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Review Article

PREVALENCE OF NON-COMMUNICABLE DISEASES IN DOCTORS

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ABSTRACT
Non-communicable diseases (NCDs) are the leading cause of death world over affecting people from each strata of life. Unfortunately, the pinnacle of the health care system is not untouched either. Long working hours, occupational stress, sedentary work habits, patient load because of over population and hectic lifestyle have all put a grave burden on the doctors thus leading to unhealthy lifestyle with habits of drinking, smoking, eating junk foods and lack of physical exercise. From the reviewed studies it was found out that, to combat work stress, consumption of alcohol and smoking were commonly seen in doctors which revealed occurrence of cancer and respiratory problems. Erratic working hours led to lack of physical activity and unhealthy dietary practices thus, leading to obesity, hypertension, cardiovascular diseases and even diabetes. The doctors are the educated and aware part of the society yet their lifestyle and work habits have led them to suffer from NCDs. More researches are needed to sensitize the doctors about the gap between the knowledge and practice.

Keywords: *Non-Communicable Diseases, Doctors, Lifestyle, Drinking, Smoking, Physical Inactivity, Unhealthy Dietary Practices*

INTRODUCTION
Human diet, activity patterns and health have experienced a sequence of major shifts leading to broad patterns of food intake and conforming to nutrition-related diseases (Popkin *et al.*, 2012). The nutrition transition ongoing in the world is setting a trend of high sugar and fat intake with decline in cereal intake whilst fruits and vegetables remains inadequate (Hawkes, 2007). Thus, resulting in progression of non-communicable diseases (NCDs) at an alarming rate. According to the World Health Organization (WHO, 2015a) every year 38 million people die due to NCDs. 82% of the deaths occur due to cardiovascular diseases, diabetes, cancer and respiratory diseases. The behavioral factors that instigate these diseases are tobacco use, physical inactivity, harmful consumption of alcohol and unhealthy dietary habits. Hence, the nutritional and health status of our society is majorly affected.
Doctors are at the pinnacle of the health care system of every society therefore their health status cannot go amiss in this discussion. Occupational stress, erratic eating timings, long working hours, less or no physical activity, harmful intake of alcohol, smoking and unhealthy dietary habits put them in a position of developing NCDs.

Behavioural Risk Factors- First Step towards Progression
The behavioural risk factors (like tobacco use, alcohol consumption, less physical activity and unhealthy dietary practices) that were assessed from studies done on doctors world over gives a picture of their health status with a clear indication towards the onset of major NCDs like cancer, cardio-vascular diseases (CVDs), Chronic Obstructive Pulmonary Disease (COPD) and diabetes which are caused mainly due to four key metabolic/physiological changes e.g., raised blood pressure (BP), overweight/obesity, raised blood glucose and raised cholesterol levels.
Smoking: Cigarettes, cigars, and tobacco leaves are different types of tobacco products widely in use. Smoking causes COPD, cancers, CVDs, asthma, other respiratory problems (WHO, 2016), blindness (Asfar *et al*., 2015) and diabetic nephropathy (Jose *et al*., 2016). According to WHO (2016), "tobacco kills up to half of its users". Each year around 6 million people die due to tobacco consumption. Out of which, more than 5 million deaths occur due to direct tobacco intake and more than 600 000 non-smokers die due to exposure to second-hand smoke. WHO recommends that there are 84% chances of quitting successfully after being intensively advised by a physician yet world over studies have shown that doctors

themselves are inclined towards smoking. Different patterns of physician smoking prevalence exist. Countries like Australia, USA and UK have shown a steady decline in the rate of smoking i.e. <10% though major exceptions like France, Italy and Japan can be found where smoking rate prevalence is found to be around >25%. But countries like China, Turkey, Bosnia/Herzegovina and India are found to have high prevalence rate in comparison (Cattaruza and West, 2013). The prevalence of smoking tobacco among health professionals is high in most European countries (La Torre, 2013). Prevalence among Chinese physicians ranged from 14% to 64% (Abdullah *et al*., 2013). Studies done in China among doctors revealed that the main reasons for smoking were social needs, as a pressure relief and to get refreshed (Smith *et al*., 2012; Zhang *et al*., 2006). The prevalence of smoking in coastal South Indian medical students was found to be 22.4% (Ganesh Kumar *et al*., 2011). Another study revealed that the number of smokers among medical students had almost doubled from 13.6% to 26.1% since they joined the medical college which was due to peer pressure, stress, desire to experiment and freedom (Majra, 2013). Medical students in spite of their knowledge about the harmful effects of smoking continued till the end of their medical education (Reiner *et al*., 2012). Whereas, Grassi *et al.,* (2012) surveyed four Italian medical school students and found out that they had limited knowledge about tobacco dependence, how to treat it, and the critical role of the physician in promoting smoking cessation.

