

DAY-TRADERS WORKING IN STOCK MARKET & RISK PROFILE OF NON-COMMUNICABLE DISEASES

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ABSTRACT

Background: A Day-trader who is involved typical working day. He/she would have to endure extremes of unpredictable market fluctuations placing them at a greater risk of non-communicable disease. The data regarding these health issues among day-traders working in stock market in India is deficient. **Objectives:** This study was devised with the aim of studying the risk profile among day-traders and compare them with a comparative group. **Materials & Methods:** A total of 128 (64 Day-traders; 64 IT-Professionals) were interviewed using the WHO-Steps Questionnaire. Proportions, Mean values, Odds ratio and p-values were calculated with the help of statistical package STATA version 14. **Results:** The overall mean age of the study participants was 42.24 \pm 6.61 with the mean age 41.78 \pm 5.16 and 42.7 \pm 7.82 respectively. The prevalence rates of alcohol use, tobacco use, inadequate physical activity and inadequate diet among day traders were 68.6%, 56.3%, 64% and 89% respectively. More than 50% were overweight or had abdominal obesity and more than three-fourths had high blood pressure. **Conclusions:** The burden of NCD risk factors was high in the study population compared to the national averages. The prevalence of risk factors was high in day-traders as compared to IT professionals. Use of tobacco and prevalence of obesity & hypertension were found to be high among day-traders.

KEYWORDS: Stock market, Day-trader, Risk-profile, Non-communicable disease, WHO-STEPs approach.

INTRODUCTION

The Indian stock market has started with the East India Company dealing in the trading of small quantities of shares and stocks (mainly cotton) as early as 18th century. The lack of connectivity and resources limited the trading to a small number of investors. A lot has changed in the 300 years that followed. Securities and Exchange Board of India (SEBI) estimates that over 18 million Indians now invest in stock market. Though it seems like a small fraction of the Indian population, this number is set to increase tremendously in the future from the current 1.3% to over 20% as with other countries in South-East Asia (21% in Hong Kong, 10.5% in China, 39.5% in Taiwan) [1].

Globalization and technological revolution made it possible to expand conduct trade in real time irrespective of the location. The relative low investment capital for a stock market venture attract young generation to choose stock trading over conventional business plans. It is important to note that majority of the day traders

belong to the younger generation. In fact, a survey conducted in Mumbai Stock Market reveals that 97.5% of the traders to be below 45 years of age [2].

A Day-trader is someone who is involved in buying and selling stocks, options, derivatives, etc. within the same trading day in such a manner that the final position is usually closed before the market close of the trading day. During his/her typical working day, he/she would have to endure extremes of unpredictable market fluctuations, huge economic losses and uncertain financial future placing them at a greater risk of non-communicable disease (NCD). In addition to this, they are also exposed to many risk factors of NCD like, physical inactivity, erratic smoking & drinking habits and unhealthy diet. Lancet recently published a five part series titled "Chronic diseases and development" that lays emphasis on high burden of NCDs in low and middle income countries like India, and warns of dire consequences to public health unless immediate action is taken [3–5]. According to WHO's Global report in 2014, NCD's accounted for over 38 million deaths worldwide in the year 2012, 80% of them in low and middle income countries and 42% were preventable and avoidable [6].

India is a growing economy and in light of changing investor sentiment and demographics (younger generation), the number of involved in day trading in India is expected to rise exponentially in the near future. This



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coupled with day-traders being exposed to multiple factors responsible for NCDs, suggest day traders as a high risk population for NCDs. This could certainly present a huge challenge to public health experts. The sheer financial impact it is going to have on a citizen of a low income country like India is catastrophic. It is already estimated that household spending on chronic illness represented as high as 32% of household's total annual health-care expenditure in states like Maharashtra, India, with a higher share for hospitalization and drugs [7].

It is imperative to have a better understanding of the complex relationship between day trading and NCD in order to have a robust strategy for its prevention and control. With this background, this study was devised with the aim of studying the risk profile among day-traders and compare them with a comparative group. The World Health Organisation (WHO) suggests a comprehensive risk profile of non-communicable diseases (NCDs) by using the WHO-STEPs approach. Till date, there are no studies that report the risk profile of NCDs among day-traders of stock market.

This study is carried out with the following objectives:

1. To study the risk profile of non-communicable disease among day-traders of stock market & comparative group
2. To study the pattern of morbidity among both the groups.

MATERIALS AND METHODS

Study Design: A comparative cross-sectional analytical study

Study Area: Nagpur is the third largest city in the state of Maharashtra after Mumbai & Pune. It is divided into 10 municipal zones, of which 5 zones house majority of the stock trading centres with day-trading facility. One zone has been randomly selected for this study.

