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PREVALENCE AND LIFESTYLE ASSOCIATED RISK FACTORS OF HYPERTENSION AND DIABETES AMONG COMMERCIAL PROFESSIONAL DRIVERS: A CROSSECTIONAL STUDY FROM CENTRAL INDIA

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ABSTRACT

The commercial professional drivers are at risk of developing hypertension, diabetes, and obesity as they are exposed to many risk factors due to the nature of their work. The study highlighted various risk factors in order to better clarify the burden of this health issue in the Sagar district of Central India. A cross-sectional analytical study was carried out on a cohort of 496 drivers in a city located in Central India. We measured participants' blood pressure, blood glucose, height, and body weight. The lifestyle-related risk factors along with dietary patterns were assessed using a pretested questionnaire. For the purpose of statistical analysis, both the Student's t-test and the Chi-square test were employed. A significance level of $P < 0.05$ was adopted as the threshold for determining statistical significance.

Out of 496 , 226 (45.5%) were hypertensive and 150 (30.2%) were diabetic.The patients who were found to be hypertensive were more than 30 years of age, mostly belonging to rural areas with a high school degree. Most of them were smokers with more than 10 cigarettes per

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day along with occasional alcohol intake and daily tobacco chewing habit. The sleep quality and physical activity was found to be inadequate.
The diabetic patients were mostly greater than 30 years of age belonging to rural areas with intense smoking and tobacco chewing habit. The sleep habit and physical activity was found to be inadequate. The patients in the BMI range of ≥30 were found to be more hypertensive and diabetic.
In light of current findings, there is a clear need for focused interventions to promote healthier lifestyles among drivers. This is essential to reduce the prevalence of diabetes, hypertension, and overweight conditions within this group. Such interventions have the dual benefit of improving drivers' well-being and as well as enhancing passenger safety.

MESH TERMS FOR KEYWORDS: Accidents, Diabetes Mellitus, Hypertension, Risk Reduction Behavior, Smoking,

INTRODUCTION

Commercial drivers are among the professional groups whose activities have a strong impact on public security, safety and are closely associated with the responsibility for other people's lives. The various statistics show that diseases that were prevalent initially in a countries with high income are becoming prevalent in low income countries. This is due to worldwide industrialization and globalization which had lead to changes in the lifestyle of the individuals like consumption of refined food which is rich in sugar and unhealthy fat. This transition has caused increased prevalence of hypertension , diabetes and other conditions[1]. In view of the nature of their work, which involves a sitting working mode, a night and shift work, and exposure to stress ,the drivers are at a higher risk of hypertension, obesity and thus, indirectly, of carbohydrate metabolism disorders, such as diabetes mellitus [2,3]. The other risk factors include uncontrolled and irregular diets, drinking alcohol before driving, being drunk while driving, smoking while at the wheel and not having time to go for medical check up[4]. Some are already on treatment for hypertension but are not adherent to

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anti-hypertensive treatment while they still drive putting passengers at risk of losing lives[5]. These all risk factors may on one hand increase the risk for traffic accidents, while on the other hand are the reason for long-term sick leaves from work, or even a partial or permanent disability for work, thus contributing to a considerable economic burden [6,7]. It is now established that commercial professional drivers face a greater risk of co-morbidities and mortality compared to the general population [8]. Since commercial drivers are high risk population where fitness is utmost important to efficiently perform their job responsibilities and save life of passengers and themselves. Taking this into account the authors of the present study intended to investigate various risk factors that contribute to various diseases among professional commercial drivers. This is first of its kind study in central India.

METHODOLOGY

The present study was a descriptive cross-sectional study carried out in Bundelkhand Government Medical College and Hospital in Sagar district of Central India from January 2023 to March 2023. Ethical approval was obtained from the Institutional Ethical Committee with approval letter no. IEC/BMC/172/2023 and all the participants provided written informed consent. A total of 496 registered commercial driver included in the study.

Inclusion and Exclusion criteria: All drivers who were present and given informed consent were included in the study. Drivers below the age of 18 years, drivers without licenses, and non-consenting drivers were excluded from the study. A total of 512 patients were present out of which 16 patients were excluded from the study due to above mentioned reasons. All the subjects were males due to the nature of work as commercial drivers are males.

