Original Research Article

风险因素：非传染性疾病在运输和安全人员中的风险因素与一所健康科学大学在沿海卡纳塔克邦

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ABSTRACT

背景: 非传染性疾病 (NCDs) 是在各种职业中上升的结果，导致发病率和死亡率。这项研究旨在评估各种风险因素和相关的社会-人口因素在芒格洛尔的一所健康科学大学的保安和运输人员中。

方法: 这是一项横断面研究，涉及所有保安和运输人员。基于WHO-STEPS方法的问卷调查被使用。血压 (BP) 测量被记录。

结果: 总共167名研究参与者被纳入; 57.5%为安全，其余为交通人员。体力活动被参与者感知为轻度的63.5%。当前吸烟者比例为26%，33.5%的参与者在12个月内曾饮酒。超过18%的参与者是高盐的食盐。在看起来健康的参与者中，12.5%和23.4%的血压正常，23.4%的血压升高。与居住区域 (p=0.004) 和类型 (p<0.001) 的职业区域的关联被发现。

结论: NCDs的风险因素在研究参与者中普遍存在。只少数研究参与者是体力活动的，绝大多数参与者认为他们日常工作提供的物理活动。大约1/4的参与者的参与者还未被发现与高血压相关。

关键词: 非传染性疾病，职业健康，筛查

INTRODUCTION

非传染性疾病 (NCDs) 像高血压，糖尿病和心血管疾病被看作是工人在各种职业中的上升。这些可被归因于在生活方式，比如有关的压力，需要剧烈工作和心理社会变化。工作的固有的懒散性质和减少的体力活动可以促进NCDs的发展，在早期年龄进一步导致并发症。NCDs及其并发症像糖尿病足，中风，视网膜病和肾病降低的劳动力的效率和也形成经济负担给家庭和医疗保健系统。NCDs也降低生命的质量给受影响的个体和家庭。1,2

不良习惯，如烟草使用和酒精消费的增加被知道会增加NCDs的发展。3,4全球成人烟草调查 (GATS) 2016到2017，这是一个全球标准用于系统监测烟草使用表明26%和33.5%的男性和女性使用烟草 (吸烟和无烟草形式)。3,4酒精消费被发现为28.4%的男性，5.4%的女性和17.2%的全体成人。6饮食也被认为是影响在NCDs的发展的重要角色。不适当的水果和蔬菜的摄入，高盐摄入，
physical inactivity are known risk factors for NCD development.7

Health, well-being and safety of the employees in any institution or an industry are important aspects. These factors not only affect the workers at individual and family levels, but also have impact on their workplace productivity. Work productivity and sustainability of an institution depends on the manpower and its efficiency.2 Individuals with driving as profession have been observed to be at a greater risk of developing NCDs. Low intense physical activity, long duration of sitting, stress, alteration in circadian rhythm etc having been predisposing factors for development of obesity. Irregular eating habits and sedentary lifestyle contribute further for development of NCDs among the transport personnel.5 Similar lifestyle is observed among the security personnel. Further day and night shift duties are done by the security personnel which adds on to the stress perceived. Appropriate screening of the common NCDs encountered and timely interventions to halt the progress of the disease will lead to significant health and economic benefits. Hence, this study was conducted to assess the prevalence of various risk factors of NCDs and their association with the socio-demographic factors among the transport and security personnel in a health sciences university of coastal Karnataka.

METHODS

It was a cross-sectional study conducted among all the transport and security personnel of a health sciences University, Mangaluru, Karnataka employed during December 2017. Ninety-six security personnel and 71 transport personnel of the institution who provided written informed consent were involved as study participants. A pre-tested semi-structured questionnaire based on WHO STEPS instrument was used for data collection.4 Demographic details and information regarding the substance use were captured. Operational definitions were used for measuring tobacco and alcohol consumption. A “current user” was defined as a person who was consuming any form of tobacco for the past one year. A person who had quit using all forms of tobacco from the past one year was defined as “ex-consumer” and a person who has never consumed tobacco in his/her life was considered as “non consumer”. For alcohol consumption a “current user” was a person who was consuming alcohol for the past 1 year. An “ex-consumer” was a person who had quit using all forms of alcohol from the past 1 year. A “non consumer” was a person who had never consumed alcohol in his/her life.

Waist-circumference and blood pressure were measured. Waist-circumference ≥102 cm in men and ≥88 cm in women was taken as cut-off point to define central obesity.9 In diet history, one cup of raw leafy vegetables or half cup of other vegetables (cooked) was considered one serving. One medium-sized piece of fruit (apple or banana or orange) or half cup of chopped fruit was measured as one serving. Low physical activity was defined as <150 minutes of moderate physical activity per week.10 Raised blood pressure (hypertension) was defined if systolic blood pressure was ≥140 mm of Hg and/or diastolic pressure ≥90 mm of Hg, or diagnosed cases taking antihypertensive drugs.11

Data was entered in Microsoft Excel and was analysed using SPSS (SPSS Inc, Chicago, USA; Version 23.0). Institutional ethics committee approval was obtained before the start of the study (protocol no 2017/325, approved on 12th December 2017).

