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Relationship between Low Back Pain and Selected Anthropometric Parameters

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ABSTRACT
This study was done to evaluate the relationship between low back pain (LBP) duration and selected anthropometric parameters. A total of 990 Participants, comprising 685 male and 305 female subjects were recruited by convenient purposive sampling method after detailed explanation of research procedure and informed consent. The following parameters were measured; height, weight, waist circumference and hip circumference. Results were presented in descriptive statistics for measured anthropometric parameters. Analysis of variance (ANOVA) and chi-square (X^2) tests were done to determine the relationship between low back pain and the anthropometric variables. There was significant association between occupation, age and duration of LBP, in particular, for periods between 3 and 12 months. In addition, the variables; occupation, body mass index (BMI) and age (in categories), showed significant association with LBP, while for waist hip ratio (WHR) statistically significant difference was observed for 3, 6 and 9 months. The differences between sex and duration of LBP were not statistically significant.
These findings will be useful to orthopedic and trauma surgeons as well as Occupational health physicians in the management of low back pain.

Key words: Low Back Pain, occupation, age, WHR, BMI

INTRODUCTION
Low back pain has become a public health issue with remarkable social and economic implications. It involves many factors in terms of etiology since it occurs in different groups and in working populations. In clinical anatomy, low back pain (LBP) may be defined as pain and discomfort below the lower back and frequently involves a number of anatomical structures. [1]

Studies on LBP have established that it is a major cause of absenteeism and income loss at personal, family and country levels. [2], [3] It is one of the reasons for most hospital visits with an estimated 6-7% of adult populations consulting a general practitioner annually. It has also been estimated that up to 60-80% of population will at some point in their lives, experience back pain. [4]

As part of the Global Burden of Disease Study (GBD) 2010, Expert Group showed that low back pain is among the top ten high burden diseases and injuries, with an average number of DALYs (disability-adjusted life years) higher than HIV, tuberculosis, lung cancer and preterm birth complications. [5]

A number of factors such as neoplasm or infection as well as pregnancy can cause low back pain. Nearly half of all pregnant women report pain in the lower back or sacral area during pregnancy, due to changes in their posture and center of gravity causing muscle and ligament strain. [6] In most cases (85 – 95%), the specific cause of low back pain is unknown. [7]

LBP can be classified according to duration into acute, sub-chronic or chronic. [9], [10] The specific duration required to meet each of these is not universally agreed upon, but generally pain lasting less than six weeks is classified as acute, pain lasting six to twelve weeks is sub-chronic, and more than twelve weeks is chronic. [11], [12] This study was therefore carried out to determine how anthropometric indices of body proportion correlate with duration of low back pain among workers in Port Harcourt between the age of 19-65years.

MATERIALS AND METHODS
Study Design: The study was a cross sectional survey involving 990 randomly selected participants subdivided into four group of workers; 190 farmers (91 males; 99 females), 200 technicians (all males), 200 drivers (all males), 200 office workers (97 males; 103 females) and a control group made up of 200 subjects (97 males; 103 females) within the age of 19 – 65 years.
Subjects were recruited from Mechanic village Elekahia, Rumokoro and Mile One motor park, Rivers State secretariat complex, Moscow Road Lagos, Rumuola secretariat and University of Port

Harcourt. Subjects were again divided into four groups based on age, that is, 19-29,29-39, 39-49, 50 + years. A Modified Standardized Nordic questionnaire was used to collect data on duration of low back pain, and anthropometric indices.

Inclusion Criteria

1. Only Nigerian workers within the stipulated age range (19 – 65 years) were selected.

Exclusion Criteria

1. Volunteers with acquired or congenital musculo-skeletal disorders were excluded.
2. Those with congenital deformities of the spine were excluded.
3. Other volunteers with devices and implants were excluded.

Procedure

The questionnaire used in the current study was a slightly modified version of the "Standardized Nordic Questionnaire" on LBP. An illustrated part was added to collect information on LBP. The questions about low back pain during the past 3 months, during the past 6 months, past 9 month, and during the past 12 months were phrased with dichotomized answer alternatives "yes" and "no". The following information was provided: Sociodemographic data: age, sex, occupation. were collected.