DATA COLLECTION AND MEASUREMENTS

Interviews using a pretested questionnaire were collected on sociodemographic status (age, place of residence, education, and marital status), dietary habit, family history of illness, health risk behaviour (tobacco chewing and alcohol consumption) and personal habits (sleep and physical activity).

The information regarding blood pressure, blood sugar levels, height and weight, were recorded. The association of HTN and Diabetes was done with sociodemographic, dietary habits, addictions (tobacco, alcohol), income, sleep and physical activity.

BP was measured manually using a mercury column sphygmomanometer and stethoscope by the Auscultatory method. Before BP recording patient was seated comfortably for at least 15 minutes. Two readings with at least a 15-minute gap were taken. The average of two readings was taken as the BP [9]. Fasting blood sugar was measured using a Glucometer. A fasting 2 drops of blood sample was taken after maintaining sterility. The middle finger was cleaned with alcohol spirit swab. A lancet was used to prick the finger and 2 drops of blood were made to fall on the test strip and the result was read within few minute after collection of blood sample.

The body mass index (BMI) was calculated by measuring subjects' height and weight. The weight was measured using a beam type weighing scale. Height was measured with the subject in an erect position against a vertical surface. The BMI was classified according to

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WHO criteria using height and weight as under weight (BMI: <18.5 kg/m^2), normal weight (BMI: 18 – 24.9 kg/m^2), over weight (25 to 29.9 kg/m^2) and obese (>30 kg/m^2) [10].

Participants that were found to be hypertensive and diabetic without prior knowledge of their health status were provided with medications to reduce the blood pressure and blood sugar level and were eventually referred to health clinic and hospital of their choice.

STATISTICAL ANALYSIS

The collected information then was analyzed using different descriptive and analytic methods with the use of the SPSS software version 14. The collected data was tabulated using Microsoft Excel 2007 and analyzed using EpiInfo 3.5.1. Quantitative variables were summarized as means and qualitative variables were summarized as proportions. Quantitative variables were tested for statistical significance using Student's *t*-test. Qualitative variables were checked for statistical significance using the Chi-Square test. For all statistical tests, a *P* value <0.05 was taken as significant.

RESULT

A total of 496 participants took part in this study. Out of 496 the majority were in the age group of 31-40 years (37.09%). Most of the participants (n=249, 50.2%) completed their high school and belonged to urban area (n=300, 60.4%). Three-fourths of the participants (79.2%) were married. about 57.6% were vegetarian and 50.4% had the habit of consuming meal from a restaurant occasionally.

About 250 (50.4%) and 226(45%) gave a family history of diabetes mellitus and hypertension respectively. Most of them were non diabetic may be unaware about their current diabetic status.

Around 408(82.2%) were current smokers with 360 (72.5%) had habit of chewing tobacco. Around 225(45.3%) of the participants consumed alcohol daily. The per capita income of most of the drivers was good. The majority 393(79.2%) and 400 (80.6%) had insufficient sleep and deficient physical activity. **Table/Figure 1**

The patients who were found to be hypertensive were more than 30 years of age, mostly belonging to rural areas with high school degree . Most of them were smokers with more than 10 cigarettes per day along with occasional alcohol intake and daily tobacco chewing habit. The sleep quality and physical activity was found to be inadequate. **Table/Figure 2**
The diabetic patients were mostly greater than 30years of age belonging to rural areas with intense smoking and tobacco chewing habit. The sleep habit and physical activity was found to be inadequate. **Table/Figure 3**
In the BMI range <18.5kg/m^2 ,15(N=43) and 21(N=43) patients were hypertensive and diabetics , while in the range of 18.5 kg/m^2-24.99 kg/m^2, 61 (N=280) and 93(N=280) was hypertensive and diabetics. The patients with BMI in the range 25-29.99 kg/m^2, 42 (N=134) was hypertensive and 22(N=134) was diabetic. The patients with BMI >30 kg/$m^{2,}$ 20 (N=39) and 19 kg/m^2 (N=39) was found to be hypertensive and diabetics respectively. **Table/Figure 4**

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Table/Figure 1. Sociodemographic, Personal and Health risk behaviours of the population (*n* = 496).