Such studies give a peripheral view of the underlying problem.

Alcohol Use: According to the factsheet on alcohol by WHO (2015b), alcohol is a causative factor for more than 200 injury conditions and diseases. Regular consumption has a major effect of alcohol which is addiction and because of it, intake increases which in turn causes diseases like neuropsychiatric conditions, gastrointestinal diseases (liver cirrhosis, pancreatitis, etc.), cancers, CVD, diabetes, pneumonia and tuberculosis (WHO, 2014). Medical practitioners are bound to study the diseases, addictions and repercussions but even then many studies have shown a strong link towards alcohol dependency in doctors. In Nepal medical college, students showed high alcohol intake (Jha *et al*., 2014). In Swiss primary care physicians 66% were drinkers and 30% were at-risk drinkers. When the sample was compared with Swiss general population it was found that the primary care physicians were more likely to be drinkers and twice more likely to be at-risk drinkers (Sebo *et al*., 2007). Alcohol use affects the overall performance of a physician was mentioned by 65.6% post graduate Indian doctors (Goel *et al*., 2015). World over the consumption of alcohol by physicians is a common scenario but the problem aggravates when their work capacity declines and disease vulnerability increases due to harmful intake of quantities. Studies in Germany and Norway (Rosta, 2008; Rosta and Aasland, 2012) have found that majority of doctors (90.5%) in Germany had a sensible intake level of alcohol and the proportion of those who drank to intoxication weekly or more decreased significantly to 2.5 % in Norway. Thus, it can be seen that both kinds of scenario exist in medical fraternity may be because of the knowledge about harmful intake and it's repercussions, can't say, but it is still a long way to go.

Physical Inactivity and Unhealthy Dietary Practices Leading to Obesity: According to WHO (2004) the NCDs are caused due to risk factors like high blood pressure, insufficient intake of fruit and vegetables, high concentrations of cholesterol in the blood, overweight or obesity, use of tobacco and lack of physical activity out of which five of them are clearly related to diet and physical activity.

Who has recommended physical activity guidelines for adults (18–64 years) that, at least 150 minutes of aerobic physical activity of moderate-intensity per week or at least 75 minutes of aerobic physical activity of vigorous-intensity per week or an equal combination of both activities should be performed. Aerobic activities must be done in bouts of at least 10 minutes duration. For added health benefits, increase the aerobic physical activity to 300 minutes moderate-intensity per week, or do 150 minutes of aerobic physical activity of vigorous-intensity per week, or an equivalent combination of both (WHO, 2010).

It is never only exercise or diet but a combination of both that works towards complete fitness.

WHO (2015c) has also recommended guidelines for healthy dietary intake that must contain few important components which are vegetables, fruits, nuts, legumes and whole grains (like unprocessed millet, maize, oats, brown rice, wheat). At least 400 g (5 portions) of vegetables and fruits per day must be taken where potatoes, cassava, sweet potatoes and other starchy roots are not categorized as vegetables

or fruits. Less than 10% of total energy intake must be from free sugars but preferably less than 5% for additional benefit. Less than 30% of total energy intake from fats preferring unsaturated fats (e.g. found in fish, avocado, nuts, sunflower, canola and olive oils) to saturated fats (e.g. found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard) and industrial trans fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, margarines and spreads). Less than 5 g of iodized salt (equivalent to approximately 1 teaspoon) per day. Wang *et al.*, (2014) conducted a study and found out that the cardiovascular mortality risk was reduced by 4% for each serving of the combined consumption of fruit and vegetables per day i.e. by 5% for fruit and by 4% for vegetables.

These important recommendations and guidelines should be followed by everyone for a healthy life. But with the erratic schedules and long working hours can the doctors follow them?

