



Analysis of Frequencies of the Hypertensive and Diabetic Workers among Administrative and Field Staff in Chevron Company, Nigeria

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Abstract This research analyses the frequencies of the hypertensive and diabetic workers among the administrative and field staff of Chevron Oil producing company in Nigeria. It exposes the modifiable risk factors of hypertension and diabetes. It also gives some recommendations to oil company workers on how to promote a healthy lifestyle, diet, physical activity, behaviour and disregarding the use of tobacco and alcohol.

Keywords Hypertension, Diabetes, Risk factors, Respondents, Chi square test

1. Introduction

This research is concerned with the incidence and prevalence of hypertension and diabetes among oil company workers using Chevron Company, Nigeria as a case study. The four major types of chronic diseases are cardiovascular diseases (like heart attacks and stroke), cancer, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes. These chronic diseases are of long duration and slow progression. Non-communicable diseases are estimated to account for 24% of total deaths in Nigeria and the probability of dying between ages 30 and 70 years from the four major non-communicable diseases is high. For research purposes, this study deals with Hypertension and diabetes which are the most common non-communicable diseases.

Hypertension is a chronic medical condition in which the blood pressure is elevated. It is a condition in which the arteries have persistently elevated blood pressure. It is commonly referred to as high blood pressure. Blood pressure is the force of blood pushing up against the vessel walls. If the blood pressure is high, the heart finds it difficult to pump. The blood pressure is summarized by measuring the pressure at systole or systolic pressure (when the heart contracts) and diastole or diastolic pressure (when the heart relaxes) [14]. The blood pressure is measured in millimetres of mercury (mmHg) and is recorded as two figures. The normal reading of blood pressure is 120/80 mmHg where 120 is the systolic pressure and 80 is diastolic pressure. The abnormal reading of blood pressure are readings greater or equal to 140/90 mmHg. A patient with systolic reading of 120-139 or diastolic reading of 80-89 mmHg is pre-hypertensive, systolic reading of 140-159 or diastolic reading of 90-99 mmHg is Stage 1 hypertensive and systolic reading of 160 and above or diastolic reading of 100 mmHg is Stage 2 hypertensive [1,2].

Hypertension is significantly higher in those who take alcohol and also in people with high cholesterol level [4]. They recorded a significant burden of hypertension in rural areas and age, education and cholesterol level were independent risk factors of hypertension. Physical activity such as walking not only improves fitness but also improves overall quality of life and decreases all-cause mortality [2].

Diabetes mellitus (commonly called diabetes) is a group of diseases in which a person has high blood sugar. The symptoms of diabetes include frequent urination, increased thirst, increased hunger and weight loss. Some effects of diabetes mellitus include nephropathy that may either lead to renal failure or foot ulcers, retinopathy with potential blindness, sexual dysfunction, failure of various organs etc [9,17]. A person is said to have



Diabetes when the pancreas is not producing enough insulin, or cells (islet cells of Langerhans) of the body do not respond properly to the insulin that is produced [6]. The types of diabetes mellitus include type 1, type 2 and gestational diabetes. Type 1 diabetes results when the body fails to produce insulin. This accounts for about 5-10% of people with diabetes. Type 2 diabetes results from defects in insulin secretion and it is almost always with a major contribution from insulin resistance. Gestational diabetics occur when pregnant women without a previous diagnosis of diabetes develop a high blood glucose level. Diabetic patients can be classified as impaired fasting glycaemia, impaired glucose tolerance or diabetes mellitus. A patient with 2 hour glucose of <7.8 (<140) mmol/l(mg/dl), fasting glucose of <6.1 (<110) mmol/l(mg/dl) is classified as impaired fasting glycaemia. A patient with 2 hour glucose of ≥ 7.8 (≥ 140) mmol/l(mg/dl), fasting glucose of <7.0 (<126) mmol/l(mg/dl) is classified as impaired glucose tolerance. A patient with 2 hour glucose of ≥ 11.1 (≥ 200) mmol/l(mg/dl), fasting glucose of ≥ 7.0 (≥ 126) mmol/l(mg/dl) is classified as diabetes mellitus. The glycated haemoglobin (HbA1c) is a term commonly used in relation to diabetes. Clinicians are able to get an overall picture of what our average blood sugar levels have been over a period of weeks/months using HbA1c [3]. A patient with HbA1c of <6.0 , $6.0 - 6.4$, $6.5 - 6.9$ and ≥ 7.0 are grouped normal, impaired fasting glycaemia, impaired glucose tolerance and diabetes respectively.

[15] records that diabetes (especially type 2) is an increasing problem in Africa and becoming more prevalent owing to the increasing rates of obesity, physical inactivity and urbanization. The number of new cases of diabetes in Nigeria increased between 1992 and 1997. [11] estimated the number of people worldwide with diabetes for the years 2010 and 2030 based on a larger number of studies and this indicated a growing burden of diabetes particularly in developing countries. According to [11], among adults (aged 20-27 years) 69% increase in diabetes in developing countries and 20% increase in developed countries. [15] findings indicated that diabetes will continue even if the levels of obesity remain constant. [9] recorded that about 3.8 million people in England have diabetes and it is more common in men (9.6% compared with 7.6% women) and people from south Asian and black ethnic groups are nearly twice as likely to have the disease compared with people from white, mixed or other ethnic groups, (15.2% compared to 8.0%).