Characteristic	N (%)
Age (years)	
21–30	129(26%)
31–40	184(37.09%)
41–50	109(21.9%)
51–60	53(10.6%)
61-70	21(4.2%)
Place of residence	
Urban	300(60.4%)
Rural	96(39.5%)
Educational status	
Illiterate	11(2.2%)
Primary	67(13.5%)
High School	249(50.2%)
Graduate	169(34.0%)
Marital status	
Married	393(79.2%)
Unmarried	98(19.7%)
Divorced	5(1%)
Consumption of Main Meal From Restaurants	
Occasional	250(50.4%)
Regular	246(49.5%)
Dietary habits	
Vegetarian	286(57.6%)
Non-Vegetarian	210(42.3%)
Family history of illness	
Hypertension	226(45.5%)
Diabetes Mellitus	250(50.4%)
Renal Disease	20(4.03%)
Whether diabetic?	
No	346(69.7%)
Yes	150(30.2%)
Addictions	
Smoking	
Current Smokers	408(82.2%)
Quit Smoking	22(4.4%)
Non Smokers	66(13.3%)
Alcohol consumption	
Daily	225(45.3%)
Occasionally	178(35.8%)

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Characteristic	N (%)
Never Consumed Alcohol	93(18.7%)
Tobacco Chewing	
No	136(27.4%)
Yes	360(72.5%)
Monthly income in rupees	
Up to 10000	66(13.3%)
10001–20000	169(34%)
20001 and Above	261(52.6%)
Personal Habits	
Insufficient sleep	393(79.2%)
Deficient physical activity	400(80.6%)

Table/Figure 2: Association between Sociodemographic, Personal, and Health risk behaviours and Hypertension

Risk Factor	Total Subjects	With Hypertension	Without Hypertension	Test statistic (χ^2)	p-Value
Age					
≤30 years	215	49	166	48.73	~ 0.00
>30 years	281	154	127		
Place of Residence					
Urban	196	86	106	1.68	0.19
Rural	300	117	187		
Education Qualification					
Up to primary school	79	45	33	9.95	0.002
Higher secondary and above	417	158	260		
Family History of Hypertension					
Absent	362	168	196	14.65	0.0001
Present	134	35	97		
Family History of Diabetes					
Absent	247	114	134	4.8	0.028
Present	249	89	159		
Monthly Income (in INR)					
Upto 10000	246	113	127	6.8	0.009
>10000	250	90	166		

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Risk Factor	Total Subjects	With Hypertension	Without Hypertension	Test statistic (χ^2)	p-Value
Smoking					
Smoker (Less than 10 cigarettes per day)	206	81	126	14	0.0009
Smoker (More than 10cigarettes per day)	202	99	102		
Non Smoker	88	23	65		
Alcohol Consumption					
Daily	156	65	92	12.49	0.002
Occasionally	193	95	99		
Never	147	43	101		
Tobacco Chewing					
Absent	164	41	125	26.18	~ 0.00
Present	332	162	168		
Personal Habits Sleep					
Inadequate	171	98	77	24.45	~ 0.00
Adequate	325	105	216		
Physical Activity					
Inadequate	295	81	214	53.26	~ 0.00
Adequate	201	122	79		

Table/Figure 3.Association between Sociodemographic, Personal, and Health risk behaviours and Diabetes

Risk Factor	Total Subjects	With Diabetes	Without Diabetes	Test statistic (χ^2)	p-Value
Age					
≤30 years	216	37	179	16.77	~ 0.00
>30 years	280	95	185		
Place of Residence					

