Published by
NIGERIAN SOCIETY OF PHYSICAL SCIENCES
Available online @ https://asr.nsps.org.ng/index.php/asr

African Scientific Reports 4 (2026) 449

African Scientific Reports

Prevalence and driving-related factors influencing prediabetes and diabetes among commercial drivers in Benin City metropolis, Edo State, Nigeria

J. E. Moyegbone [a,*], P. Onyema[b], O. C. Madubuattah[a], E. O. Emurotu[c], E. E. Oronsaye[b], P. T. Osunu[d], J. A. Ebeigbe[a], E. U. Nwose[e]

[a]*Department of Environmental and Public Health, Faculty of Optometry, University of Benin, Benin City, Edo State, Nigeria*
[b]*Department of Optometry, Faculty of Allied Health Science, Bingham University, Karu, Nasarawa State, Nigeria*
[c]*Department of Optometry, Faculty of Allied Medical Science, Dennis Osadebey University, Asaba, Delta State, Nigeria*
[d]*Department of Public Health, Faculty of Health Sciences, Bayelsa Medical University, Yenagoa, Bayelsa State, Nigeria*
[e]*Department of Public and Community Health, College of Health Sciences, Novena University, Ogume, Delta State, Nigeria*

Abstract

This study aimed to describe the prevalence and driving-related risk-factors influencing prediabetes and diabetes in commercial drivers, Benin City metropolis, Edo State, Nigeria. Descriptive cross-sectional study of public transport drivers aged between 20 - 70 years (mean age 48.09 ± 11.21 years) was conducted in Benin City. Purposive-sampling technique was used to recruit 341 subjects into the survey. Structured questionnaires were administered to all participants to collect their demographic and personal information. Fasting blood sugar (FBS) values were obtained using ACCU-CHEK Active Model: GB 31041669 device. Normal, prediabetes and diabetes FBS values were considered as 70 - 99 mg/dL, 100 - 125 mg/dL and greater than 125 mg/dL, respectively. SPSS version 29 was used to analyse information obtained. Significant level considered was at probability less than 0.05. Majority of respondents were males (95.6%). Overall prevalence of prediabetes was 26.4%, and diabetes was 9.1%. The mean FBS was 99.90 mg/dl; the 50^{th} and 75^{th} percentile were 97.0 mg/dL, and 110.0 mg/dL respectively. Age, educational level, driving experience years, and daily driving hours were driving-related factors that significantly influenced prediabetes and diabetes ($P < 0.05$). High prevalence of prediabetes may progress to diabetes without intervention. Fatigue due to long hours of driving daily may be a predisposing factor to road traffic accident. We, therefore, recommend that driver's unions should support commercial drivers to check their fasting blood sugar regularly.

DOI:10.46481/asr.2026.5.1.449

Keywords: Blood sugar, Diabetes, Commercial driver, Prediabetes, Road traffic accident

Article History :
Received: 23 January 2026
Received in revised form: 04 March 2026
Accepted for publication: 07 March 2026
Published: 23 March 2026

© 2026 The Author(s). Published by the Nigerian Society of Physical Sciences under the terms of the Creative Commons Attribution 4.0 International license. Further distribution of this work must maintain attribution to the author(s) and the published article's title, journal citation, and DOI.

1. Introduction

Diabetes mellitus (DM) is a major determinant in early illness and death worldwide. World Health Organization reported 14% prevalence among adults, 47% premature deaths in 2022 and >50% undiagnosed-DM [1]. DM is a well- known metabolic disease

*Corresponding author Tel. No:
Email address: john.moyegbone@uniben.edu (J. E. Moyegbone)

marked with increased blood sugar levels following decreased insulin secretion and resistance. Previously believed as disease of the wealthy and primarily found in cities, diabetes has now spread to middle-income and low-income countries, including Nigeria, as a result of urbanization, dietary changes, and a more sedentary lifestyle for many [2].

Prediabetes is marked with increased blood sugar levels below values consider in diagnosis of diabetes, but the individual may be more susceptible to developing diabetes. Based on laboratory parameters, prediabetes is categorized as impaired fasting glucose (IFG) if FBS ranges from 5.6 - 6.9 mmol/L (110 –125 mg/dL), and/or impaired glucose tolerance (IGT) when the 2-hour postprandial blood glucose is between 7.8 and 11.1mmol/L (140 – 199 mg/dL) [3, 4]. Literatures indicate that about 4-10% prevalence of people with prediabetes stand a higher chance of becoming diabetic, with as much as fifty percent progressing to DM within 5 years [3, 5]. Strong evidence favor early mitigation strategies and treatment of pre-diabetics so as to lower DM occurrence and complications [4].

