

Relationship between hypertension and smoking: A preliminary study in South Kashmiri population of J&K

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ABSTRACT

Background: Smoking has been found to have a profound effect on mortality and cause-specific cardiovascular events in hypertension with significant interactions between the effects of smoking and hypertension and diabetes. Nevertheless, smoking is a major modifiable risk factor for cardiovascular disease (CVD). **Materials and Methods:** The present study was conducted on the patients visiting the medical Out Patient Department, Government Medical College (OPD GMC), Anantnag, for consultation with an aim to find whether smoking can be linked with CVD as a cause. A total of 304 patients were observed during this period for health check-ups. **Results:** The result reveals that 90% of male subjects across the age groups formulated in this study were in habit of smoking. In addition, 75% of female subjects across all age groups were also found to be in the habit of smoking. The majority of subjects including male subjects were potentially susceptible to CVD. The present prospective study was carried out to assess the role of smoking in causing hypertension and thereby various CVDs among the south Kashmiri population with high blood pressure levels in presence of high smoking rates. **Discussions:** Smoking acutely exerts a hypertensive effect, mainly through the stimulation of the sympathetic nervous system. Chronic smoking affecting arterial stiffness and wave reflection has greater detrimental effect on central blood pressure, which is more closely related to target organ damage than brachial blood pressure. Hypertensive smokers are more likely to develop severe forms of hypertension, including malignant and renovascular hypertension, an effect likely due to accelerated atherosclerosis. **Conclusion:** Smoking is potentially a leading cause of CVD among the South Kashmiri Population with high blood pressure levels in presence of high-smoking rates. Therefore, imperative measures regarding cessation of smoking are essential to prevent CVD which in line with clinical practice guidelines and policies should be emphasized to treat nicotine addiction in smokers by incorporating multicomponent and multilevel approaches for the better management of BP among the population studied.

Keywords: Cardiovascular disease, hypertension, mortality, smoking

Introduction

Hypertension is a medical condition where blood vessels have persistently raised blood pressure.^[1] The equilibrium movement

of blood in terms of carrying from the heart to all parts of the body in the vessels thus gets hampered.^[2] Usually, hypertension is defined as blood pressure above the range of 140/90 and is considered severe if the pressure is raised above 180/120.

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Types of Hypertension

There are two main types of high blood pressure: primary and secondary high blood pressure.

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Primary, or essential, high blood pressure is the most common type of high blood pressure which occurs when you have abnormally high blood pressure that is not the result of a medical condition or it may occur over time as you get older.

Secondary high blood pressure is caused by a medical condition or the use of certain medicines. It usually gets better after you treat that condition or stop taking the medicines that are causing it. Various complications are associated with hypertension, which include: heart attack or stroke, aneurysm, heart failure, weakened and narrowed blood vessels in your kidneys, thickened, narrowed or torn blood vessels in the eyes, metabolic syndrome, trouble with memory or understanding, and dementia.^[3] In view of these complications, it has been observed that smoking besides other factors is an important “risk factor” for arterial hypertension. Various researchers have evaluated the effect of smoking on mortality and cause-specific cardiovascular events in hypertension and have found significant interactions between the effects of smoking and hypertension and diabetes.^[4]

Epidemiology

Worldwide data analysis of hypertension reveals that 20.6% of Indian men and 20.9% of Indian women are suffering from hypertension. It is expected that there may be a surge in the percentage of hypertension which may go to 22.9% and 23.6% for Indian men and women, respectively, by 2025 unless taken preventive measures.^[5] Despite the fact that smoking is one of the alarming factors responsible for hypertension, smoking is currently prevalent in male subjects at 19.78% (48.36% for male and 0.22% for female subjects). A total of 15.93% of smokers have stopped smoking successfully (1,376/8,636). The prevalence of 10 selected Tobacco related chronic disease (TCDs) among smokers ranges from 0.63% Chronic Obstructive Pulmonary Disease, (COPD) to 36.31% (hypertension).^[6]

By virtue of unprecedented increased changes in human lifestyles, the prevalence of CVDs is markedly evident both in developed and developing countries.^[7] A recent assessment of the Global Burden of Disease (GBD) has estimated that 422.7 million individuals suffer from CVDs and 17.9 million annual deaths are attributed to these diseases.^[8]