Following standard protocol, the following anthropometric variables were measured: weight was measured in kilograms (kg) using a weighing scale, height was measured in meters (m) using a stadiometer. Measurements were done to the nearest 0.01m for height and 0.01 kg for weight. Body Mass Index (BMI) was calculated using following expression;

$$BMI = \frac{weight\ (kg)}{(height\ )^2} = kg/m^2$$

Waist circumference was measured using a tape placed at the mid axillary line while the subject is in a standing position. Hip circumference was measured in centimeter (cm) as the widest area of the hip using a tape.

Waist-to-hip ratio was determined by dividing waist circumference by hip circumference;

WHR = WC/HC.

Data Analysis: Data was analyzed using SPSS (Statistical Package for the Social Sciences) version 22.0 and Microsoft Excel 2013 Edition. Continuous variables were summarized in descriptive statistics. Chi square analysis was done to establish the relationships between low back pain duration and measured categorical variables. ANOVA (analysis of variance) was done to determine the relationship between measured variables and occupation, followed by post hoc (Dunnet) test (in the case of significant differences).

RESULTS

Descriptive Statistics

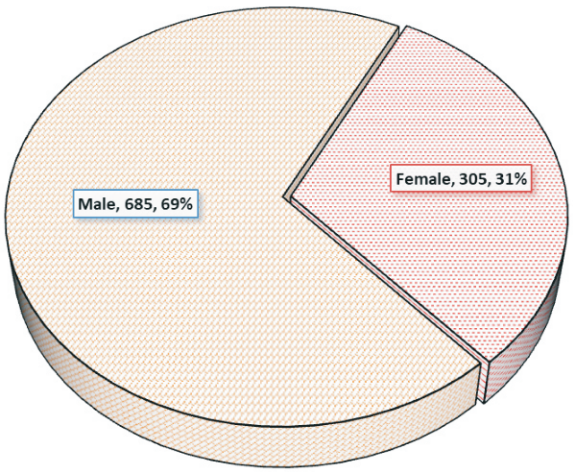

Figure 1: shows the sex distribution of the samples.

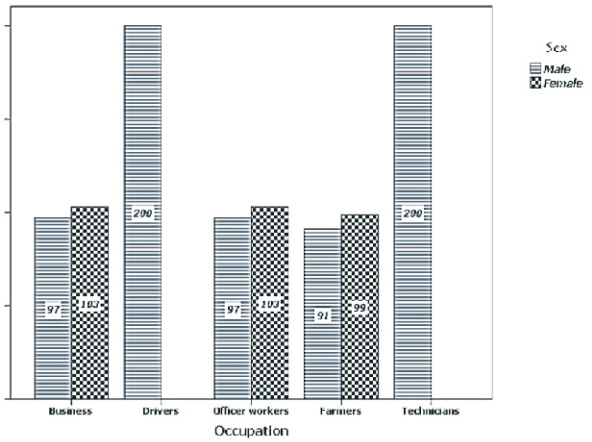

Figure 2: shows distribution of job description by sex.