RESULTS

Among the 167 study participants, 81 (48.5%) belonged to age group of less than 48 years and rest were above 48 years of age. Ninety-six (57.5%) of the participants were security personnel and seventy-one (42.5%) were transport personnel. Majority of the participants i.e. 159 (95.2%) were married (Table 1).

Table 1: Socio-demographic profile of study participants screened for risk factors of NCDs, 2017 (n=167).

| Variable | N (%) |
|----------|-------|
| Gender   |       |
| Male     | 163 (97.6) |
| Female   | 4 (2.4)  |
| Religion |       |
| Hindu    | 133 (79.6) |
| Islam    | 26 (15.6)  |
| Christian| 8 (4.8)   |
| Education|       |
| Uneducated| 2 (1.2) |
| Primary  | 15 (9.0)  |
| Secondary| 127 (76.0) |
| High secondary | 22 (13.2) |
| Under graduate | 1 (6.0) |
| Area of residence | |
| Urban   | 77 (46.1) |
| Rural   | 90 (53.9) |
| Socio-economic status | |
| Above poverty line | 40 (24.0) |
| Below poverty line | 127 (76.0) |

The physical activity due to occupation was assessed and it was found that 63.5% of the participants had light physical activity. Only 4.2% of the participants opined that their work involved vigorous activity. Seventy-four percent of the participants used lift while climbing up the floors. Only 16.2% of them exercised daily apart from their work involved vigorous activity. Seventy-four percent of the participants did some workout occasionally and the remaining were physically inactive. The mean duration of time spent sitting or reclining per day was found to be 5.8 hours (±1.79). Minimum time spent on sitting was 1 hour and maximum was 12 hours.
Table 2: Association between socio-demographic factors (age, occupation and education) and alcohol consumption, tobacco use and physical activity (n=167).

| Risk factors | Alcohol consumption | Tobacco use | Physical activity |
|--------------|---------------------|-------------|-------------------|
|              | Yes N (%) | No N (%) | P value | Yes N (%) | No N (%) | P value | Light N (%) | Moderate N (%) | P value |
| Age Up to 48 years (n=81) | 23 (39.5) | 58 (60.5) | 0.069 | 32 (28.4) | 49 (71.6) | 0.445 | 57 (70.4) | 24 (29.6) | 0.072 |
| More than 48 years (n=86) | 36 (45.3) | 50 (54.7) | 39 (41.9) | 47 (58.1) | 49 (57) | 39 (43) | 0.001* |
| Occupation Security (n=96) | 43 (44.8) | 55 (55.2) | 0.489 | 34 (35.4) | 62 (64.6) | 0.978 | 73 (76) | 23 (24) | 0.001* |
| Transport (n=71) | 28 (39.4) | 43 (60.6) | 25 (35.2) | 46 (64.8) | 33 (46.5) | 38 (53.5) | 0.177 |
| Education Below secondary (n=13) | 4 (30.8) | 9 (69.2) | 0.372 | 4 (30.8) | 9 (69.2) | 6 (46.2) | 7 (53.8) | 0.004* |
| Secondary and above (n=154) | 67 (43.5) | 87 (56.5) | 55 (35.7) | 99 (64.3) | 100 (64.9) | 54 (35.1) | 0.004* |

*Significant p-value, Test applied: Chi-square test.

Table 3: Association between socio-demographic factors (marital status and residence) and alcohol consumption, tobacco use and physical activity (n=167).

| Risk factors | Alcohol consumption | Tobacco use | Physical activity |
|--------------|---------------------|-------------|-------------------|
|              | Yes N (%) | No N (%) | P value | Yes N (%) | No N (%) | P value | Light N (%) | Moderate N (%) | P value |
| Marital status Unmarried (n=8) | 2 (25) | 6 (75) | 0.304 | 1 (12.5) | 7 (87.5) | 0.166 | 4 (50) | 4 (50) | 0.417 |
| Married (n=159) | 69 (43.4) | 90 (56.6) | 58 (36.5) | 101 (63.5) | 102 (64.2) | 57 (35.8) | 0.417 |
| Residence Urban (n=77) | 34 (44.2) | 43 (55.8) | 23 (29.9) | 54 (70.1) | 40 (51.9) | 37 (48.1) | 0.004* |
| Rural (n=90) | 37 (41.1) | 53 (58.9) | 36 (40) | 54 (60) | 66 (73.3) | 24 (26.7) | 0.004* |

*Significant p-value, Test applied: Chi-square test.

Tobacco and alcohol consumption were assessed among the study participants. It was found that 16.2% of the participants started smoking when they were less than 20 years of age. Twenty six percent of the participants were current smokers and 12.8% of them smoked more than 10 cigarettes per day. Non-smoke form of tobacco consumption was found to be gutkha, khaini and paan with 1.2%, 24% and 1.8% respectively. Alcohol was consumed by 33.5% of the participants in last 12 months. Among them, 9.6% of the participants consumed alcohol in past 30 days of the interview.