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Risk Factor	Total Subjects	With Diabetes	Without Diabetes	Test statistic (χ^2)	p-Value
Urban	192	47	145	0.56	0.45
Rural	304	85	219		
Education Qualification					
Primary school	78	35	43	14.71	~ 0.00
Senior secondary and above	418	97	321		
Family History of Hypertension					
Absent	364	82	282	10.92	0.0009
Present	132	50	82		
Family History of Diabetes					
Absent	248	37	211	33.54.	~ 0.00
Present	248	95	153		
Monthly Income (in INR)					
Upto 10000	239	60	179	0.40	0.52
>10000	257	72	185		
Smoking					
Smoker (Less than 10 cigarettes per day)	207	38	169	16.07	0.0003
Smoker (More than 10 cigarettes per day)	201	72	129		
Non Smoker	88	22	66		
Alcohol Consumption					
Daily	157	67	90	32.90	~ 0.00
Never	145	22	123		
Occasionally	194	44	150		
Tobacco Chewing					
Absent	166	34	132	4.34	0.037
Present	330	98	232		
Personal Habits Sleep					
Inadequate	175	94	81	99.56	~ 0.00
Adequate	321	38	283		
Physical Activity					
Inadequate	201	71	130	12.39	~ 0.00

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Risk Factor	Total Subjects	With Diabetes	Without Diabetes	Test statistic (χ^2)	p-Value
Adequate	295	61	234		

The association between BMI and HTN and Diabetes is shown in table 4. The patient was divided in various BMI category based on WHO Category of BMI in (kg/m^2)

Table/Figure 4. Prevalence of HTN and Diabetes based on BMI status of study population

WHO Category of BMI (kg/m^2)	Number of Subjects	Hypertensive	Diabetics
<18.5	43	15(N=43/496)	21(N=43/496)
18.5–24.99	280	61(N=280/496)	93(N=280/496)
25–29.99	134	42(N=134/496)	22(N=134/496)
≥30	39	20(N=39/496)	19(N=39/496)

DISCUSSION

The study observed that hypertensive patients were adult living in rural area with high school education and frequent tobacco chewing and occasional alcohol intake habit. They have lack of sleep and physical activity. The present study observed that diabetics were adult, staying in rural areas, frequent tobacco chewing and alcohol intake and reduced sleep and physical activity. The majority of patients with BMI more than $30kg/m^2$ was found to be hypertensive and diabetics in this study.

In many studies the average age of drivers was found to be in the range of 38-40 yrs which was in accordance with the results of present study with average age 39.55±12.53 years. [11,12,13]

The educational background of commercial drivers has been found to be different in studies. In a study conducted by Collins A A et al. and Asiamah G et al. it was observed that the majority of drivers choose this profession because they have less educational qualifications for securing the good job of their interest and the financial crunche to start a business which is similar to present where most of the drivers was found to be high school passed [12,13].

In a study done by Saberi HR et al. and Constantine IV et al. it was observed that majority of the drivers depend on food from restaurants, similar to present study as most of the drivers skip food at their homes due to the shift of their work. These foods contain high calories, extra salt, and unhealthy fats [14,15].

Hypertension increases with age is a well-known fact now. A study conducted by Ramachandran SV et al. in 1298 subjects found a significant association of hypertension with age, similar to the present study [16].

In a study by Wang et al. it was observed that blood pressure was inversely associated with the level of school education independent of all other risk factors. Educational qualification

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makes people aware of the consequences of the disease hence they make quick decisions to prevent it[17].
The study done by Ambarish P et al. it was concluded that smokeless tobacco consumption is associated with an increased prevalence of high BP in adult males. Similar findings were found in the present study[18].
Many studies observed alcohol as an independent risk factor for hypertension. Most drivers consume alcohol as a means of relaxation after exhaustive overwork. Alcohol when consumed excessively leads to increase blood pressure and increase calorie intake[19,20].
Moreover, lack of physical activity along with inadequate and disturbed sleep contributes to the development of hypertension, diabetes, overweight, and obesity [21,22].
Oyeniyi O S et al in one of the study observed that 19.9% of obese had hypertension which was inconsistent with the present study in which 51% of obese drivers had hypertension [23].

The prevalence of diabetes was 138(27.8%) which was inconsistent with the study done by Tamilarasan M et al[24]. Diabetes was more common among drivers who smoke more than 10 cigarettes per day and had habit of chewing tobacco. Smoking is more prevalent among drivers as they use tobacco while driving to relief occupation stress, eliminate boredom and sleepiness. They always keep their daily income aside for smoking. Majority of the them does not know about the harmful effects of tobacco consumption[25,26,27].