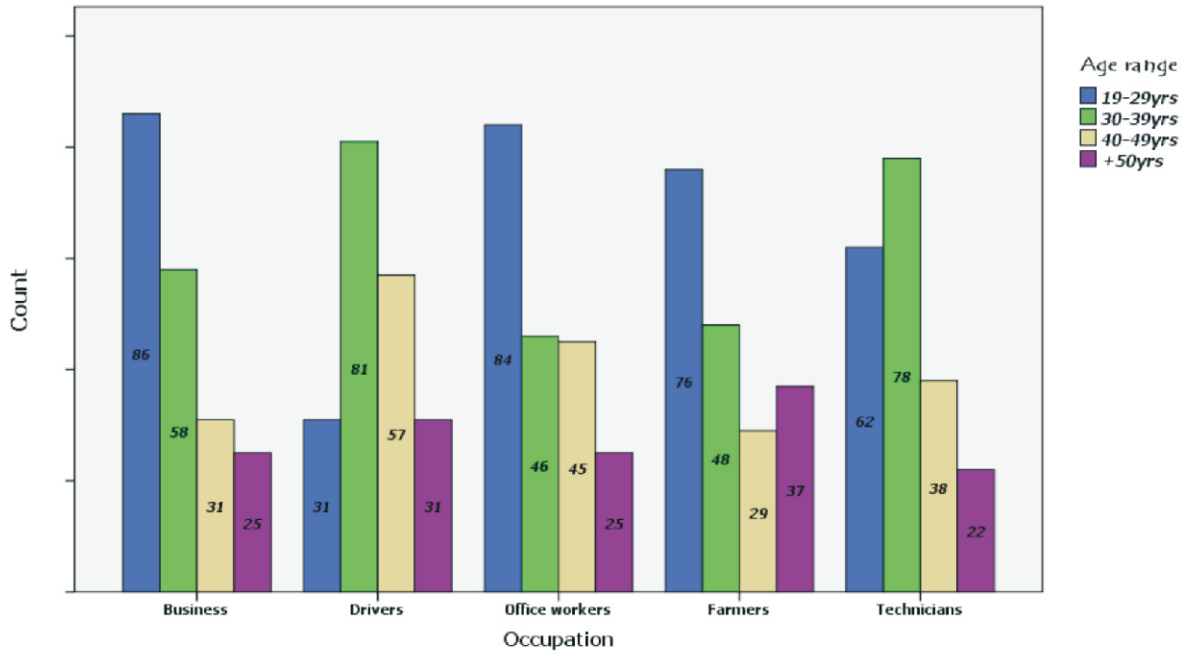

Figure 3: shows the distribution of job description by age group.

Inferential Statistics

Table 1: Test of association between job description and age of workers

		Age range				Total	Chi-square test			
		19-29yrs	30-39yrs	40-49yrs	+50yrs		df	Chi-Square value	P value (2-sided)	Inference
Business	Count	86 (8.7%)	58 (5.9%)	31 (3.1%)	25 (2.5%)					
	% within Occupation	43.00 %	29.00 %	15.50 %	12.50 %	200 (20.2%)				
	% within Age range	25.40 %	18.60 %	15.50 %	17.90 %					
Drivers	Count (%)	31 (3.1%)	81 (8.2%)	57 (5.8%)	31 (3.1%)					
	% within Occupation	15.50 %	40.50 %	28.50 %	15.50 %	200 (20.2%)				
	% within Age range	9.10%	26.00 %	28.50 %	22.10 %					
Officer workers	Count (%)	84 (8.5%)	46 (4.6%)	45 (4.5%)	25 (2.5%)					
	% within Occupation	42.00 %	23.00 %	22.50 %	12.50 %	200 (20.2%)	12	65.256	<0.0001	Significant association
	% within Age range	24.80 %	14.80 %	22.50 %	17.90 %					
Farmers	Count (%)	76 (7.7%)	48 (4.8%)	29 (2.9%)	37 (3.7%)					
	% within Occupation	40.00 %	25.30 %	15.30 %	19.50 %	190 (19.2%)				
	% within Age range	22.40 %	15.40 %	14.50 %	26.40 %					
Technicians	Count (%)	62 (6.3%)	78 (7.9%)	38 (3.8%)	22 (2.2%)					
	% within Occupation	31.00 %	39.00 %	19.00 %	11.00 %	200 (20.2%)				
	% within Age range	18.30 %	25.10 %	19.00 %	15.70 %					
Total	Count (%)	339 (34.2 %)	311 (31.4 %)	200 (20.2 %)	140 (14.1 %)	990 (100%)				

Table 2: Test of association between occupation and 3 months duration of low back pain

	Low back pain duration (3m0nths)		Total	Chi-Square Tests			Inference
	Yes	No		*df*	Chi-Square value	P-Value (2-sided)	
Business (%)	85 (8.6%)	115 (11.6%)	200 (20.2%)				
Drivers (%)	102 (10.3%)	98 (9.9%)	200 (20.2%)				
Officer workers (%)	96 (9.7%)	104 (10.5%)	200 (20.2%)	4	68.426	<0.001	Sig. association
Farmers (%)	153 (15.5%)	37 (3.7%)	190 (19.2%)				
Technicians (%)	115 (11.6%)	85 (8.6%)	200 (20.2%)				
Total (%)	551 (55.7%)	439 (44.3%)	990 (100%)				