Study done in Pakistan found 28.2% of the post graduate trainees to be obese and the major factors associated with it were snacking between meals, excessive intake of tea, eating lunch from canteen and lack of physical activity (Mahmood *et al*., 2010). 20% of doctors' physical activity level was not enough to maintain their obesity markers in normal levels in a study conducted in India. Only 8% physicians had ≥5 servings/day of fruits and vegetables and also increased salt intake was found in 39% physicians (Gandhi *et al*., 2012). Physical Activity Survey (PAS) in Ireland using International Physical Activity Questionnaire (IPAQ) among general practitioners found 43% to be physically inactive (McGrady *et al*., 2007). Van der Veer *et al*., (2011) found in their study that half of the Dutch medical students' eating habits were predominantly unhealthy and/or irregular. Duperly *et al*., (2009) found low compliance with the recommended consumption of vegetables and fruits and also observed lack of physical activity. A study on the medical practitioners in Jordan found that there was relatively high rate of obese, and overweight individuals with more than 50% who did not participate in physical activity. Also it was seen that physical activities decreased with age (Alarjan *et al*., 2015). In another study, 60% of physicians exercised less than three hours per week and about 40% did not exercise regularly. Furthermore, 51% rarely consumed vegetables and 68% fruits whereas 77% had regular intake of protein, 33% had fat food and 18 % had highly processed food, respectively (Al Alwan, 2013).

Physiological Changes Leading To Disease Progression

The behavioural risk factors are the stepping stones for the major NCDs- CVDs, cancers and type 2 diabetes. The elevated blood cholesterol, rise in blood sugar levels and high blood pressure have a direct link with the disease progression. The normal parametres, causative effect and the reasons for onset are well versed with the doctors. But the lifestyle problems have started gripping even the most sensitized sect of the society.

The major causes of death due to NCDs were because of cardiovascular diseases (17.5 million deaths, or 46% of all NCD deaths), diabetes (1.5 million deaths), cancers (8.2 million, or 22% of all NCD deaths), and respiratory diseases, including chronic obstructive pulmonary disease (4.0 million) and asthma (WHO, 2015d). NCDs are spreading like silent epidemic. It can be controlled and disease toll can be reduced but the steps have to be taken by the individual first. So what about that part of the society which is well aware of the reasons and consequences? That part is none other than the backbone of the medical fraternity, the medical practitioners led to the growing burden of cardiovascular diseases (Krishnan, 2012). HT is a major risk factor for myocardial infarction (MI), heart failure, stroke, and renal failure (Lee *et al*., 2007). The role of diet cannot be overlooked as it helps in improving the lipid profile, body weight, cholesterol and blood pressure. Minimizing the adiposopathy and loss of beta cells from the islets of pancreas from a young age is important. To achieve this aim, we need to reduce the intake of sugar, salt, trans-fat, cholesterol and saturated fats. At the same time, consumption of heart friendly food like complex carbohydrate, fish, fruits, vegetables and nuts should be encouraged.

Hypertension and Cardiovascular Diseases (CVDs): Hypertension (HT) is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths. This fact is important because HT is a controllable disease (Rodgers *et al.*, 2000). There has been an alarming rise in the prevalence of coronary risk factors like hypertension, diabetes, atherogenic dyslipidemia, central obesity, smoking, physical inactivity, rapid urbanization and lifestyle changes which have eating practices must be

popularized. Legal ban on trans-fats rich food, salty crisps and sugar sweetened beverages is immediately needed. Appropriate food labelling will help people to make healthy choices (Sivasankaran, 2010).

Studies have been conducted to find out how deep in the waters the medical practitioners are, but unfortunately still more researches are needed to comprehend the ever changing health status of the physicians. In India, Mathavan *et al.,* (2009) evaluated the prevalence of cardiovascular risk factors among physicians and found 41% male physicians to be hypertensive as compared to 23% females whereas Dash *et al.,* (2013) found nearly 60% of doctors to be hypertensive with more than 25% having hypercholesterolemia and hypertriglyceridemia. Another thing that was observed was that the older age group doctors were majority hypertensives while middle-aged doctors had diabetes and the younger doctors showed higher lipid profiles. Jardim *et al.,* (2014) found that due to high degree of stress and high sedentary activities the physicians showed excessive weight gain, systemic arterial hypertension, and dyslipidemia. In 2015 the results of a longitudinal cohort observed for a period of 20 years by Jardim *et al*., (2015) showed similar results, thus, can be concluded that knowledge doesn't necessarily changes attitude to change the practice. Nakladalova *et al.,* (2005) studied cardiovascular diseases risk factors in Czech physicians and found 40% with hypercholesterolemia. Further, another study found the prevalence of hypertension and hyperlipidaemia higher in physicians as compared to the general population stating that high levels of stress and psychological distress experienced by physicians might be possible reasons contributing to hypertension and hyperlipidaemia (Kao *et al*., 2016).