In adequate sleep and physical inactivity was found to be another risk factors of diabetes. Due to long work hours and shift work on the transportation route make difficult physical activity behaviours difficult for drivers[28], high rate of sleep complaints due to lifestyle habits of these individuals, irregular shift work which does not provide good physical and mental restoration during sleep[29]. The higher prevalence of carbohydrate metabolism disorder observed among persons with excessive body weight that is reported in literature is confirmed by our study also [30].

The present study has limitations that should be addressed. Our study does not have control group and no follow up. The sample size of drivers was very less to generalize our results on total population of commercial professional drivers.

CONCLUSION: Our findings underscore the imperative for targeted interventions aimed toward a healthier lifestyle, with the goal of mitigating the prevalence of diseases such as diabetes, hypertension, and overweight conditions within the driver population. Such interventions not only hold the potential to enhance the well-being of drivers but also contribute to the overall safety of passengers.

Conflict of interest statement
No conflict of interest.

References:

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1. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Blaha MJ et al. Heart disease and stroke statistics--2014 update: a report from the American Heart Association. Circulation 129:e28-e292.

2. Zimmet P, Alberti KGMM, Shaw J. Global and societal implications of the diabetes epidemic. Nature 2001;414:782–87.

3. Commission Directive 2009/112/EC of 25 August 2009 amending Council Directive 91/439/EEC on driving licence. Official Journal of the European Union 2009;52(L 223):26.

4. Chidoka O . Road Traffic Accident in Nigeria 2013. Federal Road Safety Corp, FRSC, Tribune;1: 29.

5. Akanbi OS, Charles-Owaba OE, Oluleye AE, Ken S. Human factors in traffic accidents in Lagos, Nigeria. 2009. Disaster Prevention and Management; 18(4):397-409.

6. Schmitt-Koopmann I, Schwenkglenks M, Spinas GA, Szucs TD. Direct medical costs of type 2 diabetes and its complications in Switzerland. Eur J Public Health 2004;14:3–9.

7. Diabetes and Driving in Europe. A Report of the Second European Working Group on Diabetes and Driving, an advisory board to the Driving Licence Committee of the European Union [cited 2010 January 27].

8. Robinson CF, Burnett CA. Truck drivers and heart disease in the United States, 1979–1990 . Am. J. Ind. Med. 2005; 47 (2) : 113-119.

9.Muntner P., Shimbo D., Carey R.M., Charleston J.B., Gaillard T. et al. Measurement of blood pressure in humans : A scientific statement from the American Heart association. 2019 vol 73,(5) e35-e66.

10. World Health Organization (WHO) (2000). Obesity; preventing and managing the global epidemic. Report of a WHO Consultation. WHO Technical Report Series 894. Geneva; World Health Organization.

11. Abban HA. Cardiovascular disease risk factors among commercial long drivers in Cape Coast. Thesis (M Phil) submitted to the Department of Nutrition and Food Science. University of Cape Coast. Ghana. 2013;2013(1):70–71. [Google Scholar]

12. Achulo D, Colecraft E, Otoo G. Dietary Practices, Nutritional Status and Non-Communicable Diseases among commercial long distance drivers in Accra, Ghana. Thesis (M Phil) submitted to the Department of Nutrition and Food Science. University of Ghana. 2011:1–45. [Google Scholar]

13. Asiamah G, Mock C, Blantari J. Understanding the knowledge and attitudes of commercial drivers in Ghana regarding alcohol impaired driving. Injury Prevention. 2002;8(1):53–56. [PMC free article] [PubMed] [Google Scholar]

14. Saberi HR, Moravveji AR, Fakharian E, Kashani MM, Dehdashti AR. Prevalence of metabolic syndrome in bus and truck drivers in Kashan, Iran. Diabetol Metab Syndr. 2011;3(1):8. [PMC free article] [PubMed] [Google Scholar]

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

15. Vardavas CI, Linardakis MK, Hatzis CM, Saris WH, Kafatos AG. Cardiovascular disease risk factors and dietary habits of farmers from Crete 45 years after the first description of the Mediterranean diet. Eur J Cardiovasc PrevRehabil. 2010;17(4):440–6. [PubMed] [Google Scholar]