Table 3: Test of association between occupation and 6months duration of low back pain

	Low back pain duration (6months)		Total	Chi-Square Tests			Inference
	Yes	No		df	Chi-Square value	P-Value (2-sided)	
Business (%)	87 (8.8%)	113 (11.4%)	200 (20.2%)				
Drivers (%)	107 (10.8%)	93 (9.4%)	200 (20.2%)				
Officer workers (%)	93 (9.4%)	107 (10.8%)	200 (20.2%)	4	43.155	<0.001	Sig. association
Farmers (%)	140 (14.1%)	50 (5.1%)	190 (19.2%)				
Technicians (%)	110 (11.1%)	90 (9.1%)	200 (20.2%)				
Total (%)	537 (54.2%)	453 (45.8%)	990 (100%)				

Table 4: Test of association between occupation and 9 months duration of low back pain

	Low back pain duration (9m0nths)		Total	Chi-Square Tests			Inference
	Yes	No		df	Chi-Square value	P-Value (2-sided)	
Business (%)	76 (7.7%)	124 (12.5%)	200 (20.2%)				
Drivers (%)	107 (10.8%)	93 (9.4%)	200 (20.2%)				
Officer workers (%)	80 (8.1%)	120 (12.1%)	200 (20.2%)	4	52.996	<0.001	Sig. association
Farmers (%)	134 (13.5%)	56 (5.7%)	190 (19.2%)				
Technicians (%)	106 (10.7%)	94 (9.5%)	200 (20.2%)				
Total (%)	503 (50.8%)	487 (49.2%)	990 (100%)				

Table 5: Test of association between occupation and 12 months duration of low back pain

	Low back pain duration (12months)		Total	Chi-Square Tests			Inference
	Yes	No		df	Chi-Square value	P-Value (2-sided)	
Business (%)	63 (6.4%)	137 (13.8%)	200 (20.2%)	4	61.465	<0.001	Sig. association
Drivers (%)	96 (9.7%)	104 (10.5%)	200 (20.2%)				
Officer workers (%)	73 (7.4%)	127 (12.8%)	200 (20.2%)				
Farmers (%)	129 (13%)	61 (6.2%)	190 (19.2%)				
Technicians (%)	96 (9.7%)	104 (10.5%)	200 (20.2%)				
Total (%)	457 (46.2%)	533 (53.8%)	990 (100%)				

Table 6: Test of association between BMI and Low back pain duration (3mnths)

			Low back pain duration (3mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
BMI Class	Under weight	Count	0	4	4	3	46.676	<0.001	Sig. association
		% of Total	0.00%	0.40%	0.40%				
	Normal weight	Count	165	218	383				
		% of Total	16.70%	22.00%	38.70%				
	Over weight	Count	292	166	458				
		% of Total	29.50%	16.80%	46.30%				
	Obese	Count	94	51	145				
		% of Total	9.50%	5.20%	14.60%				
Total		Count	551	439	990				
		% of Total	55.70%	44.30%	100.00%				

Table 7: Test of association between BMI and Low back pain duration (6mnths)

			Low back pain duration (6mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
BMI	Under weight	Count	1	3	4	3	32.055	<0.001	Sig. association
		% of Total	0.10%	0.30%	0.40%				
	Normal weight	Count	166	217	383				
		% of Total	16.80%	21.90%	38.70%				
	Over weight	Count	282	176	458				
		% of Total	28.50%	17.80%	46.30%				
	Obese	Count	88	57	145				
		% of Total	8.90%	5.80%	14.60%				
Total		Count	537	453	990				
		% of Total	54.20%	45.80%	100.00%				

Table 8: Test of association between BMI and Low back pain duration (9mnths)

			Low back pain duration (9mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
BMI Class	Under weight	Count	1	3	4	3	25.765	<0.001	Sig. association
		% of Total	0.10%	0.30%	0.40%				
	Normal weight	Count	157	226	383				
		% of Total	15.90%	22.80%	38.70%				
	Over weight	Count	263	195	458				
		% of Total	26.60%	19.70%	46.30%				
	Obese	Count	82	63	145				
		% of Total	8.30%	6.40%	14.60%				
Total		Count	503	487	990				
		% of Total	50.80%	49.20%	100.00%				