Developing countries are experiencing changes in the health needs of their populations. It is projected that over the next 2 decades, there will be a rise in cardiovascular diseases mortality rates in the developing countries. Cardiovascular diseases (like hypertension) and diabetes are fast replacing infectious diseases and malnutrition as the leading causes of disability and premature death in many countries. The rate of mortality has been linked to demographic changes and progressive urbanization. [10] discussed that Nigeria has progressively witnessed changes in socio-economic level and rural-urban migration probably leading to emergence of non-communicable diseases. [16] has reported that unhealthy diet and physical inactivity as well as the use of tobacco are major global determinants of chronic disease [8]. Hypertension and diabetes are more common in the urban setting than in the rural setting. This might be because there is the syndrome of the ‘‘ready to eat meals’’ like pastries and processed foods which are high in salt and oil (with cholesterol) content due to preservatives and also high in sugar content which leads to hypertension and diabetes [8]. [16] also reported that obesity is known to cause heart disease of which about 2.5 million (3.8%) deaths occur annually. [13] discussed how understanding the risk factors for non-communicable diseases are vital in tackling the increasing prevalence in rural and urban communities. [7] observed that the blood pressure is reduced when dietary sodium intake was reduced. [5] highlighted the growing burden of non-communicable diseases in Nigeria and its relationship with globalization and recommended ways of tackling this burden.

This research analyses the frequencies of the hypertensive and diabetic workers among the administrative and field staff of an oil producing company in Nigeria. Hence, it is aimed at exposing the modifiable risk factors of hypertension and diabetes and promoting a healthy lifestyle, diet, physical activity, behaviour and disregarding the use of tobacco and alcohol. It will also aim at reducing the risk factors (if any) of hypertension and diabetics.

2. Data Collection

The data was collected from Chevron Company which is one of the largest oil producers in Nigeria and one of its largest investors. Chevron Company operates under a joint-venture arrangement with the Nigerian National Petroleum Corporation (NNPC) for the onshore and offshore assets covering approximately 2.2 million acres



(8,900 sq km) in the Niger Delta region. The company is one of the world's leading integrated energy companies. The company is involved in virtually every facet of the energy industry. Chevron Company explores for, produces and transports crude oil and natural gas; refines, markets and distributes transportation fuels and lubricants; manufactures and sells petrochemical products. The company is proud to have operated in Nigeria for five decades, contributing to the growth and prosperity of the country.

A random sample size of 237 respondents was taken from different departments in the Warri location of the Chevron Company. The company consists of both land (also called Administrative) and field staff. Both kinds of staff are exposed to the modifiable risk factors of hypertension and diabetes. Their lifestyle and work pattern both in the field and office may vary. Some take alcohol, high sodium intake (salt), are obese or physically inactive etc.

A well-structured questionnaire was administered to staff that were randomly chosen. The respondents of the questionnaires constituted of workers above 26 years residing in Delta State of Nigeria. These workers were based on the two categories of workers, field and land. The instruments used for the data collection were glucometer, sphygmomanometer, tape, weighing scale and stadiometer.

The randomly chosen staff were selected on the basis that they hadn't had their breakfast or eaten for at least 8 hours. The data was collected on different days in the mornings between 7:30 am and 8:30 am. This is because there must be at least 8 hours of fasting for a good fasting blood sugar sample and the blood pressure is more reliable before the staff go for the stress for the day. A glucometer was used to check the fasting blood sugar and 2 hours after eating and the readings were recorded as the case was. A mercury sphygmomanometer was used to check the blood pressure of the staff and the readings were recorded.

Information on the variables and possible risk factors were collected. Table 1 shows the frequencies (with percentage) of respondents with respect to the variables, subgroups, the hypertensive and diabetic status. The gender (denoted as Gender in Table 1) was recorded as either male or female. The ages (denoted as Age in Table 1) which were recorded as age groups of the respondents are 26-30, 31-35, 36-40, 41-45, 46-50, 51-55 and 56-60 years. The levels of education of the respondents were also collected. These were grouped into secondary, tertiary and post tertiary levels. The respondents were also asked the kind of work they did. They were either land or field workers. The respondents were asked if they engage in exercise and physical activities. Their responses were grouped as either yes or no. The respondents were asked if they smoked (grouped as yes or no), drank alcohol (grouped as yes or no), added salt in their diet (grouped as never, sometimes and always), how often they checked their level of blood pressure (grouped as daily, weekly, monthly and 6 monthly) and how often they checked their level of blood sugar (grouped as daily, weekly, monthly and 6 monthly).

The measurement of the hip and waist of the staff were also collected using a tape. [16] defines abdominal obesity as when the waist to hip circumference above 0.90 for males and above 0.85 for females. We will note that we were careful enough to get the correct position following the World health Organisation standard of the waist being the soft fleshy section between the last rib and the iliac crest and the hip being the widest circumference of the buttocks. The weights (in kilograms) and heights (in centimetres) of the staff were taken using weighing scale and stadiometer respectively. Hence, the Body mass index (BMI) was calculated using

$$BMI = \frac{weight}{height^2}$$

Sonu() records that BMI between 25 and 29.9 indicates overweight and 30 or higher indicates obesity. In Table 1, we have grouped BMI as normal, overweight or obesity.