Ethical Permission: The study was cleared by the Institutional Ethics Committee, NKP Salve Institute of Medical Sciences & Research Centre, Nagpur.

Sample Size: All the day traders in the selected financial zone who fit in the inclusion criteria ($n = 64$) were included in the study and equal number of IT professionals ($n = 64$) from the same zone were included as the comparative group. The total sample size was 128 (64 Day-traders; 64 IT-Professionals).

Study Population

Study Group (Group 1): Persons who are involved in day trading in stock market full time for more than 5 years

Comparative Group (Group 2): Age & gender matched population working in IT sector without any exposure to day-trading.

Methodology

Using the WHO STEP approach information was collected on demographics, STEP 1 variables (tobacco, alcohol, physical activity, diet) and measured STEP 2 variables (weight, height, waist circumference and

blood pressure). Fasting blood samples were analysed for blood glucose [8].

Data were coded according to the WHO guidelines. Hours of physical activity of low, moderate and vigorous intensities were calculated by Metabolic Equivalent (MET) values using WHO guidelines (according to MET minutes per week into inadequate (<600), adequate (≥ 600)). Current tobacco users were defined as individuals who used any form of tobacco during the last one month. Current alcohol users were those who consumed an alcoholic drink within the past 30 days [8]. Unhealthy diet was defined as consumption of less than five servings of fruits and vegetables per day. Body mass index (BMI) was calculated as $BMI = \text{weight (kg)} / \text{height}^2 (m^2)$. Individuals were grouped as overweight or obese if they had a BMI of $\geq 25 \text{ kg/m}^2$. Abdominal obesity was defined as waist circumference of $\geq 90 \text{ cm}$. Hypertension was defined as systolic blood pressure of $\geq 140 \text{ mmHg}$ and/or diastolic blood pressure of $\geq 90 \text{ mmHg}$ or on medication for hypertension. We have chosen IT-professionals as they are more comparable with the study population as they more or less share the same exposure as the study group like sitting long hours in-front of the computer, similar working hours, etc.

Statistical Analysis: All the WHO-STEPs questionnaires were checked before it was entered into a spreadsheet. It was cleaned, coded and analysed according to the recommendations of the WHO-STEPs Manual [8]. Data analysis was done using statistical package STATA version 14 [9].

RESULTS & DISCUSSION

The overall mean age of the study participants i.e. 64 day-traders and 64 IT-professionals was 42.24 ± 6.61 years with the mean age 41.78 ± 5.16 and 42.7 ± 7.82 years respectively.

Table 1 shows the mean values of BMI, waist circumference, blood pressure (systolic and diastolic), and fasting blood glucose.

Table 1. Mean Values of NCD risk factors (continuous variables) by occupation

Parameter	Group		95% CI		p-value
	Group 1	Group 2	Lower	Upper	
BMI	25.38	23.62	0.2	3.298	0.027 ⊠
Waist Circumference (cm)	89.16	85.7	-0.79	7.697	0.11
Systolic BP (mmHg)	144.3	134.83	5.63	13.306	<0.01 †
Diastolic BP (mmHg)	87.05	79.23	4.61	11.019	<0.01 †
FBG (mg/dl)	96.89	92.47	-8.64	17.48	0.5
⊠ - Significant					
† - Highly Significant Fasting Blood Glucose					

BMI and both systolic and diastolic blood pressure were significantly higher in day traders as compared to the IT professionals. Figure 1 presents the box plots of the continuous variables studied grouped by occupation.

The burden of NCD risk factors was high in the study population. Between the study groups, the prevalence of risk factors was found to be high among day-traders as compared to IT-professionals. The study sample characteristics regarding the behavioral risk factors, presence of abdominal obesity, hypertension and diabetes are presented in Table 2.

It was found that BMI >23 (51.6%) and abdominal obesity (48.4%) was more common among day-traders. The day-traders were characterized by a higher prevalence of hypertension and tobacco use as compared to the IT-professionals (OR=3.5 (1.84-8.42)) which was statistically highly significant (p-value <0.01). Though alcohol intake, lower dietary consumption of fruits and vegetables and physical inactivity were more frequent among day-traders, the difference was not statistically significant.

Recent studies done in China and US suggest a possible link between stock performance and cardiovascular & health [10–14]. Though the pathophysiology is unclear, it is speculated that emotional and physical stress may play an important role. To the best of our knowledge there are not many comprehensive studies done in developing countries on NCD risk factors among day-traders using WHO STEPS.