According to International Diabetes Federation's (IDF) Atlas 2021, 10.5% of adults globally (ages 20 to 79) have diabetes, and over half of them are not aware that they have the disease [3]. African region have the highest rate of undiagnosed diabetes worldwide, as only 46% of people with diabetes in the African region are aware that they have the disease. A systemic review conducted in Nigeria from 1990 to 2017 showed the pooled prevalence of diabetes of 5.77%. This pooled prevalence when disaggregated into the six geopolitical zone showed 9.8% in the south-south zone, 5.9% in northeast zone, 5.5% in southwest zone, 4.6% in southeast zone, 3.8% in northcentral zone and 3.0% in northwest zone [6]. More recently, WHO estimated 4.3% prevalence of diabetes in Nigeria with over eight million people living with diabetes [7].

Another systemic review conducted between 2000 and 2019 which made use of American Diabetes Association and WHO criteria showed overall prevalence of prediabetes as 13.2% and 10.4% respectively, with over 26 million prediabetic people in Nigeria [8]. According to Edi Tarigan *et al.* [9], rate of diabetes and prediabetes among Indonesian cab drivers was 25.5% and 29.2%, respectively. Additionally, according to Siu *et al.* [10] , 8.1% and 10% of new drivers in Hong Kong were diagnosed with diabetes and prediabetes, respectively. Meanwhile, Pakistan recorded dramatic rise in DM prevalence from 5.2 million to almost 33 million among adults in 2000 and 2021, respectively [11].

The development of every country is greatly aided by the transportation sector, which may also be used as a stand-in for industrialization and urbanization. Estimate has it that over 1.5 million people work on land-transport industry, which contributes ninety percent of the subsector's gross domestic output. However, it has been reported that some of these commercial drivers have generally poor mental and physical health because their jobs require them to travel great distances, spend a lot of time sitting down, get little to no sleep, physically inactive, and have unhealthy eating habits [12]. A study conducted by Sharvana showed that majority of commercial drivers in rural areas of India led sedentary lifestyles, eat unhealthy foods, consume tobacco and alcohol incessantly [13]. Yearly, approximately one million, two hundred people die in traffic-related clashes worldwide, and millions more have injuries of various severity, some of which cause permanent disability [14]. Apart from stress or fatigue related factor due to prolong driving time, diabetic eye related complications such as diabetes induce cataract, fluctuation in refractive status, and diabetic retinopathy may predispose driver to road traffic accident.

In order to recommend effective preventive strategies in mitigating diabetes and prediabetes in commercial drivers, we need to know the prevalence and factors that may pose a risk to these drivers. Therefore, our study aimed to evaluate the prevalence, and driving-related factors that may influence prediabetes and diabetes in commercial drivers routing Benin City metropolis, Edo State, Nigeria.

2. Materials and methods

Descriptive cross-sectional study of public transport drivers aged between 20 - 70 years (mean age 48.09 ± 11.21 years) was conducted in Benin City, Nigeria. Structured questionnaires were administered to all participants to collect their demographic and personal information. Fisher's formula estimated the minimum number of subjects needed in our study as shown in Equation (1) [15].

$$n = \frac{Z^2 pq}{e^2}, \tag{1}$$

where,
n = sample size; Z = normal curve's abscissa (1.96); e = degree of accuracy (5%); p = estimated proportion from previous study (9.8%) [6]; and $q = 1 - p$, i.e. $(1 - 0.098)$.

$$n = \frac{Z^2 pq}{e^2} = \frac{(1.96)^2 \times 0.902 \times 0.098}{0.05^2} = 136.$$

10% attributed to dropouts = 14, Require sample size = 150 subjects.

Purposive sampling method was used to recruit 341 subjects into the survey. A total of 341 commercial drivers that usually based and route Benin City metropolis from the Central Motor Park were enrolled into the study. Commercial drivers that have been plying the city for a year or more and gave consent were included. Those that were not available during the survey, and those that did not give consent were excluded.

Table 1. Respondents' socio-demographic and driving-related variables.