3. Methodology

Data were collected from the questionnaires and analysed using R. The data collected for this study will be presented using frequency tables as shown in Table 1. We might want to test whether or not two factors presented in the frequency tables are independent. This will be done using the Chi-square test (χ^2). The hypotheses of interest are

Null hypothesis (H_0): This states that the two factors tested are independent.

Alternative hypothesis (H_1): This states that the two factors tested are not independent.



The test statistic χ^2 , p- value is calculated using

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \quad \dots \dots (1)$$

We have that r and c is the number of rows and columns respectively, O_{ij} are the observed frequencies and E_{ij} are the expected frequencies given as

$$E_{ij} = \frac{\text{corresponding column total} \times \text{row marginal total}}{\text{Grand total}}$$

The critical value is the chi-squared distribution with (r-1) (c-1) degrees of freedoms. We compare the calculated value from Equation (1) with the critical value of the Chi square test χ^2_{α} with the specified degree of freedom. We reject the null hypothesis and accept the alternative hypothesis if the calculated chi-square value is greater than the critical value or the p value (that the probability, $P(\chi^2 > \chi^2_{\alpha})$) is less than the alpha, α . We accept the null hypothesis and reject the alternative hypothesis if the calculated chi-square value is lesser than the critical value or the p value is greater than alpha (0.05 in our case).

4. Results and Discussion

Data analysis was done using R. We have 150 (63.3%) of the respondents were males and 87 (36.7%) were females. Of the 150 males, 70% of these respondents had normal blood pressure while 14.6%, 12.6% and 2.6% of the male respondents were grouped as pre – hypertensive, stage 1 hypertensive and stage 2 hypertensive respectively. And of the 87 females, 60.9% of these respondents had normal blood pressure while 19.5%, 19.5% and 0% of the female respondents were grouped as pre – hypertensive, stage 1 hypertensive and stage 2 hypertensive respectively. More of the proportion of males had normal blood pressure.

We have that 74.6% of the male respondents had normal blood sugar level. None of the males had type 1 diabetes but 25.4% had type 2 diabetes. Of the 87 female respondents, 4.6% had gestational diabetes. About 64.4% of the females had normal blood sugar level while 2.3% and 28.7% had type 1 and type 2 diabetes respectively. The proportion of type diabetes in both males and females seem to be close. The Chi square test of independence was further used to check for association between gender and either blood pressure or blood sugar level. From Table 1, we had a χ^2 test value of 5.5085 and p-value of 0.1381 for the blood pressure level. There is no association between gender and blood pressure level. There was association between gender and blood sugar level. Hence, gender and blood sugar level are dependent.

We had 21 respondents from age group 26-30, 43 respondents for age group 31-35, 23 respondents for age group 36-40, 85 respondents for age group 41-45, 42 respondents for age group 46-50, 25 respondents for age group 51-55 and 2 respondents for age group 56-60. Age group 41-45 had the most respondents while 56-60 had the least respondents. All respondents in age group 26-30 had normal blood pressure and sugar level. We have that 21.2% of age group 41-45, 26.2% of age group 46-50 and 28% of age group 51-55 respondents were stage 1 hypertensive. We have that 62.8% of the respondents that fall in the age group 31-35 had normal blood sugar level while 32.5% of this group had type 2 diabetes. Also, 31.8%, 16.2% and 52% of age groups 41-45, 46-50 and 51-55 respectively had type 2 diabetes. The Chi square test of independence was further used to check for association between age group and either blood pressure or blood sugar level. From Table 1, we had a p-value of 0.000 for the blood pressure level. There is association between age group and blood pressure level. There was association between age group and blood sugar level. Hence, age group and either blood pressure or sugar level are dependent.

Of the 237 respondents, 20 had secondary school educational level, 217 had tertiary educational level while there was no respondent who had post tertiary education. From Table 1, we have that 30% of the respondents with secondary educational level were stage 1 hypertensive while 13.8% of the respondents with tertiary education were stage 1 hypertensive. We have also used the Chi square test of independence to check for association between educational level and either blood pressure or blood sugar level. From Table 1, we had p-value of 0.2385 for the blood pressure level. There is no association between the educational level of the respondent and blood pressure level. There is also no association between the educational level and blood sugar level. Hence, educational level and blood pressure or sugar level are independent.



Of the 237 respondents, 73 were field workers while 164 were administrative or land workers. From Table 1, we have that 21.9% of the respondents that worked in the field were pre-hypertensive and 21.9% were stage 1. We also had that 14.1% of the land workers were pre-hypertensive while 12.2% were stage 1 hypertensive. From Table 1, we had p-value of 0.3539 for the blood pressure level. There is no association between the kind of work of the respondent and blood pressure level. There is also no association between the kind of work and blood sugar level. Hence, the kind of work carried out by the worker and blood pressure or sugar level are independent.