Diabetes: Diabetes is another major risk factor of CVD. Diabetes is defined as having a fasting plasma glucose value ≥ 7.0 mmol/l (126 mg/dl). Impaired glucose tolerance and impaired fasting glycaemia are risk categories for future development of diabetes and CVD (WHO, 2007) Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and ultimately causes irreparable damage to various body systems, like nerves and blood vessels. Diabetes increases the risk of heart disease, stroke and kidney failure. Diabetic retinopathy can cause blindness because due to prolonged damage occurs to the small blood vessels in the retina. At the same time, reduction in blood flow leads to neuropathy (nerve damage) in the feet that causes ulcers and infection often requiring limb amputation. Diabetics are twice as likely to die when compared to non-diabetic peers (WHO, 2015e). Consumption of sugar-sweetened beverages (SSBs) increases the risk of type 2 diabetes. SSBs have large quantities of quickly absorbable carbohydrates (e.g., sucrose) leading to elevation in dietary glycemic load which further surges the blood glucose and insulin levels. Diet high in glycemic load, upsurges insulin demand and in the long run may lead to pancreatic β-cell exhaustion therefore, is a prime cause of type 2 diabetes and CVDs (Hu, 2011).

Researches have been done on physicians to get an idea of their state of progression towards NCDs. Excerpts from a few, follows. A high prevalence of diabetes was diagnosed using fasting blood glucose > or = 126 mg/dl or in 9.4% male and 12.9% female physician in a study in northern India (Gupta *et al*., 2001). Hegde *et al*., (2015) found the prevalence of diabetes mellitus in doctors to be 25.4%, 36.5% overweight doctors and prevalence of obesity to be 15.1% in a recent study in southern India. Another study reported the prevalence of diabetes mellitus among physicians within the range (1.4% to 30.0%) (Al Alwan, 2013).

Cancer: The pathogenesis of cancer comprises of genetics, wrong lifestyle choices, environmental toxins (Lin *et al*., 2013), and mental health (stress, chronic depression and lack of social support) (Antoni *et al*., 2006). Despite their medical knowledge physicians are exposed to various environmental and occupational factors that may escalate the risk of cancer. Physicians are unfortunately exposed routinely to multiple carcinogens, like ionizing radiation (Roguin *et al*., 2013) and various chemicals. Experiencing high doses of diagnostic and therapeutic ionizing radiation increases the risk of various cancers thus such doctors develop cancer at a quicker rate as compared to those who don't. (Klein-kremer *et al*., 2014). Study conducted by Kim *et al.,* (2016) found that cancer prevalence in male physicians was 2.47 times more than the prevalence expected in the general Korean population whereas among female physicians it was found to be 3.94 times higher. Study suggests that a problem may be present in the health care of physicians.

DISCUSSION

Doctors are faced with challenges, stress, long working hours, lack of sleep, over-exhaustion and crucial decisions making. Physicians' excessive number of work hours (more than 65 hours per week) was associated with lack of physical activity, not having breakfast and sleeping fewer than 6 hours per night (Bazargan *et al*., 2009). Even after knowing and treating patients with diseases they end up becoming a patient themselves due to their ignorance towards their own health. To combat the work pressure, they turn towards smoking and alcohol intake. Due to paucity of time they do not prioritize exercise thus leading a more sedentary life. Weight gain occurs thus opening the door way for other NCDs. Regular exposure to radiations along with wrong lifestyle choices initiate cancer. But self-diagnosis, self-prescribing and not involving another physician worsens the situation. The question now arises that is the backbone of our medical system really strong? It is time to take care of the ones who tirelessly take care of the rest of the society's health. Sensitizing them, making them aware and relaxed working hours (time limit should be set by the government) may help improve the situation.

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