Table 9: Test of association between BMI and Low back pain duration (12mnths)

			Low back pain duration (12mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
BMI Class	Under weight	Count	1	3	4	3	30.344	<0.001	Sig. association
		% of Total	0.10%	0.30%	0.40%				
	Normal weight	Count	138	245	383				
		% of Total	13.90%	24.70%	38.70%				
	Over weight	Count	232	226	458				
		% of Total	23.40%	22.80%	46.30%				
	Obese	Count	86	59	145				
		% of Total	8.70%	6.00%	14.60%				
Total		Count	457	533	990				
		% of Total	46.20%	53.80%	100.00 %				

Table 10: Test of association between WHR risk class and Low back pain duration (3mnths)

			Low back pain duration (6mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
WHR risk class	Low risk	Count	305	295	600	2	7.849	0.020	Sig. association
		% of Total	30.80%	29.80%	60.60%				
	Moderate risk	Count	71	42	113				
		% of Total	7.20%	4.20%	11.40%				
	High risk	Count	161	116	277				
		% of Total	16.30%	11.70%	28.00%				
Total		Count	537	453	990				
		% of Total	54.20%	45.80%	100.00 %				

Table 12: Test of association between WHR risk class and Low back pain duration (9mnths)

			Low back pain duration (9mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
WHR	Low risk	Count	285	315	600	2	6.67	0.036	Sig. association
		% of Total	28.80%	31.80%	60.60%				
	Moderate risk	Count	63	50	113				
		% of Total	6.40%	5.10%	11.40%				
	High risk	Count	155	122	277				
		% of Total	15.70%	12.30%	28.00%				
Total		Count	503	487	990				
		% of Total	50.80%	49.20%	100.00%				

Table 13: Test of association between WHR risk class and Low back pain duration (12mnths)

			Low back pain duration (12mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
WHR	Low risk	Count	260	340	600	2	4.961	0.084	No Sig. association
		% of Total	26.30%	34.30%	60.60%				
	Moderate risk	Count	56	57	113				
		% of Total	5.70%	5.80%	11.40%				
	High risk	Count	141	136	277				
		% of Total	14.20%	13.70%	28.00%				
Total		Count	457	533	990				
		% of Total	46.20%	53.80%	100.00%				

Table 14: Test of association between sex and Low back pain duration (3mnths)

			Low back pain duration (3mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Sex	Male	Count	378	307	685	1	0.202	0.678	No Sig. association
		% of Total	38.20%	31.00%	69.20%				
	Female	Count	173	132	305				
		% of Total	17.50%	13.30%	30.80%				
Total		Count	551	439	990				
		% of Total	55.70%	44.30%	100.00%				

Table 15: Test of association between sex and Low back pain duration (6mnths)

			Low back pain duration (6mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Sex	Male	Count	377	308	685	1	0.565	0.452	No Sig. association
		% of Total	38.10%	31.10%	69.20%				
	Female	Count	160	145	305				
		% of Total	16.20%	14.60%	30.80%				
Total		Count	537	453	990				
		% of Total	54.20%	45.80%	100.00%				

Table 16: Test of association between sex and Low back pain duration (9mnths)

			Low back pain duration (9mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Sex	Male	Count	351	334	685	1	0.167	0.731	No Sig. association
		% of Total	35.50%	33.70%	69.20%				
	Female	Count	152	153	305				
		% of Total	15.40%	15.50%	30.80%				
Total		Count	503	487	990				
		% of Total	50.80%	49.20%	100.00%				

Table 17: Test of association between sex and Low back pain duration (12mnths)

			Low back pain duration (12mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Sex	Male	Count	317	368	685	1	0.012	0.945	No Sig. association
		% of Total	32.00%	37.20%	69.20%				
	Female	Count	140	165	305				
		% of Total	14.10%	16.70%	30.80%				
Total		Count	457	533	990				
		% of Total	46.20%	53.80%	100.00%				

Table 18: Test of association between age and Low back pain duration (3mnths)

