lifestyle, behaviour and personal habits to save the health of medical professionals. Medical professionals are in sustained exposure to stress in their daily life; it indirectly affects the whole humanity. The present decreased manpower in medical profession compared to general population, long term stressful study pattern without any fruitful or bright future in comparison to other sectors, irrelevant responsibilities offered to a doctor other than to treat the patients etc. may be responsible for this epidemic in our medical community.

CONCLUSION

Our study has shown that increased job stress and other factors, among doctors and staff decrease HDL and increase total cholesterol. Females are more dyslipidemic compared to males and dyslipidaemia increased with age. The prevalence of dyslipidaemia was much more than the general population. Effect of differences in life and behaviours such as physical inactivity, job stress, work load, altered sleep pattern, more alcoholic consumption etc. in the general population are the major determining factors.

REFERENCES

- [1] Barensen GS, Srinivasan SR, Bao W, et al. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. The Bogalusa Heart Study. *N Eng J Med* 1998;338(23):1650-6.
- [2] Fuster V, Kelly BB. Promoting cardiovascular health in the developing world: a critical challenge to Achieve Global Health. Washington (DC): National Academies Press 2010.
- [3] Sample Registration System Million Death Study: Preliminary Report on Causes of Death in India 2011-2003. New Delhi: Registrar General of India, 2007.
- [4] Enas EA, Yusuf S, Mehta JL. Prevalence of coronary artery disease in Asian Indians. *Am J Cardiol* 1992;70(9):945-9.
- [5] Omran AR. The epidemiologic transition. A theory of the epidemiology of population change. *Milbank Mem Fund Q* 1971;49(4):509-38.
- [6] Grundy SM. Small LDL, atherogenic dyslipidaemia and the metabolic syndrome. *Circulation* 1997;95(1):1-4.
- [7] Haffnar SM. Diabetes, hyperlipidemia and coronary artery disease. *Am J Cardiol* 1999;83(9B):17F-21F.
- [8] Craig CL, Marshall AL, Sjostrom M, et al. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc* 2003;35(8):1381-95.
- [9] Workplace Stress Survey: American Institute of Stress.
- [10] Konradi AO, Rotar OP, Korostovtseva LS, et al. Prevalence of metabolic syndrome components in a population of bank employees from St. Petersburg, Russia. *Metab Syndr Relat Disord* 2011;9(5):337-43. www.libetpub.com
- [11] Garrido RA, Semerar MB, Temesgen SM, et al. Metabolic syndrome and obesity among workers at Kanye Seventh Day Adventist Hospital, Botswana. *S Afr Med J* 2009;99(5):331-4.
- [12] American Diabetes Association. Diagnosis and classification of diabetes mellitus. *Diabetes care* 2006;29(Suppl 1):S43-S8. <http://www.diabetes.org/diabetesprevention/pre-diabetes>.
- [13] Kumar S, Roy S. Tropical Heart Disease in India. In: Fanja M, edr. *Dyslipidaemia in Indians*. Mumbai. Indian College of Physicians 2005: p. 109-18.
- [14] Krishnaswami V, Radhakrishna T, John BV, et al. A pattern of ischaemic heart disease: a clinical study. *J Indian Med Assoc* 1970;55:153-7.
- [15] Enas EA, Senthikumar A, Chennikkara H, et al. Prudent diet and preventive nutrition from pediatrics to geriatrics: current knowledge and practical recommendation. *India Heart J* 2003;55(4):310-38.
- [16] Mora S, Szklo M, Otvos JD, et al. LDL particle subclasses, LDL particle size and carotid atherosclerosis in the Multi-Ethnic study of Atherosclerosis (MESA). *Atherosclerosis* 2007;192(1):211-7.
- [17] Gaziano JM, Hennekens CH, O'Donnell CJ, et al. Fasting triglycerides, high-density lipoprotein and risk of myocardial infarction. *Circulation* 1997;96(8):2520-5.