Variables	Options	Frequency (N= 341)	Percentage (%)
Ethnic groups	Edos	202	59.2
	Igbos	33	9.7
	Deltans	47	13.8
	Yorubas	8	2.3
	Others	51	15.0
Sex	Male	326	95.6
	Female	15	4.4
Age Categories (years)	20 – 30	13	3.8
	31 – 40	41	12.0
	41 – 50	155	45.5
	51 – 60	82	24.0
	> 60	50	14.7
Educational Status	None	24	7.0
	Primary	53	15.5
	Secondary	136	39.9
	Tertiary	128	37.5
Type of Employment	Self	260	76.2
	Company	81	23.8
Driving Experience (years)	< 3	20	5.9
	3 – 5	33	9.7
	6 – 10	91	26.7
	> 10	197	57.8
License Validity	Valid	246	72.1
	Not-valid	95	27.9
Hours driven Daily (Hours)	< 3	29	8.5
	3 – 5	60	17.6
	> 5	252	73.9
Self-reported RTA in previous one year	None	252	73.9
	1 - 2x	74	21.7
	3 - 4x	11	3.2
	> 4x	4	1.2

Fasting blood sugar (FBS) values were obtained using ACCU-CHEK Active Model: GB 31041669 device. FBS values of 70-99 mg/dl were recorded as normal, while 100 to 125 mg/dL, and greater than 125 mg/dL were considered prediabetes and diabetes, respectively. IBM- SPSS version 29.0 was used for inferential statistics. Tables and Figures were used to present descriptive information obtained. Chi-square test (Fisher's Exact Test when data is less than 5 in a cell) was used in determining driving-related risk-factors linked with diabetes and prediabetes. Significant level considered was at probability less than 0.05.

3. Result

Overall, 341 public transport drivers operating inside the metropolitan of Benin City underwent fasting blood sugar testing. From Table 1, the findings showed that Edo ethnicity accounted for over half of the respondents, followed by Deltans (13.8%). Males made up the majority (95.6%) of the study population. With prevalence of 45.5% and 24.0%, respectively, aged 41–50 and 51–60 made the biggest portions of the subjects. Furthermore, 39.9% and 37.5% of the respondents had secondary and tertiary education, respectively, indicating that the majority of them were educated.

More than half of the respondents had more than ten years of driving experience, and more than two-thirds worked for themselves. Additionally, more than two-thirds of the respondents said they drove more than five hours a day and had not been involved in any traffic incidents in the previous year. In contrast, 21.7% reported one or two traffic accidents in the previous year.

Our findings show that 64.5% (220) respondents had normal fasting blood sugar level. While the prevalence of prediabetes was 26.4% (90), diabetes had a prevalence of 9.1% (31) (Figure 1).

Figure 2 shows that while the mean FBS was 99.9 mg/dl, the median (50^{th} percentile) and the 75^{th} percentile was 97 mg/dl and 110 mg/dl respectively.

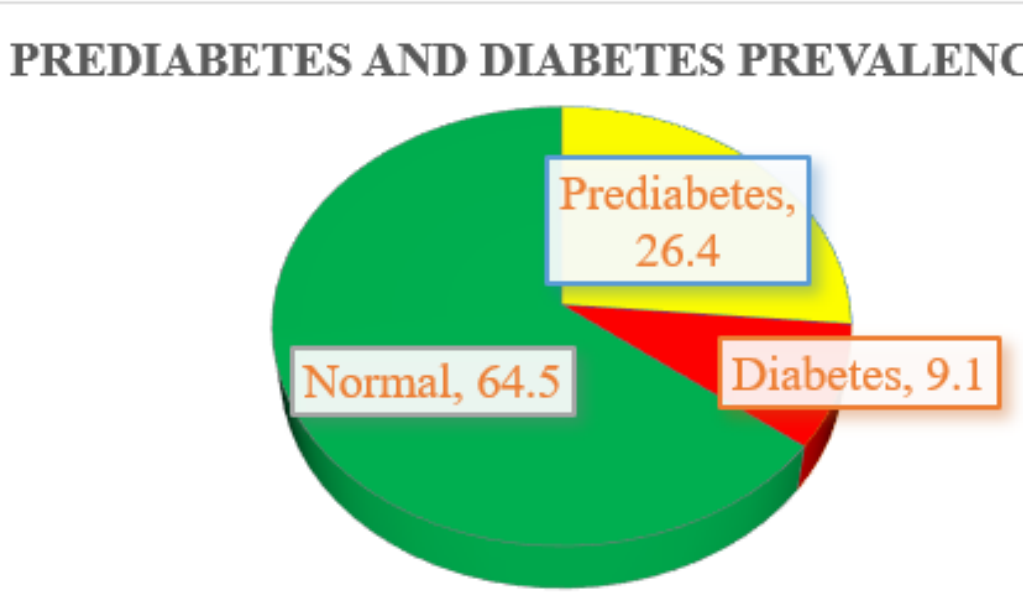


Figure 1. Prediabetes and diabetes prevalence in commercial drivers, Benin City metropolis.