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Most of the times. Half of the participants used coconut oil for cooking.

Waist circumference was used to observe the central obesity. Thirteen percent of the male participants and 50% of the female participants had central obesity. Among the participants, 12% were known hypertensive, 7.8% were known diabetic and 3.6% had both the disorders. Among participants who were apparently healthy (n=128), 12.5% had raised systolic and 23.4% had raised diastolic blood pressure.

Association between socio-demographic factors with the prevalence of NCD risk factors was analyzed. Association between place of residence and physical activity when checked, it was found that, 51.9% of the urban area residents and 73.3% of rural area residents were having light physical activity and this association was found to be significant (Table 2). With regard to occupation, 76% of

Majority of the study participants (98.2%) were consuming mixed diet. Diet predominant of non-vegetarian origin was consumed by 33.5% of the population on daily basis. Seventy two percent of the participants consumed vegetables in their diet daily. Twenty percent of the participants ate fruits daily. Salt intake was assessed and it was found that 18% of the participants top salted their food
the security personnel and 46.5% of the transport personnel were engaged in light amount of physical activity and this association was found to be significant (Table 3).

DISCUSSION

This study was conducted among two sedentary groups of employees of a health sciences university. Mean age of the study participants was 48 years and majority of them were males. Most of them were educated up to secondary school. This is comparable with the findings of similar studies among the occupational groups from other parts of India studies where mean age of the participants was 44.5 years and 43.5 years respectively.12,13

Among the 167 study participants, 26% were current smokers, which is comparable with the findings of the study among auto-rickshaw drivers, where 35.45% of the participants were current smokers and were in the age group of 30-39 years.12 Similar findings were obtained in the study conducted among bus drivers where 24.8% of the participants were smokers.14 These findings correlate with the national average of 28.6% too.5 Alcohol consumption was assessed and it was found that 33.5% of the participants consumed alcohol in past 1 year. This is comparable with the findings from another where 43.6% of the participants consumed alcohol.12 However, these findings were higher than the national average of 17.2%.6

Physical inactivity is one of the major risk factors for development of NCDs. In our study, it was found that 63.5% of the participants had only light physical activity due to work and only 16.2% of them exercised daily apart from work related activity. Similar findings were obtained from two other studies from the Indian context.7,13

Majority of the participants consumed mixed diet and one-third of them consumed non-vegetarian diet daily. Only 22% of the population consumed fruits in their diet. Diet low in fruit and vegetable content is a known risk factor for development of NCDs and these findings are comparable with the study conducted in Kerala.15 Top salting the food is a common practice in this region of Karnataka along with high intake of salted fish and sea food. In our study, 18% of the participants top salted their food regularly. Increased sodium intake is a known risk factor of development of hypertension and hence, low sodium diet is recommended in dietary approaches to stop hypertension (DASH) along with consumption of nuts, legumes etc.16 Coconut oil was predominantly used for cooking purposes which is rich in saturated fatty acids. Consumption of oils and fats rich in saturated fatty acids is a known risk factor for atherosclerosis.17

The socio-demographic factors like age, education, occupation, area of residence and marital status were checked for association with presence of NCD risk factors. When association between age and alcohol consumption was looked, it was found that participants belonging to younger age groups had less tendency of consuming alcohol. Thus, the habit of alcohol consumption increased with increasing age, which is also the age of developing NCDs. No difference was found in the distribution of participants across the age groups in relation to tobacco consumption. With reference to the occupation of participants, the security personnel were found to perceive the physical activity as light, compared to that of the transport personnel. This can be attributed to the sedentary nature of the security personnel and this association was found to be significant. Individuals with education of secondary level and above were found to have less tendency of tobacco consumption.

The area of residence of the participants was checked for association with the risk factors. There were no associations with smoking and alcohol consumption with area of residence. However, participants from rural areas perceived light physical activity compared to the urban residents and this association was found to be significant.

This study involved does not represent a larger population, hence findings cannot be generalized. Another limitation is that we have not undertaken lab investigations for the study participants for screening of diabetes and other metabolic diseases.

CONCLUSION

In our study, we observed that prevalence of risk factors of NCDs were high among study participants. Only few study subjects were physically active and majority of them felt that their routine work provided them with light physical activity. Around one third of the participants consumed tobacco and alcohol. Majority of the subjects ate mixed diet and used oil with saturated fatty acids for cooking purposes.

Physical activity was found to be associated significantly with the area of residence and the type of occupation. Around one quarter of the study participants who were not known hypertensive, were found with increased levels of blood pressure. Thus, we would recommend that regular screening for the presence of non-communicable diseases like diabetes mellitus and hypertension and their risk factors in workplace should be conducted. Modifiable risk factors can be addressed and follow ups can be provided for the diagnosed cases, thus reducing the development of complications.

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