We have that 28 of the respondents do exercise or physical activity. All of these respondents had normal blood pressure level, 53.6% of them also had normal blood sugar level and the remaining 46.4% were type 2 diabetic. We have that of the 209 respondents who do exercise, 73.2% had normal blood sugar level and 23.9% had type 2 diabetes. From Table 1, a p-value of 0.0012 for blood pressure showed that doing physical activity and the blood pressure level were dependent. It is also obvious that doing physical activity and blood sugar level are independent.

We have that 18 of the respondents smoked tobacco. All of these respondents were stage 1 hypertensive. Also all of these respondents had normal blood sugar. From Table 1, a p-value of 0.0019 for blood pressure showed that smoking was associated with the blood pressure level. It is also obvious that smoking was also associated with the blood sugar level.

Of the 237 respondents, 75 drank alcohol and 25.3% of them had pre-hypertension, 26.6% had stage 1 hypertension and 2.6% had stage 2 hypertension. From Table 1, we had p-value of 0.000 for the blood pressure level. There is association between drinking alcohol and blood pressure level. There is also no association between drinking alcohol and blood sugar level.

We have that 2 of the respondents never added salt to their diets. Both respondents had normal blood pressure and type 1 diabetes. About 227 of them sometimes added salt to their diet. We have that 13.7% of them were pre-hypertensive and 15.9% were stage 1 hypertensive. From Table 1, a p-value of 0.000 for blood pressure showed that adding salt to diets was associated with the blood pressure level. It is also obvious that adding salt to diets was also associated with the blood sugar level.

From Table 1, none of the respondents checked the blood pressure daily or weekly. We have that 63.4% of respondents that checked their blood pressure monthly have normal blood pressure while 13.4% are pre-hypertensive. Also, 70.9% of respondents that checked their blood pressure every 6 months have normal blood pressure while 20.4% are pre-hypertensive. From Table 1, a p-value of 0.016 for blood pressure showed the attitude in which the blood pressure is checked is associated with the blood pressure level. It is also obvious that the attitude in which the blood pressure is checked is not associated with the blood sugar level.

From Table 1, none of the respondents checked the blood sugar daily and 2 respondents checked weekly. These 2 respondents have type 1 diabetes. We have that 69.3% of respondents that checked their blood sugars monthly are pre-hypertensive, 3.5% have gestational diabetes, 69.3% have normal blood sugar and 27.2% have type 2 diabetes. Also, 73.6% of respondents that checked their blood sugar level every 6 months have normal blood sugar level while 26.4% have type 2 diabetes. From Table 1, a p-value of 0.1385 for blood pressure showed the attitude in which the blood sugar is checked is not associated with the blood pressure level. It is also obvious that the attitude in which the blood sugar is checked is associated with the blood sugar level.

Of the 237 respondents, 109 had normal BMI, 95 were overweight and 33 had obesity. We have that 67.9% of those with normal BMI had normal blood pressure, 22.9% had pre-hypertension, 5.5% had stage 1 hypertension and 3.7% had stage 2 hypertension. We also have that 71.6% of the overweight respondents had normal blood pressure, 6.3% had pre-hypertension and 22.1% had stage 1 hypertension. We have that 48.5% of the respondents who had obesity had normal blood pressure, 24.2% had pre-hypertension and 27.3% had stage 1 hypertension. Also, 89% of the respondents who had normal BMI had normal blood sugar level, 9.2% had type 2 diabetes. We have that of the 95 respondents that were overweight, 42.1% had type 2 diabetes and 12.1% of respondents who had obesity had gestational diabetes and 39.4% had type 2 diabetes. From Table 1, we had p-value of 0.000 for both the blood pressure and sugar level. There is association between the BMI of the respondent and blood pressure level. There is also association between the BMI and blood sugar level.



When respondents fasting blood sugar were checked, 4(2%) who said they were not diabetic had gestational diabetes and 48(24%) had type 2 diabetes. Of those who said they are not hypertensive, 32(16.4%) had pre-hypertension and 20(10.3%) had stage 1 hypertension.

Table 1: The frequencies (with percentage) of respondents with respect to the variables, subgroups, the hypertensive and diabetic status and results from χ^2 test