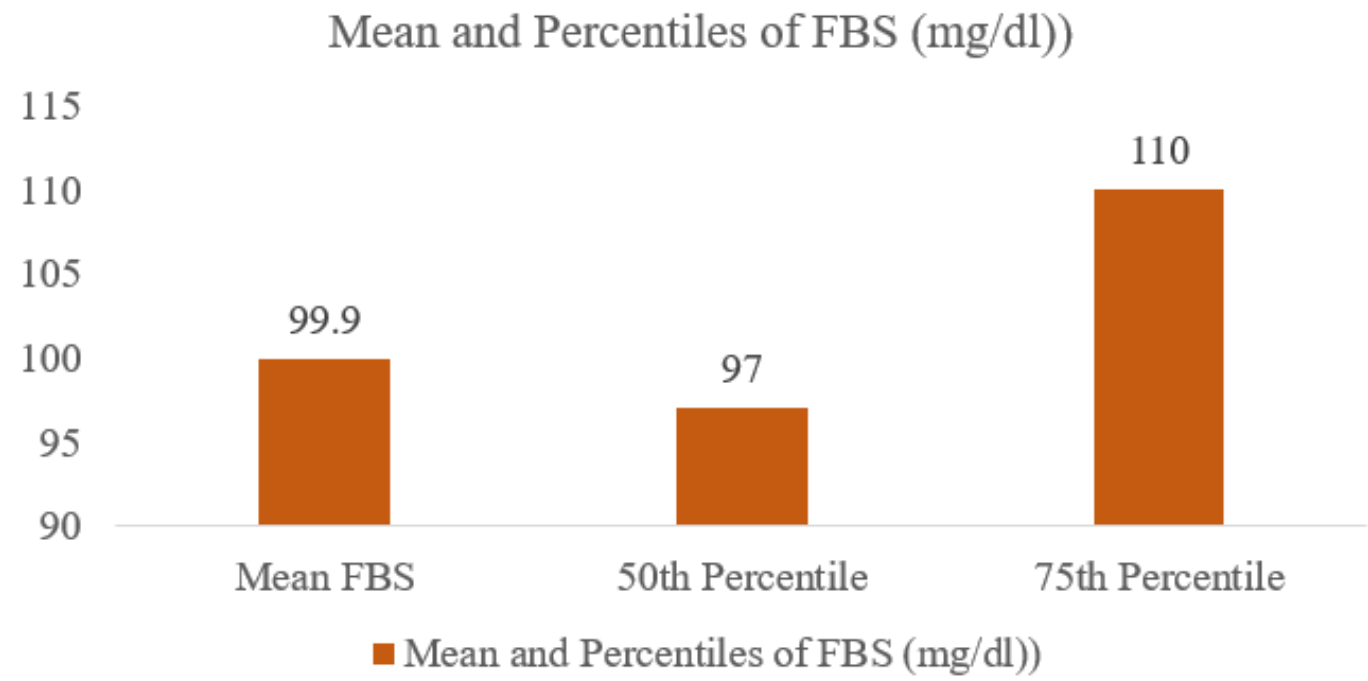


Figure 2. Mean and percentile of FBS in commercial drivers, Benin City.

Table 2 shows socio-demographic and driving-related factors influencing prediabetes and diabetes. From the Table, Deltan (36.2%), and others (29.4%) ethnicities had the highest prevalence of prediabetes. Also, Edos (9.4%) and others (13.7%) were the ethnicities with highest rate of diabetes. It can be noticed that prediabetes, diabetes and ethnicity had no significant relationship (p = 0.395). Whereas prediabetes, diabetes and sex had no significant relationship (p = 0.648), prediabetes and diabetes was higher in females (33.3% & 13.3%) than in males (26.1% & 8.9%) respectively. The prevalence of prediabetes increased as age increases from 15.4% in 20–30 age-group to 40.0% in 60 years and above age-group. In a similar vein, the prevalence of diabetes increased as age increases from 0% in 20–30 age-group to 17.0% in 51–60 age-group. Prediabetes, diabetes, and age-categories showed significantly

Table 2. Fasting blood sugar by socio-demographic and driving-related characteristics of respondents.