NPCDCS programme

To prevent and control major NCDs, the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (**NPCDCS**) was launched in 2010 with a focus on strengthening infrastructure, human resource development, health promotion, early diagnosis, management, and referral.^[9] Statistically, 60% of all deaths, in India, occur by non-communicable diseases (NCDs) which include CVDs, Cancer, Chronic Respiratory Diseases, and Diabetes. After recognizing these dreadful statistics, the Government of India initiated to implement NPCDCS under the National Health Mission policy. The major focus of the program was to create awareness among the generation for behavior and lifestyle

changes, screening and early diagnosis of persons with high levels of risk factors, and their referral to appropriate treatment facilities, that is, Community Health Centres and District Hospitals for management of NCDs including CVDs.^[10]

Younger myocardial infarction attacks have been on a sudden surge with an unexpected increase in the Kashmiri population. There is a greater perception that the majority of the population have prolonged stress, a sedentary lifestyle, using junk foods, and no or diminished physical activity, and the same is believed to have arisen during the last 2 years reasonably due to the imposition of lockdown in the wake of demographic changes in Jammu and Kashmir and more recently due to the coronavirus pandemic that has brought everything to a standstill for about a year. These factors are the potential contributing causes for this deadly surge in the valley. Other causes that are believed to attribute toward this disease are the harsh winters, coldness, and increased smoke levels in the environment of Kashmir. It has been established that **CVDs** are the number one cause of death globally. More people die annually from CVDs than from any other cause/disease. An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% are due to heart attack and stroke. More than one in three CVD deaths in India are projected to occur among young and working-age people, leading to substantial economic and societal costs.^[11] The term CVD encompasses all disorders of the heart, blood vessels, and blood circulation.^[6] The burden of CVDs in the Kashmiri population like any other developing community is undergoing lifestyle changes but the unusual stress and strain for the last 30 years of the disturbed situation in the state apparently has contributed to increasing the prevalence of CVD. Therefore, this study was conducted on people who visited medical OPD from both rural and urban areas of south Kashmir of Government Medical College, Anantnag. This is the tertiary hospital for the south Kashmiri population caring for about 34% population of the valley. Its related risk factors as well as its rising trend in the southern part of Kashmir in India are not different in terms of their severity and impact. Various workers have concluded that the high prevalence and incidence of CVDs are because of the most prominent risk factors of CVDs including obesity, low physical activity, glucose intolerance, hypertension, emotional stress, and smoking. Some workers concluded that smoking is the second major modifiable risk factor of CVDs which directly harms and affects cardiac vasculature, and also contributes to the development of other cardiovascular risk factors, such as glucose intolerance, dyslipidemia, and thrombus formation.^[12] Moreover, passive smoking or exposure to environmental tobacco smoke besides active smoking, potentially plays a substantial role in CVDs as well as in aggravating the contributing risk factors, viz. metabolic syndrome, vascular inflammation, thrombus formation, and atherosclerosis.

Smoking

Smoking is the act of inhaling and exhaling the fumes of burning plant material. A variety of plant materials are smoked,

including marijuana and hashish, but the act is most commonly associated with tobacco as smoked in a cigarette, cigar, or pipe. Historically, smoking is a leading cause of mortality worldwide that has killed up to half of its users including nearly 6 million people who die each year of whom 45 million are users and ex-users, in which 4600,000 are non-smokers exposed to second-hand (passive) smoking.^[13,14] Smoking is related to 68% of deaths due to NCDs. Smoking has been estimated to be responsible for about one in 20 deaths among Indian women and one in five deaths among Indian men aged 30 to 69 years.^[15] With current statistics, CVD deaths are expected to increase by approximately 12% over the next decade. If stringent regulations are not put in place immediately, the annual death toll could rise to 48 million by 2030 with an approximation of 1 billion tobacco-related deaths during the 21st century.^[14] Although smoking rates are falling in the Western world, they are increasing in developing countries. In India, NCDs such as CVDs, cancer, and diabetes are estimated to account for around 60% of all deaths.^[16,17]

Research Design and Methods

The present study was conducted on the patients who visited Medical OPD GMC, Anantnag, for consultation during our rota-scheduled period from November 2019 to August 2020. During this period of health check-ups, a total of 304 hypertensive patients were observed who were smokers. In this study, an attempt was made to find whether smoking can be linked with CVD as a cause. Among the patients, 166 were men and 138 were women. The patients with other medical ailments such as diabetes, thyroid, and so on, were not considered in the current study and all are smokers. The patients of opposite sexes were categorized into different age groups varying from 20 to 80 years. Accordingly, the age groups for both sexes are given in Table 1:

Parameters considered for the association between smoking and CVD include blood pressure.