SN	gender	age	Edu	diabetes	Bp	Rdia	Rbp	work	exer	smoke	alcohol	salt	Check bp	Check sugar	bmi
1	Male	31-35	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
2	Female	41-45	ter	no	no	type2	prehy	land	no	no	no	many	6mnths	6mnths	obes
3	Male	51-55	ter	no	yes	type2	stge1	field	no	no	yes	some	1mnth	6mnths	obes
4	Male	46-50	ter	no	no	nor	stge1	field	no	yes	yes	some	6mnths	6mnths	nor
5	Male	41-45	ter	yes	yes	nor	nor	land	no	no	no	some	1mnth	6mnths	nor
6	Female	41-45	sec	no	no	type2	stge1	land	no	no	no	some	1mnth	1mnth	overw
7	Male	36-40	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
8	Male	31-35	ter	yes	no	type2	nor	field	yes	no	yes	some	6mnths	6mnths	overw
9	Female	41-45	ter	no	yes	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
10	Female	46-50	ter	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
11	Male	41-45	sec	no	no	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw
12	Female	31-35	ter	yes	no	type1	nor	land	no	no	no	neve	1mnth	week	nor
13	Male	41-45	ter	no	no	nor	nor	field	no	yes	yes	some	1mnth	1mnth	overw
14	Female	36-40	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
15	Female	41-45	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
16	Male	41-45	sec	no	no	type2	stge1	land	no	no	no	some	1mnth	1mnth	overw
17	Male	46-50	ter	no	no	nor	nor	land	no	no	no	some	6mnths	1mnth	overw
18	Female	41-45	ter	no	no	type2	stge1	land	no	no	no	some	6mnths	6mnths	overw
19	Female	41-45	sec	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	overw
20	Male	41-45	ter	no	no	type2	stge1	land	no	no	yes	some	1mnth	1mnth	overw
21	Male	51-55	ter	no	no	nor	nor	field	no	no	yes	some	1mnth	6mnths	obes
22	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
23	Male	51-55	ter	no	no	nor	nor	field	no	no	no	some	1mnth	6mnths	obes
24	Male	31-35	ter	no	no	type2	nor	land	yes	no	yes	some	6mnths	6mnths	overw
25	Female	41-45	ter	no	no	nor	prehy	land	no	no	no	many	6mnths	6mnths	obes
26	Male	51-55	ter	no	yes	type2	stge1	field	no	no	no	some	1mnth	6mnths	obes
27	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
28	Male	41-45	ter	yes	yes	nor	stge2	land	no	no	yes	some	1mnth	6mnths	nor
29	Female	41-45	sec	no	no	type2	stge1	land	no	no	no	some	1mnth	1mnth	overw
30	Male	36-40	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
31	Male	31-35	ter	yes	no	nor	nor	field	yes	no	yes	some	6mnths	6mnths	overw
32	Female	41-45	ter	no	yes	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
33	Female	46-50	ter	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
34	Male	31-35	ter	no	no	type2	nor	land	yes	no	no	some	6mnths	6mnths	overw
35	Female	41-45	ter	no	no	nor	prehy	land	no	no	no	many	6mnths	6mnths	obes
36	Male	51-55	ter	no	yes	type2	nor	field	no	no	yes	some	1mnth	6mnths	obes
37	Male	46-50	ter	no	no	nor	nor	field	no	yes	yes	some	6mnths	6mnths	nor

38	Male	41-45	ter	yes	yes	nor	nor	land	no	no	no	some	1mnth	6mnths	nor
39	Female	41-45	sec	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
40	Male	36-40	ter	no	no	nor	nor	land	yes	no	yes	some	6mnths	6mnths	overw
41	Male	31-35	ter	yes	no	type2	nor	field	yes	no	no	some	6mnths	6mnths	overw
42	Female	41-45	ter	no	yes	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
43	Female	46-50	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
44	Male	46-50	ter	no	no	type2	nor	land	yes	no	no	some	6mnths	6mnths	overw
45	Male	51-55	ter	yes	no	type2	nor	field	no	no	yes	some	6mnths	6mnths	nor
46	Male	46-50	ter	no	no	nor	stge1	field	no	yes	no	some	6mnths	6mnths	nor
47	Female	41-45	ter	no	yes	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
48	Female	46-50	ter	no	no	nor	prehy	land	no	no	no	some	1mnth	1mnth	overw
49	Male	41-45	sec	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	overw
50	Female	41-45	ter	no	yes	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
51	Female	46-50	ter	no	no	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
52	Male	41-45	sec	no	no	type2	nor	land	no	no	yes	some	1mnth	1mnth	overw
53	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
54	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
55	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
56	Male	51-55	ter	yes	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
57	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	obes
58	Male	51-55	ter	yes	no	nor	prehy	field	no	no	no	some	1mnth	1mnth	nor
59	Male	46-50	ter	no	no	nor	nor	field	no	no	no	some	6mnths	6mnths	nor
60	Male	41-45	ter	no	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
61	Male	31-35	ter	no	no	type2	nor	land	yes	no	yes	some	6mnths	6mnths	overw
62	Female	41-45	ter	no	no	nor	prehy	land	no	no	no	many	6mnths	6mnths	obes
63	Male	51-55	ter	no	yes	nor	stge1	field	no	no	yes	some	1mnth	6mnths	obes
64	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
65	Male	41-45	ter	yes	yes	nor	stge2	land	no	no	no	some	1mnth	6mnths	nor
66	Female	41-45	sec	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
67	Male	36-40	ter	no	no	nor	nor	land	yes	no	yes	some	6mnths	6mnths	overw
68	Male	31-35	ter	yes	no	nor	nor	field	yes	no	no	some	6mnths	6mnths	overw
69	Female	41-45	ter	no	yes	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
70	Female	46-50	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
71	Male	41-45	sec	no	no	type2	nor	land	no	no	yes	some	1mnth	1mnth	overw
72	Female	31-35	ter	yes	no	type1	nor	land	no	no	no	neve	1mnth	week	nor
73	Male	41-45	ter	no	no	nor	stge1	field	no	yes	yes	some	1mnth	1mnth	overw
74	Female	36-40	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
75	Female	41-45	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
76	Male	41-45	sec	no	no	type2	nor	land	no	no	yes	some	1mnth	1mnth	overw
77	Male	46-50	ter	no	no	nor	nor	land	no	no	yes	some	6mnths	1mnth	overw
78	Female	41-45	ter	no	no	type2	nor	land	no	no	no	some	6mnths	6mnths	overw
79	Female	41-45	sec	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	overw
80	Male	41-45	ter	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	overw