Variables	Options	Normal (%)	Prediabetes (%)	Diabetes (%)	P-Value (P<0.05)	X^2
Ethnic groups	Edos	134 (66.3)	49 (24.3)	19 (9.4)	.395	8.358
	Igbos	24 (72.7)	8 (24.2)	1 (3.0)		
	Deltans	26 (55.3)	17 (36.2)	4 (8.5)		
	Yorubas	7 (87.5)	1 (12.5)	0 (0)		
	Others	29 (56.9)	15 (29.4)	7 (13.7)		
Sex	Male	212 (65.0)	85 (26.1)	29 (8.9)	.648	.901
	Female	8 (53.3)	5 (33.3)	2 (13.3)		
Age Categories (years)	20–30	11 (84.6)	2 (15.4)	0 (0)	.019	18.338
	31–40	30 (73.2)	11 (26.8)	0 (0)		
	41–50	102 (65.8)	39 (25.2)	14 (9.0)		
	51–60	50 (61.0)	18 (22.0)	14 (17.0)		
	> 60	27 (54.0)	20 (40.0)	3 (6.0)		
Level of Education	None	18 (75.0)	6 (25.0)	0 (0)		
	Primary	23 (43.4)	22 (41.5)	8 (15.1)	.018	15.372
	Secondary	89 (65.4)	33 (24.3)	14 (10.3)		
	Tertiary	90 (70.3)	29 (22.7)	9 (7.0)		
Employment State	Self-employed	160 (61.5)	73 (28.1)	27 (10.4)	.096	4.695
	Company employed	60 (74.1)	17 (21.0)	4 (4.9)		
Driving Experience (years)	< 3	17 (85.0)	3 (15.0)	0 (0)	.007	17.810
	3–5	27 (81.8)	6 (18.2)	0 (0)		
	6–10	64 (70.3)	22 (24.2)	5 (5.5)		
	> 10	112 (56.9)	59 (29.9)	26 (13.2)		
Driver's license Validity	Valid	151 (61.4)	72 (29.3)	23 (9.3)	.122	4.175
	Invalid	69 (72.6)	18 (18.9)	8 (8.4)		
Daily driving Hours	< 3	17 (58.6)	11 (37.9)	1 (3.4)	.017	12.011
	3–5	49 (81.7)	7 (11.7)	4 (6.6)		
	> 5	154 (61.1)	72 (28.6)	26 (10.3)		
Self-report road traffic accidents in previous one year	None	164 (65.1)	62 (24.6)	26 (10.3)	.619	4.361
	1–2x	45 (60.8)	25 (33.8)	4 (5.4)		
	3–4x	8 (72.7)	2 (18.2)	1 (9.1)		
	> 4x	3 (75.0)	1 (25.0)	0 (0)		

remarkable relationship ($p = 0.019$).

Our outcomes show that prediabetes increased with lower educational status, increasing from 22.7% in those having tertiary education to 25.0% in those with no-formal education. In like manner, diabetes increased with lower educational levels, increasing from 7.0% in people with tertiary education to 15.1% in those with primary education. Prediabetes, diabetes, and educational levels had significant connection ($p = 0.018$). Although, there was no signification relationship between prediabetes, diabetes and employment status, this survey demonstrated that self-employed had higher prevalence of prediabetes and diabetes compared with company employed drivers.

Furthermore, our study showed that prevalence of prediabetes increased as driving experience increases in years from 15.0% in subjects that drives for less than 3 years to 29.9% in subjects that have driven for over 10 years. In a similar vein, diabetes prevalence increased as driving experience increases in years from 0% in subjects that drives for less than 3 years to 13.2% in subjects that have driven for over 10 years. Prediabetes, diabetes, and years of driving experience had statistically remarkable relationship ($p = 0.007$).

While prediabetes and diabetes were not statistically connected with validity of drivers' license, and self-reported road traffic accidents in previous 12 month prior to study ($p > 0.05$), there was statistically significant connection with number of hours driven per day. Prediabetes increased with increase in number of hours driven daily from 11.7% among those that drives 3 – 5 hours daily to 28.6% among those that drives > 5 hours daily. Similarly, diabetes increased with increase in number of hours driven daily from 3.4% among those that drives < 3 hours daily to 10.3% among those that drives > 5 hours daily.