Our results showed a high burden of NCD risk factors among both the groups. In terms of behavioral risk factors (STEP 1); 62.5% of the participants consumed alcohol which was very high as compared to 32.1% (which

is the national high in Andhra Pradesh). The prevalence of smoking among day traders was high (41.2%) to that observed among other occupations in the United States [15,16].

Physical inactivity was by far the most common risk factor with over 85% of the study participants having inadequate physical activity (89% among day-traders and 81.2% among IT-Professionals). These estimates are much higher than that observed in other studies from industrial populations in India [17–21].

Our study reveals that over 60% consumed a diet low in fruit and vegetable content as recommended by WHO (Figure 2). However, these results are higher than the estimates of a nation-wide study done by Deepa et al on risk factors of non-communicable diseases which shows that the proportion of subjects consuming less than five servings of fruits or vegetables per day in Maharashtra to be 76% [22].

In terms of anthropometric risk factors (STEP 2), the prevalence of abdominal obesity among day-traders in the present study was 48%. This is higher than that of previous estimates which reveals the prevalence of abdominal obesity in urban residents of Maharashtra to be 26.7% and 32% among urban middle class men of India. Recently, a BMI of $\geq 23\text{kg/m}^2$ has been suggested to determine risk for Asia Pacific population [23] and by this criteria 42.1% of the study population had higher BMI values (BMI $\geq 23\text{kg/m}^2$). However, the prevalence of higher BMI was more among the day-traders group as compared to the IT-Professionals (51.6% & 16.4% respectively). Also, greater prevalence of high BMI among the day-traders group is seen as compared to other studies done in industrial settings [17,24,25].

High blood pressure was observed in nearly 60 per cent

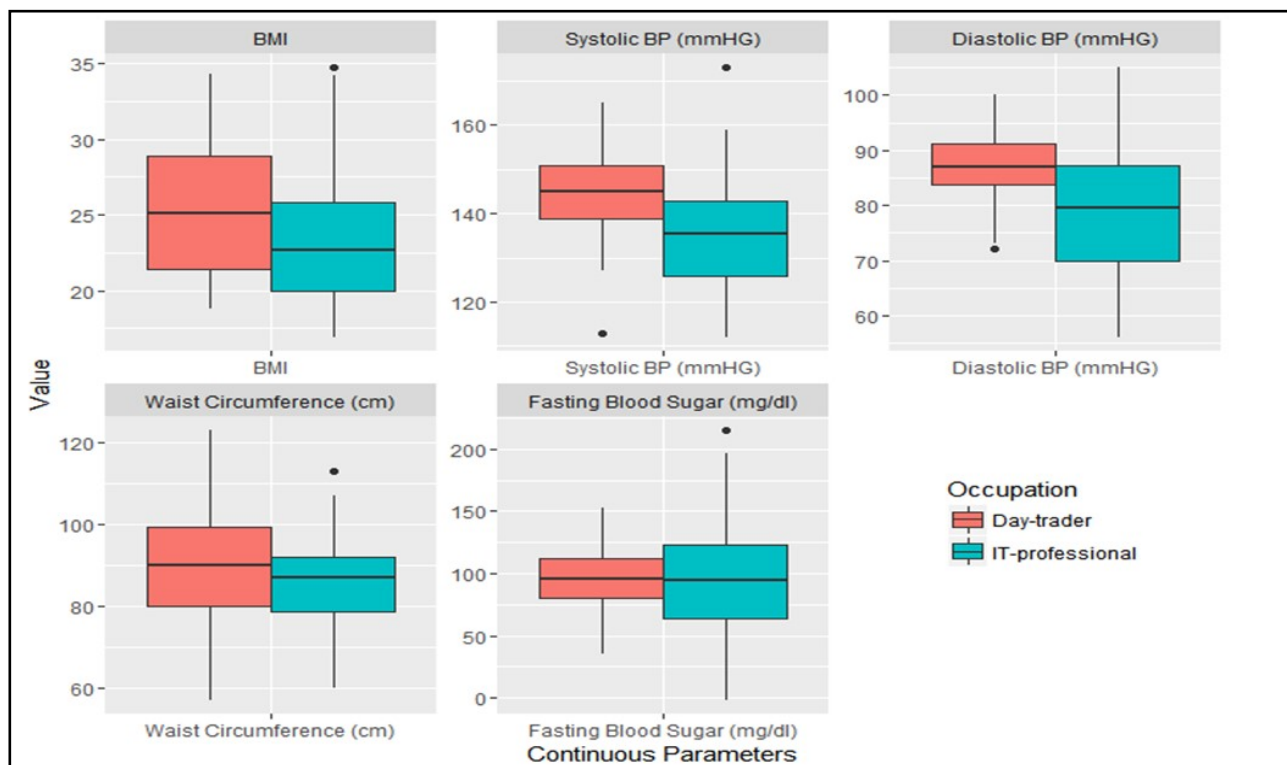


Figure 1. Boxplots of continuous variables (both anthropometric and biochemical) grouped by occupation