81	Male	51-55	ter	no	yes	type2	nor	field	no	no	no	some	1mnth	6mnths	obes
82	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
83	Male	51-55	ter	no	yes	nor	stge1	field	no	no	no	some	1mnth	6mnths	obes
84	Male	31-35	ter	no	no	type2	nor	land	yes	no	yes	some	6mnths	6mnths	overw
85	Female	41-45	ter	no	no	nor	prehy	land	no	no	no	many	6mnths	6mnths	obes
86	Male	51-55	ter	no	yes	nor	nor	field	no	no	yes	some	1mnth	6mnths	obes
87	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
88	Male	41-45	ter	yes	yes	nor	nor	land	no	no	no	some	1mnth	6mnths	nor
89	Female	41-45	sec	no	no	type2	stge1	land	no	no	yes	some	1mnth	1mnth	overw
90	Male	36-40	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
91	Male	31-35	ter	yes	no	type2	nor	field	yes	no	no	some	6mnths	6mnths	overw
92	Female	41-45	ter	no	yes	type2	stge1	land	no	no	no	some	1mnth	1mnth	overw
93	Female	46-50	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
94	Male	31-35	ter	no	no	type2	nor	land	yes	no	yes	some	6mnths	6mnths	overw
95	Female	41-45	ter	no	no	nor	prehy	land	no	no	no	many	6mnths	6mnths	obes
96	Male	51-55	ter	no	yes	type2	stge1	field	no	no	yes	some	1mnth	6mnths	obes
97	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
98	Male	41-45	ter	yes	yes	nor	stge2	land	no	no	no	some	1mnth	6mnths	nor
99	Female	41-45	sec	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
100	Male	36-40	ter	no	no	nor	nor	land	yes	no	yes	some	6mnths	6mnths	overw
101	Male	31-35	ter	yes	no	type2	nor	field	yes	no	no	some	6mnths	6mnths	overw
102	Female	41-45	ter	no	yes	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
103	Female	46-50	ter	no	no	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
104	Male	46-50	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
105	Male	51-55	ter	yes	no	type2	nor	field	no	no	yes	some	6mnths	6mnths	nor
106	Male	46-50	ter	no	no	nor	stge1	field	no	yes	yes	some	6mnths	6mnths	nor
107	Female	41-45	ter	no	yes	nor	stge1	land	no	no	no	some	1mnth	1mnth	overw
108	Female	46-50	ter	no	no	type2	prehy	land	no	no	no	some	1mnth	1mnth	overw
109	Male	41-45	sec	no	no	nor	prehy	land	no	no	yes	some	1mnth	1mnth	overw
110	Female	41-45	ter	no	yes	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
111	Female	46-50	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
112	Male	41-45	sec	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	overw
113	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
114	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
115	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
116	Male	51-55	ter	yes	no	type2	prehy	field	no	no	yes	some	6mnths	6mnths	nor
117	Male	46-50	ter	no	no	nor	stge1	field	no	yes	no	some	6mnths	6mnths	obes
118	Male	51-55	ter	yes	no	type2	prehy	field	no	no	no	some	1mnth	1mnth	nor
119	Male	46-50	ter	no	no	nor	stge1	field	no	no	yes	some	6mnths	6mnths	nor
120	Male	41-45	ter	no	no	nor	prehy	field	no	no	no	some	6mnths	6mnths	nor
121	Male	46-50	ter	no	no	nor	nor	field	no	no	no	some	1mnth	1mnth	overw
122	Female	41-45	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	obes
123	Male	41-45	ter	no	no	nor	prehy	field	no	no	no	some	6mnths	6mnths	nor