4. Discussion

The prevalence of diabetes in our study was 9.1%, and it is similar to the prevalence of 10% in Abuja [16] and 9.8% in the south-south geopolitical zone [7]. The 9.1% prevalence in our study was higher than the prevalence found in earlier studies including 3.4% in Ibadan, Nigeria [12], 5.3% in Akure, Nigeria [4], 4.7% in Oyo State, Nigeria [17], 4.8% in Ekiti State, Nigeria [18], 5.4% in Delta State, Nigeria [19], 3.7% in Bayelsa State, Nigeria [20] and 8.1% among Hong Kong drivers [10]. Nevertheless, this prevalence (9.1%) is lower than 16.98% in Pakistan [2], 25.5% in Indonesia [9], 13.9% in Edo State, Nigeria [21], 25.46% in Ughelli, Delta State [22] and 59% in Agbor, Delta State, Nigeria [23].

The prevalence of prediabetes in our study sample was 26.4%. This prevalence is higher than the 10% among Hong Kong drivers [10], 11.7% in Akure, Nigeria [4], 4.9% in Delta State, Nigeria [19], 3.3% in Oyo State, Nigeria [17], 3.8% in Ekiti State, Nigeria [18], 8.4% in Bayelsa State, Nigeria [20] and 10.91% in Pakistan [2], but lower than the 29.2% in in Indonesia [9].

Our findings showed that prediabetes and diabetes were of public health concern among commercial drivers, and long-term effects might cause a variety of issues in the body's organs. Retinopathy, neuropathy, nephropathy, and foot disease are often reported microvascular consequences linked to diabetes. Whereas, coronary artery disease, dyslipidemia, stroke, peripheral vascular disease, and heart failure were macrovascular commonly reported issues. Other conditions include depression, cognitive deterioration, and pancreatitis, as well as an elevated risk of malignancies like breast, pancreatic, and colorectal cancer [22]. These drivers can benefit from lifestyle changes such as physical exercise, diets rich in fruits and vegetables, less saturated fatty and high carbohydrate foods in order to control the degree of diabetes and mitigate progression of prediabetes to diabetes.

Prediabetes and diabetes were found to be statistically and significantly correlated with age groups, educational attainment, driving experience (years), and daily driving duration ($p < 0.05$). The prevalence of prediabetes increased as age increases from 15.4% in 20–30 age-group to 40.0% in 60 years and above age-group. In a similar vein, the prevalence of diabetes increased as age increases from 0% in 20–30 age-group to 17.0% in 51–60 age-group. Our results agrees with reports from previous researchers that older age are independent predictors and well-known established risk factor for diabetes [24–26]. Therefore, the American Diabetes Association advises routine blood glucose testing for all persons over 45 and those who have risk factors for diabetes [27].

Similarly, prediabetes increased with lower educational status, increasing from 22.7% in those having tertiary education to 25.0% in people with no-formal education. In like manner, diabetes increased with lower educational levels, increasing from 7.0% in people with tertiary education to 15.1% in people with primary education, respectively. Even though there are few specific research on the direct association between prediabetes, diabetes, and educational level, education is sometimes regarded as a stand-in to socioeconomic position (SES), which might affect access to healthcare and health-related behaviors [14, 28].

The results of our study show that prediabetes increased as driving experience increased from 15.0% among those with less than three years driving experience to 29.9% among those with over ten years driving experience. Similarly, diabetes increased as years of driving increases from 0% among those with less than three years driving experience to 13.2% among those with over ten years driving experience. Also, prediabetes increased with increase in number of hours driven daily from 11.7% among those that drives 3 – 5 hours daily to 28.6% among those that drives > 5 hours daily. Similarly, diabetes increased with increase in number of hours driven daily from 3.4% among those that drives < 3 hours daily to 10.3% among those that drives > 5 hours daily. It is worthy of note that spending long hours on the road driving daily, accumulating into years can result in chronic stress. Stress may be a coexisting risk factor for hypertension-related problems, and impaired insulin secretion which may predispose drivers to road traffic accidents [12, 29].

5. Conclusion

The prevalence of 26.4% and 9.1% prediabetes and diabetes respectively show that metabolic disorder of diabetes is a major health burden among commuters in Edo State, Nigeria. Consequently, our results demonstrate the intrinsic value of performing diabetes screening in commercial motor parks in order to unravel undiagnosed diabetes among drivers and commence intervention programmes early. Therefore, we suggest that the Edo State Ministry of Health's public health section work with the state's National Union of Road Transport Workers to plan diabetes education and awareness campaigns for commercial drivers. There are some limitations in this study- prediabetes and diabetes diagnosis were based on one-time fasting blood sugar. More so, the study was restricted to commercial drivers in Benin City Metropolis, and this findings may not be generalized to all drivers in Edo State. However, this study has sounded the alarm regarding magnitude of diabetes and prediabetes in commercial drivers, Benin City Metropolis. It also generated baseline data for further studies on diabetes and prediabetes in Edo State, Nigeria.