Table 2. Select Risk Factors of NCD's by Occupation

of	Parameter		(n=64)		Odds Ratio	95% CI		p-value
			Group 1	Group 2		Lower	Upper	
	BMI	≥23	33	21	2.179	1.065	4.46	0.037*
		Normal	31	43				
	Abdominal Obesity	Present	31	20	2.066	1.005	4.249	0.047*
		Absent	33	44				
	Hypertension	Present	49	29	3.942	1.844	8.425	0.0003
		Absent	15	35				
	Diabetes	Present	11	15	0.677	0.284	1.617	0.38
		Absent	53	49				
	Alcohol	User	42	38	1.306	0.637	2.677	0.467
		Non-user	22	26				
	Tobacco	User	36	17	3.554	1.691	7.47	0.0007+
		Non-user	28	47				
	Diet	<5 servings	41	35	1.477	0.726	3.001	0.282
		>5 servings	23	29				
	Physical Activity	Inadequate	57	52	1.879	0.687	5.133	0.215
		Moderate	7	12				
⊠ - Significant , + - Highly Significant								

* - Significant, † - Highly Significant

individuals evaluated, which is much higher than the estimates of other Indian studies done in various settings including among urban men [25,26]. However, the results of the study are comparable to the estimates of Mehan et al who estimated the prevalence of high blood pressure to be 61.5% in an industrial setting [24].

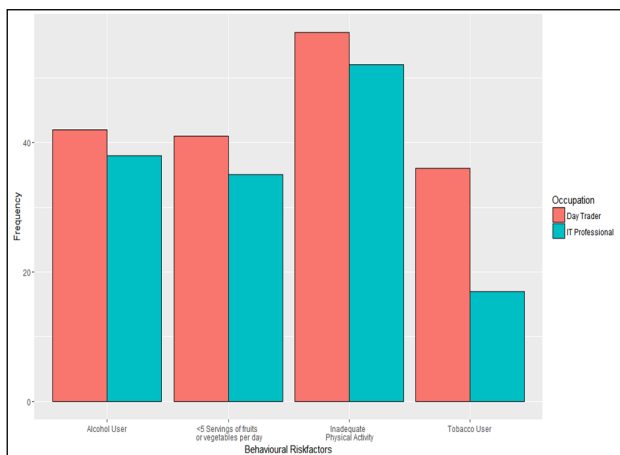


Figure 2. Shows the distribution of behavioural risk factors of NCD's among the study participant

The present study showed that occurrence of hypertension in day-traders was much more common than the IT-professionals. Hypertension was present in 76.6% of the day-traders and only in 45.3% of the IT-professionals. This higher prevalence of hypertension among day-traders could be attributed to the immense psychological stress they undergo on a typical trading day, along with the higher prevalence of other modifiable risk factors (tobacco use, alcohol use and poor physical activity).

The study reveals that though there was not much difference between both the groups (day-traders & IT-professionals), the risk profile was definitely higher than the national averages. The study also clearly demonstrates that the risk factors of non-communicable disease are more common among day-traders making them a vulnerable high-risk group for NCDs. Also, since majority the above mentioned conditions are amenable to dietary and lifestyle factors, modifying these factors may be helpful in curtailing this unhealthy trend. However, there is a greater need to conduct more studies to understand the role of stress among day-traders in order to advocate and plan health policies focusing on behavior change, and communication to promote healthy diets and lifestyles amongst day-traders.

CONCLUSION

In this comparative cross-sectional study done among day-traders with ≥5 years' experience in stock market, the burden of NCD risk factors is high.

Tobacco use, alcohol use, unhealthy dietary habits and inadequate physical activity were high among day-traders as compared to study subjects belonging to IT-Sector and are the major NCD risk factors.

Prevalence of hypertension and obesity (≥ 23) was higher among day-traders as compared to IT-professionals and was found to be statistically significant.

Further studies are imperative to have a better understanding of the complex relationship between day trading and NCD in-order to have a robust strategy for its prevention and control.

Targeted health education and integrated approach in the work place are required to reduce these risk fac-

tors and enhance the control of NCDs.

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