16. Vasan R. S., Beiser A., Seshadri S., et al. Residual lifetime risk for developing hypertension in middle-aged women and men: the Framingham Heart Study. The Journal of the American Medical Association. 2002;287(8):1003–1010. [PubMed] [Google Scholar]

17. Wang Y., Chen J., Wang K., Edwards C. L. Education as an important risk factor for the prevalence of hypertension and elevated blood pressure in Chinese men and women. Journal of Human Hypertension. 2006;20(11):898–900. doi: 10.1038/sj.jhh.1002086. [PubMed] [CrossRef] [Google Scholar]

18. Pandey A., Patni N., Sarangi S., et al. Association of exclusive smokeless tobacco consumption with hypertension in an adult male rural population of India. Tobacco Induced Diseases. 2009;5(1, article 15) doi: 10.1186/1617-9625-5-15. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

19. Manimunda S. P., Sugunan A. P., Benegal V., Balakrishna N., Rao M. V., Pesala K. S. Association of hypertension with risk factors & hypertension related behaviour among the aboriginal Nicobarese tribe living in Car Nicobar Island, India. Indian Journal of Medical Research. 2011;133(3):287–293. [PMC free article] [PubMed] [Google Scholar]

20. Khan R. J., Stewart C. P., Christian P., et al. A cross-sectional study of the prevalence and risk factors for hypertension in rural Nepali women. BMC Public Health. 2013;13, article 55 doi: 10.1186/1471-2458-13-55. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

21. Cheng Y,DuCL,HwangJJ,ChenIS,ChenMF,Su TC. Working hours, sleep duration and the risk of acute coronary heart disease: a case control study of middle aged men in Taiwan. International Journal of Cardiology. 2014;171(3):419-422.[PubMed] [Google Scholar]

22. Aberg F,Helenius Hietala J, Puukka P, Farkkila M, Jula A. Interaction between alcohol consumption and metabolic syndrome in predicting severe liver disease in the general population . Hepatology: 2018;67(6):2141-2149.[PubMed] [Google Scholar]

23. Oyeniyi O.S., Ajayi I.o. Prevalence of hypertension and associated risk factor among interstate commercial drivers in Jabi Park Abuja. International journal of medicine and medical sciences 2016; 8(7):75-83.

24. A Cross-Sectional Study of Determinants of Type 2 Diabetes Mellitus Among Professional Drivers in the Perambalur Municipality Area of Tamil Nadu, India Tamilarasan M, Karthikeyan Kulothungan, Shagirunisha Rizvana and Sriranganathan Thirunavukkarasu.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

25. Krishnaswamy U, Chhabria M, Rao A. Excessive sleepiness,sleep hygiene, and coping strategies among night bus drivers:A cross-sectional study. Indian J Occup Environ Med.May-Aug;20(2):84-87. doi: 10.4103/0019-5278.197526.

26. Jadhav AV. Non-Communicable Diseases Risk Profile of Bus Drivers in Rural Maharashtra: An Exploratory Comparative study. 2017;8(12):4.

27. Chaudhary SS, MMNagargoje SS, Kubde SC, Gupta SK. Mishra.Prevalence of cardiovascular diseases risk factors among auto-rickshaw drivers. Indian J Community Health. 2011;22(2):23.

28. Anjana RM, Pradeepa R, Das AK, Deepa M, Bhansali A, Joshi SR,et al. Physical activity and inactivity patterns in India – results from the ICMR-INDIAB study (Phase-1) [ICMR-INDIAB-5]. Int J Behav Nutr Phys Act. 2014 Feb 26;11(1):26.

29. Mello MT, Santana MG, Souza LM, Oliveira PC, Ventura ML,Stampi C, Tufik S. Sleep patterns and sleep-related complaints of Brazilian interstate bus drivers. Brazilian Journal of Medical and Biological Research. 2000 Jan;33(1):71-7.

30. Sieradzki J, Wilkins A, Szczepanskim. Screen Pol2- active screening and early detection of type 2 diabetes in general practice in Poland. Results of multicentre national screening survey. Diabet Prakt 2005;6(3):103-14

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023