Data Availability

Data will be made available upon reasonable demand from the corresponding author.

Acknowledgment

We are thankful to everyone who supported and encouraged us during the course of this study.

References

[1] World Health Organization, "Diabetes", Available: http://www.who.int/mediacentre/factsheets/fs312/en/.

[2] A. H. Aamir, Z. Ul-Haq, S. A. Mahar, F. M. Qureshi, I. Ahmad, A. Jawa, A. Sheikh, A. Raza, S. Fazid, Z. Jadoon, O. Ishtiaq, N. Safdar, H. Afridi & A. H. Heald, "Diabetes prevalence survey of Pakistan (DPS-PAK): prevalence of type 2 diabetes mellitus and prediabetes using HbA1c: a population-based survey from Pakistan", BMJ Open **9** (2019) 1. https://doi.org/10.1136/bmjopen-2018-025300.

[3] M. R. Rooney, M. Fang, K. Ogurtsova, B. Ozkan, J. B. Echouffo-Tcheugui, E. J. Boyko, D. J. Magliano & E. Selvin, "Global prevalence of prediabetes", Diabetes Care **46** (2023) 1388. https://doi.org/10.2337/dc22-2376.

[4] I. Aladeniyi, O. V. Adeniyi, O. Fawole & A. Ogunlaja, "The prevalence and correlates of pre-diabetes and diabetes mellitus among public category workers in Akure, Nigeria", Open Public Health Journal **10** (2017) 167. https://doi.org/10.2174/1874944501710010167.

[5] E. U. Nwose, R. S. Richards, P. T. Bwititi & J. Butkowski, "Prediabetes and cardiovascular complications study (PACCS): international collaboration 4 years' summary and future direction", BMC Research Notes **10** (2017) 730. https://doi.org/10.1186/s13104-017-3017-7.

[6] A. O. Fajola, A. O. Isara, A. Alali & O. O. Olatosi, "Prevalence and risk factors of hypertension and diabetes mellitus in riverine communities in Nigeria's Niger delta: implications for community-based interventions", International Journal of Community Medicine and Public Health **11** (2024) 1038. https://doi.org/10.18203/2394-6040.ijcmph20240600.

[7] World Health Organization Regional Office for Africa, "Stakeholders call for increased access to diabetes education", Available: https://www.afro.who.int/countries/nigeria/news/stakeholders-call-increased-access-diabetes-education.

[8] M. Bashir, A. Yahaya, M. Muhammad & A. Bello, "Prediabetes burden in Nigeria: a systematic review and meta-analysis", Frontiers in Public Health **9** (2021) 762429. https://doi.org/10.3389/fpubh.2021.762429.

[9] T. E. Tarigan, E. Purwaningsih, Yusra & S. Hidayat, "Estimating the incidence of prediabetes and type 2 diabetes among taxi drivers in Indonesia", Journal of Natural Science, Biology and Medicine **10** (2019) S150. https://jnsbm.org/estimating-the-incidence-of-prediabetes-and-type-2-diabetes-among-taxi-drivers-in-indonesia.

[10] S. Siu, K. Wong, K. Lee & C. Chan, "Prevalence of undiagnosed diabetes mellitus and cardiovascular risk factors in Hong Kong professional drivers", Diabetes Research and Clinical Practice **96** (2012) 60. https://doi.org/10.1016/j.diabres.2011.12.002.

[11] M. A. Dina, A. Arshed & M. Bilal, "Diabetes mellitus in Pakistan: prevalence and preventive management strategies—a comprehensive literature review", Cardiovascular Diabetology – Endocrinology Reports **11** (2025) 24. https://doi.org/10.1186/s40842-025-00235-7.

[12] O. Odeyinka & I. Ajayi, "Prevalence of hypertension and diabetes and their determinants among commercial drivers in Ibadan metropolis, south-western Nigeria", Nigerian Journal of Cardiology **14** (2017) 75. https://doi.org/10.4103/njc.njc_11_17.

[13] S. E. Udayar, K. R. Kumar & B. A. P. Kumar, "Study of cardiovascular risk factors among transport drivers in rural area of Andhra Pradesh: Indian drivers survey", International Journal of Research in Health Sciences **2** (2015) 420. https://njcmindia.com/index.php/file/article/view/1279.

[14] J. E. Moyegbone, E. E. Oronsaye, B. Osaiyuwu & C. O. Aigbiremolen, "Risk factors and prevalence of contrast sensitivity impairment among commercial motor vehicle drivers in Benin City, Nigeria", Bioscience Review **7** (2025) 94. https://doi.org/10.32350/bsr.73.07.