124	Male	46-50	ter	no	no	nor	nor	field	no	no	yes	some	1mnth	1mnth	overw
125	Female	41-45	ter	no	no	type2	nor	land	no	no	no	some	6mnths	6mnths	obes
126	Male	41-45	ter	no	no	nor	prehy	field	no	no	no	some	6mnths	6mnths	nor
127	Male	46-50	ter	no	no	nor	nor	field	no	no	yes	some	1mnth	1mnth	overw
128	Female	41-45	ter	no	no	type2	nor	land	no	no	no	some	6mnths	6mnths	obes
129	Male	41-45	ter	no	no	nor	prehy	field	no	no	no	some	6mnths	6mnths	nor
130	Male	41-45	ter	no	no	nor	nor	field	no	no	yes	some	1mnth	1mnth	overw
131	Female	41-45	ter	no	no	type2	nor	land	no	no	no	some	6mnths	6mnths	obes
132	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
133	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
134	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
135	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
136	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
137	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
138	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
139	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
140	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
141	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
142	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
143	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
144	Male	56-60	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
145	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
146	Female	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
147	Female	36-40	ter	yes	yes	type2	prehy	land	no	no	no	some	1mnth	1mnth	nor
148	Female	36-40	ter	yes	yes	nor	prehy	land	no	no	no	some	1mnth	1mnth	nor
149	Female	36-40	ter	yes	yes	type2	nor	land	no	no	no	some	1mnth	1mnth	nor
150	Male	41-45	ter	no	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
151	Male	41-45	ter	no	no	type2	nor	field	no	no	yes	some	1mnth	1mnth	overw
152	Female	41-45	ter	no	no	Gest	nor	land	no	no	no	some	1mnth	1mnth	obes
153	Male	41-45	ter	yes	yes	nor	nor	land	yes	no	no	some	1mnth	1mnth	overw
154	Female	41-45	ter	no	no	Gest	nor	land	no	no	no	some	1mnth	1mnth	obes
155	Male	31-35	ter	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	nor
156	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
157	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
158	Male	31-35	ter	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	nor
159	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
160	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
161	Female	31-35	ter	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	nor
162	Female	31-35	ter	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
163	Male	31-35	ter	no	no	nor	nor	land	no	no	yes	some	1mnth	1mnth	nor
164	Male	31-35	ter	no	no	type2	nor	field	no	no	no	some	1mnth	1mnth	nor
165	Male	31-35	ter	no	no	nor	nor	field	no	no	yes	some	1mnth	1mnth	nor
166	Male	51-55	ter	yes	yes	type2	prehy	land	no	no	yes	some	1mnth	1mnth	nor



167	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
168	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
169	Male	51-55	ter	no	no	nor	prehy	land	no	no	yes	some	1mnth	1mnth	nor
170	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
171	Female	36-40	ter	yes	yes	nor	prehy	land	no	no	yes	some	1mnth	1mnth	nor
172	Female	36-40	ter	yes	yes	nor	prehy	land	no	no	yes	some	1mnth	1mnth	nor
173	Female	36-40	ter	yes	yes	nor	prehy	land	no	no	yes	some	1mnth	1mnth	nor
174	Male	41-45	ter	no	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
175	Male	41-45	ter	no	no	type2	nor	field	no	no	no	some	1mnth	1mnth	overw
176	Female	41-45	ter	no	no	Gest	nor	land	no	no	no	some	1mnth	1mnth	obes
177	Male	41-45	ter	yes	yes	nor	nor	land	yes	no	no	some	1mnth	1mnth	overw
178	Female	41-45	ter	no	no	Gest	nor	land	no	no	no	some	1mnth	1mnth	obes
179	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
180	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
181	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
182	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
183	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
184	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
185	Female	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
186	Female	31-35	ter	no	no	type2	prehy	land	no	no	yes	some	1mnth	1mnth	overw
187	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
188	Male	31-35	ter	no	no	nor	nor	field	no	no	no	some	1mnth	1mnth	nor
189	Male	31-35	ter	no	no	nor	nor	field	no	no	no	some	1mnth	1mnth	nor
190	Male	51-55	ter	yes	yes	type2	prehy	land	no	no	yes	some	1mnth	1mnth	nor
191	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
192	Male	36-40	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
193	Male	51-55	ter	no	no	nor	prehy	land	no	no	yes	some	1mnth	1mnth	nor
194	Male	31-35	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	nor
195	Female	41-45	ter	no	no	type2	prehy	land	no	no	yes	many	6mnths	6mnths	obes
196	Male	51-55	ter	no	yes	type2	stge1	field	no	no	yes	some	1mnth	6mnths	obes
197	Male	46-50	ter	no	no	nor	nor	field	no	yes	no	some	6mnths	6mnths	nor
198	Male	41-45	ter	yes	yes	nor	stge2	land	no	no	yes	some	1mnth	6mnths	nor
199	Female	41-45	sec	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
200	Male	36-40	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
201	Male	31-35	ter	yes	no	type2	nor	field	yes	no	no	some	6mnths	6mnths	overw
202	Female	41-45	ter	no	yes	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw
203	Female	46-50	ter	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
204	Male	31-35	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
205	Female	41-45	ter	no	no	type2	prehy	land	no	no	no	many	6mnths	6mnths	obes
206	Male	51-55	ter	no	yes	nor	stge1	field	no	no	yes	some	1mnth	6mnths	obes
207	Male	46-50	ter	no	no	nor	stge1	field	no	yes	yes	some	6mnths	6mnths	nor
208	Male	41-45	ter	yes	yes	nor	nor	land	no	no	no	some	1mnth	6mnths	nor
209	Female	41-45	sec	no	no	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw

210	Male	36-40	ter	no	no	nor	nor	land	yes	no	no	some	6mnths	6mnths	overw
211	Male	31-35	ter	yes	no	type2	nor	field	yes	no	yes	some	6mnths	6mnths	overw
212	Female	41-45	ter	no	yes	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw
213	Female	46-50	ter	no	no	nor	nor	land	no	no	no	some	1mnth	1mnth	overw
214	Male	46-50	ter	no	no	type2	nor	land	yes	no	no	some	6mnths	6mnths	overw
215	Male	51-55	ter	yes	no	nor	nor	field	no	no	yes	some	6mnths	6mnths	nor
216	Male	46-50	ter	no	no	nor	stge1	field	no	yes	yes	some	6mnths	6mnths	nor
217	Female	41-45	ter	no	yes	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw
218	Female	46-50	ter	no	no	nor	prehy	land	no	no	no	some	1mnth	1mnth	overw
219	Male	41-45	sec	no	no	nor	prehy	land	no	no	yes	some	1mnth	1mnth	overw
220	Female	41-45	ter	no	yes	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
221	Female	46-50	ter	no	no	nor	stge1	land	no	no	yes	some	1mnth	1mnth	overw
222	Male	41-45	sec	no	no	type2	nor	land	no	no	no	some	1mnth	1mnth	overw
223	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
224	Female	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
225	Male	26-30	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	nor
226	Male	51-55	ter	yes	no	type2	prehy	field	no	no	yes	some	6mnths	6mnths	nor
227	Male	46-50	ter	no	no	nor	stge1	field	no	yes	yes	some	6mnths	6mnths	obes
228	Male	51-55	ter	yes	no	nor	prehy	field	no	no	no	some	1mnth	1mnth	nor
229	Male	46-50	ter	no	no	nor	nor	field	no	no	no	some	6mnths	6mnths	nor
230	Male	41-45	ter	no	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
231	Male	41-45	ter	no	no	type2	nor	field	no	no	no	some	1mnth	1mnth	overw
232	Female	41-45	ter	no	no	nor	nor	land	no	no	no	some	6mnths	6mnths	obes
233	Male	41-45	ter	no	no	nor	prehy	field	no	no	no	some	6mnths	6mnths	nor
234	Male	46-50	ter	no	no	type2	nor	field	no	no	no	some	1mnth	1mnth	overw
235	Female	41-45	ter	no	no	type2	nor	land	no	no	no	some	6mnths	6mnths	obes
236	Male	41-45	ter	no	no	nor	prehy	field	no	no	yes	some	6mnths	6mnths	nor
237	Male	41-45	ter	no	no	type2	nor	field	no	no	no	some	1mnth	1mnth	overw

5. Conclusion and Recommendation

This research analyses the frequencies of the hypertensive and diabetic workers among the administrative and field staff of Chevron Oil producing company in Nigeria. It aimed at promoting a healthy lifestyle, diet, physical activity, behaviour and disregarding the use of tobacco and alcohol. The research aimed at reducing and exposing the risk factors of hypertension and diabetics to the staff of the company. Information on the variables and possible risk factors were collected from results of questionnaires.

In this research, we found out that more of the proportion of males had normal blood pressure. It is advisable that staff of the company is encouraged to own an electronic sphygmomanometer so that they can often check their blood pressure. This research also shows that there is a relationship between age and either blood pressure or sugar level. The educational level and blood pressure or sugar level were found to be independent. We found out that the kind of work done by the oil worker is independent of either the blood pressure or sugar level but rather they should be encouraged to find time before or after work to do exercise or physical activities since the blood pressure was found out to be associated with doing physical activity or exercise. The research also shows that the blood pressure is associated with both smoking and drinking alcohol. It is also obvious that adding salt to diets was also associated with the blood pressure level. It is also obvious that the attitude in which the blood pressure is checked is not associated with the blood sugar level. Also, the attitude in which the blood sugar is

checked is associated with the blood sugar level of the workers but not the blood pressure of the worker. It was found out that the BMI is very much associated with the blood pressure and sugar level of the respondent. It is also very clear some respondents who said that they were not diabetic had either gestational or type 2 diabetes and some of those who said they were not hypertensive had either pre-hypertension or stage 1 hypertension.

We should note that developing Type 2 diabetes is not an inevitable part of aging. It is known that the risk of hypertension and diabetes is quite high among the workers in the oil sector. It is recommended that good and relevant information or seminars on risk factors and healthy lifestyles be given to all staff of the company. It is also required that information on the causes and how to avoid hypertension and diabetes be taught. The nature of the job carried out by the workers and lacks of exercise or physical activity result in having a larger part of the population to be obese. There are some certain risk factors that cause complications which is associated with obesity. Staff should be taught how to adopt and follow healthy lifestyle such as types of food to buy and how to prepare meals, etc. It is also recommended that in cases where the risk factors are not modifiable, preventive measures are encouraged to prevent complications which may cause premature death. This research recommends that workers should eat our traditional fibre rich meals with minimal fat and sparing protein and avoid eating the foreign made energy dense meals with high amount of salt (used for preservation), high amount of sugar. It is possible that those who never add raw salt to their diet take in highly salted meals. This research also recommends that workers eat less from fast food and prepare their home made food and in cases where they are unable to prepare, they should encourage fast food eateries to make local high fibre low at meals. It is also required that they drink less of drinks with sugar content and eat more of vegetables and natural fruits.

It is recommended that workers engage themselves in physical activities to reduce obesity, high blood pressure and diabetes. The respondent may be a healthy eater in that he takes more of high fibre diets that high calorie or refined diet. It is possible that some workers are healthy eater and take more of high fibre or refined diet. It is also recommended that workers who use tobacco or drink alcohol are advised to stop since these are major risk factors to hypertension and bad health conditions in general. Workers of the company relatively higher income and indulge in high salt, high calorie and refined sugar containing meals.

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