Results

All the patients have been informed about the study and verbal consent was taken. It has been found that all the subjects have similar kinds of dieting habits and they are in the regular habit of smoking. The diagnosed data of patients revealed that the association of smoking with CVD cannot be confirmed because of inconsistent data as well as that the cohort study must be within many years of follow-up. Furthermore, the risk of developing CVD events due to changes in smoking cannot be concluded for want of accurate data. To our knowledge, this is the first study focusing on South Kashmiri Population. Nevertheless, in our study, smoking was the most crucial risk factor attributing to 90% of CVD in middle age. The majority of patients with a smoking history have shown normal as well as abnormal BP as evident from Table 2.

Table 1: No. of males and females tested in the age group of 20-80

Age group	Males	Females
31-40	36	42
41-50	18	25
51-60	40	27
61-70	72	42
Total	166	136

Table 2: Normal and abnormal BP among the smokers

Age Group	Blood Pressure	
	Males	Females
31-40	130/90-150/90	130/90-150/90
41-50	140/80-170/100	130/80-160/100
51-60	130/80-160/100	130/80-160/100
61-70	130/90-160/100	130/90-170/90

Discussions

Studies have examined the effect of smoking on Atherosclerotic cardiovascular disease (ASCVD) in young adults.^[18] Some studies have shown that smoking remains an independent risk factor affecting the incidence of ischemic heart disease (IHD), stroke, and ASCVD.^[19,20] These risk associations have been estimated across total serum cholesterol groups. A cohort study in Hasayama, Japan, found that smoking showed a positive association with coronary heart disease in people with high levels of serum cholesterol above 180 mg/dL, but not with people with a low level of cholesterol less than 180 mg/dL.^[21-24] Several studies have demonstrated that smoking increases cardiovascular risk among young people. In one of the studies, it was observed that blood pressure and waist circumference were decreased by lowering weekly tobacco consumption in younger participants.^[25] Another study conducted on young women with polycystic ovary syndrome (PCOS) reported an association between smoking habits in lean PCOS patients and the increase of soft markers of cardiovascular risk.^[26,27] In our study, more than 90% of male subjects across all age groups were in the habit of smoking. Likewise, 75% of female subjects across all age groups reported that they are in the habit of smoking. Furthermore, high-smoking rates among the male subjects across all age groups may appear an important aspect in relation to the development of middle-aged hypertension and transition to CVD. It was further revealed that high smoking rates among the population studied are potentially and likely to be linked with high blood pressure among this population having developed CVD as a major health problem. Our study is in agreement with the earlier made findings. Therefore, in view of these findings, imperative steps need to be made by the Govt. and policy makers to improve health education besides promoting sound health specifically covering modifiable risk factors and awareness of BP measures. However, the existing interventions should additionally look at incorporating multicomponent and multilevel approaches for the better management of BP among the population studied.

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Conflicts of interest

There are no conflicts of interest.