[15] J. Moyegbone, E. Nwose & E. Anowa, "Prevalence of visual impairment among primary and secondary school children in Delta State, Nigeria", Journal of Nigerian Optometric Association **25** (2023) 42. https://dx.doi.org/10.4314/jnoa.v25i1.7.

[16] S. Oyeniyi & I. Ajayi, "Prevalence of hypertension and associated risk factor among interstate commercial drivers in Jabi Park Abuja", International Journal of Medicine and Medical Sciences **8** (2016) 75. https://doi.org/10.5897/IJMMS2016.1234.

[17] L. Ojewale & P. Adejumo, "Type 2 diabetes mellitus and impaired fasting blood glucose in urban south western Nigeria", International Journal of Diabetes and Metabolism **21** (2012) 1. https://doi.org/10.1159/000497720.

[18] O. Ogunmola, A. Olaifa, O. Oladapo & A. Babatunde, "Prevalence of cardiovascular risk factors among adults without obvious cardiovascular disease in a rural community in Ekiti State, southwest Nigeria", BMC Cardiovascular Disorders **13** (2013) 89. https://doi.org/10.1186/1471-2261-13-89.

[19] V. Oguoma, E. Nwose, T. Skinner & C. Digban, "Prevalence of cardiovascular disease risk factors among a Nigerian adult population: relationship with income level and accessibility to CVD risk screening", BMC Public Health **15** (2015) 397. https://doi.org/10.1186/s12889-015-1709-2.

[20] B. Kasia, A. Oyeyemi & I. Opubiri, "Prevalence and risk factors of diabetes mellitus and prediabetes in rural communities in Bayelsa State, Niger delta region of Nigeria", Niger Delta Medical Journal **4** (2020) 14. https://ndmjournal.org.ng/journal/december-2020/prevalence-and-risk-factors-of-diabetes-mellitus-and-pre-diabetes-in-rural-communities-in-bayelsa-state-niger-delta-region-of-nigeria/.

[21] O. G. Egbi & S. D. Ahmed, "Prevalence of diabetes mellitus in a rural, agrarian community in south-south Nigeria", Research Journal of Health Sciences **8** (2020) 201. https://doi.org/10.4314/rejhs.v8i3.6.

[22] O. Agofure, O. Okandeji-Barry & P. Ogbon, "Pattern of diabetes mellitus complications and co-morbidities in Ughelli north local government area, Delta State, Nigeria", Nigerian Journal of Basic and Clinical Sciences **17** (2020) 123. https://doi.org/10.4103/njbcs.njbcs_37_18.

[23] H. Oshilonya, S. Ijioma & I. Ibeh, "Prevalence of type-2 diabetes mellitus amongst suspected subjects in Agbor, Delta State, Nigeria and its relationship with age and gender", Archives of Applied Science Research **7** (2015) 18. https://api.semanticscholar.org/CorpusID:32725263.

[24] G. Arugu & O. Maduka, "Risk factors for diabetes mellitus among adult residents of a rural district in southern Nigeria: implications for prevention and control", Nigerian Journal of Clinical Practice **20** (2017) 1544. https://doi.org/10.4103/njcp.njcp_154_17.

[25] Centers for Disease Control and Prevention, "National diabetes statistics report", Available: https://www.cdc.gov/diabetes/php/data-research/index.html.

[26] A. Uloko, B. Musa, M. Ramalan & S. Gezawa, "Prevalence and risk factors for diabetes mellitus in Nigeria: a systematic review and meta-analysis", Diabetes Therapy **9** (2018) 1307. https://doi.org/10.1007/s13300-018-0441-1.

[27] American Diabetes Association, "Standards of medical care in diabetes—2022 abridged for primary care providers", Clinical Diabetes **40** (2022) 10. https://doi.org/10.2337/cd22-as01.

[28] N. Adler & J. Stewart, "Health disparities across the lifespan: meaning, methods, and mechanisms", Annals of the New York Academy of Sciences **1186** (2010) 5. https://doi.org/10.1111/j.1749-6632.2009.05337.x.

[29] J. E. Moyegbone, J. Okpoghono, A. B. Osaiyuwu & E. E. Oronsaye, "Impairment of depth perception and risk factors among commercial motor-vehicle drivers", Transportation Research Interdisciplinary Perspectives **31** (2025) 101444. https://doi.org/10.1016/j.trip.2025.101444.