References

- Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, *et al.* Global disparities of hypertension prevalence and control: A systematic analysis of population-based studies from 90 countries. *Circulation* 2016;134:441-50.
- Prince MJ, Ebrahim S, Acosta D, Ferri CP, Guerra M, Huang Y, *et al.* Hypertension prevalence, awareness, treatment and control among older people in Latin America, India and China: A 10/66 cross-sectional population-based survey. *J Hypertens* 2012;30:177-87.
- Prenissl J, Manne-Goehler J, Jaacks LM, Prabhakaran D, Awasthi A, Bischops AC, *et al.* Hypertension screening, awareness, treatment, and control in India: A nationally representative cross-sectional study among individuals aged 15 to 49 years *PLoS Med* 2019;16:e1002801.
- Ministry of Health and Family Welfare. State/UT-wise rural and urban population as per census during 2001 and 2011. New Delhi: Government of India; 2011. Available from: <https://data.gov.in/resources/state-ut-wise-rural-and-urban-population-census-during-2001-and-2011>.
- Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: Analysis of worldwide data. *Lancet* 2005;365:217-23.
- Martyn P. The British Medical Association Illustrated Medical Dictionary. Dorling Kindersley, 2002.
- Turk-Adawi K, Sarrafzadegan N, Fadhil I, Taubert K, Sadeghi M, Wenger NK, *et al.* Cardiovascular disease in the eastern Mediterranean region: Epidemiology and risk factor burden. *Nat Rev Cardiol* 2018;15:106-19.
- Kendir C, Van den Akker M, Vos R, Metsemakers J. Cardiovascular disease patients have increased risk for comorbidity: A cross-sectional study in the Netherlands. *Eur J Gen Pract* 2018;24:45-50.
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS). A Manual for Medical Officer. Available from: <http://clinicalestablishments.gov.in/WriteReadData/58.pdf>.
- Directorate General of Health Services. National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke. Available from: https://dghs.gov.in/content/1363_3_NationalProgrammePreventionControl.aspx.
- Reddy KS, Yusuf S. Emerging epidemic of cardiovascular disease in developing countries. *Circulation* 1998;97:596-601.
- Amiri P, Mohammadzadeh-Naziri K, Abbasi B, Cheraghi L, Farahani SJ, Momenan AA, *et al.* Smoking habits and incidence of cardiovascular diseases in men and women: Findings of a 12 year follow up among an urban Eastern-Mediterranean population. *BMC Public Health* 2019;19:1042.
- Ezzati M, Lopez AD. Estimates of global mortality attributable to smoking in 2000. *Lancet* 2003;362:847-52.
- World Health Organization. WHO report on the global tobacco epidemic, 2011: Warning about the dangers of tobacco: Executive summary. No. WHO/NMH/TFI/11.3. World health organization, 2011.
- Jha P, Jacob B, Gajalakshmi V, Gupta PC, Dhingra N, Kumar R, *et al.* A nationally representative case-control study of smoking and death in India. *N Engl J Med* 2008;358:1137-47.
- Hakim ZQ, Beig, G, Reka S, Romshoo SA, Rashid I. Winter burst of pristine kashmirvalley air. *Sci Rep* 2018;8:3329.
- Anchala R, Kannuri NK, Pant H, Khan H, Franco OH, Di Angelantonio E, *et al.* Hypertension in India: A systematic review and meta-analysis of prevalence, awareness and control of hypertension. *J Hypertens* 2014;32:1170-7.
- Morotti E, Battaglia B, Fabbri R, Paradisi R, Venturoli S, Battaglia C. Cigarette smoking and cardiovascular risk in young women with polycystic ovary syndrome. *Int J Fertil Steril* 2014;7:301-12.
- GBD 2016 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *Lancet* 2017;390:1260-344.
- Booth GL, Kapral MK, Fung K, Tu JV. Relation between age and cardiovascular disease in men and women with diabetes compared with non-diabetic people: A population-based retrospective cohort study. *Lancet* 2006;368:29-36.
- Kiyohara Y, Ueda K, Fujishima M. Smoking and cardiovascular disease in the general population in Japan. *J Hypertens* 1990;8:S9-15.
- Fujishima M, Kiyohara Y, Ueda K, Hasuo Y, Kato I, Iwamoto H. Smoking as cardiovascular risk factor in low cholesterol population: The Hisayama study. *Clin Exp Hypertens* 1992;14:99-108.
- Bernaards CM, Twisk JW, Snel J, van Mechelen W, Kemper HCG. In a prospective study in young people, associations between changes in smoking behaviour and risk factors for cardiovascular disease were complex. *J Clin Epidemiol* 2005;58:1165-71.
- Forouzanfar MH, Sepanlou SG, Shahrzad S, Dicker D, Naghavi P, Pourmalek F, *et al.* Evaluating causes of death and morbidity in Iran, global burden of diseases, injuries, and risk factors study 2010. *Arch Iran Med* 2014;17:304-20.
- Manuel DG, Schultz SE. Health-related quality of life and health-adjusted life expectancy of people with diabetes mellitus in Ontario, Canada 1996/97. *Diabetes Care* 2004;27:407-14.
- Roth GA, Johnson C, Abajobir A, Abd-Allah F, Abera SF, Abyu G, *et al.* Global, regional, and national burden of cardiovascular diseases for 10 causes, 1990 to 2015. *J Am Coll Cardiol* 2017;70:1-25.
- Athyros VG, Katsiki N, Doumas M, Karagiannis A, Mikhailidis DP. Effect of tobacco smoking and smoking cessation on plasma lipoproteins and associated major cardiovascular risk factors: A narrative review. *Curr Med Res Opin* 2013;29:1263-74.