			Low back pain duration (3mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Age range	19-29yrs	Count	138	201	339	3	75.036	<0.001	Sig. association
		% of Total	13.90%	20.30%	34.20%				
	30-39yrs	Count	165	146	311				
		% of Total	16.70%	14.70%	31.40%				
	40-49yrs	Count	139	61	200				
		% of Total	14.00%	6.20%	20.20%				
	+50yrs	Count	109	31	140				
		% of Total	11.00%	3.10%	14.10%				
Total		Count	551	439	990				
		% of Total	55.70%	44.30%	100.00%				

Table 19: Test of association between age and Low back pain duration (6mnths)

			Low back pain duration (6mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Age range	19-29yrs	Count	130	209	339	3	91.249	<0.001	Sig. association
		% of Total	13.10%	21.10%	34.20%				
	30-39yrs	Count	157	154	311				
		% of Total	15.90%	15.60%	31.40%				
	40-49yrs	Count	138	62	200				
		% of Total	13.90%	6.30%	20.20%				
	+50yrs	Count	112	28	140				
		% of Total	11.30%	2.80%	14.10%				
Total		Count	537	453	990				
		% of Total	54.20%	45.80%	100.00 %				

Table 20: Test of association between age and Low back pain duration (9mnths)

			Low back pain duration (9mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Age range	19-29yrs	Count	111	228	339	3	99.288	<0.001	Sig. association
		% of Total	11.20%	23.00%	34.20%				
	30-39yrs	Count	155	156	311				
		% of Total	15.70%	15.80%	31.40%				
	40-49yrs	Count	128	72	200				
		% of Total	12.90%	7.30%	20.20%				
	+50yrs	Count	109	31	140				
		% of Total	11.00%	3.10%	14.10%				
Total		Count	503	487	990				
		% of Total	50.80%	49.20%	100.00%				

Table 21: Test of association between age and Low back pain duration (12mnths)

			Low back pain duration (12mnths)		Total	Chi-Square Tests			Inference
			Yes	No		df	Chi-Square value	P-Value (2 sided)	
Age range	19-29yrs	Count	96	243	339	3	103.72	<0.001	Sig. association
		% of Total	9.70%	24.50%	34.20%				
	30-39yrs	Count	141	170	311				
		% of Total	14.20%	17.20%	31.40%				
	40-49yrs	Count	113	87	200				
		% of Total	11.40%	8.80%	20.20%				
	+50yrs	Count	107	33	140				
		% of Total	10.80%	3.30%	14.10%				
Total		Count	457	533	990				
		% of Total	46.20%	53.80%	100.00 %				

Table 22 shows test of variance, and mean difference of height, weight and BMI between the control and other job descriptions

Parameter	Occupation	Mean (SEM)	Grouped Median	Min	Max	Range	ANOVA	POST-HOC (DUNNET) TEST		
								Mean Difference (SED)	P value (cal)	Inference
Height (m)	Business (control)	1.672 (0.006)	1.669	1.4	1.9	0.5	Sig (F=25.099, P>0.001)	-	-	-
	Drivers	1.711 (0.005)	1.710	1.5	1.9	0.4		0.039 (0.009)	<0.0001	Sig
	Officer workers	1.691 (0.006)	1.696	1.40	1.9	.50		.0190 (0.009)	0.085	Not Sig
	Farmers	1.631 (0.006)	1.632	1.4	1.9	0.5		-0.0405 (0.009)	<0.0001	Sig
	Technicians	1.696 (0.006)	1.692	1.5	2.0	0.5		0.024 (0.009)	0.02	Sig
	Total	1.680(0.003)	1.680	1.4	2.0	0.6				
Weight (kg)	Business (control)	73.638 (0.725)	71.957	50	125	75	Sig (F= 13.846, P>0.001)	-	-	-
	Drivers	77.53 (0.813)	75.118	60	115	55		3.893 (1.125)	0.002	Sig
	Officer workers	75.436 (0.934)	73.615	48	112	64		1.799 (1.125)	0.313	Not Sig
	Farmers	69.711 (0.709)	68.692	45	112	67		-3.927 (1.139)	0.002	Sig
	Technicians	76.06 (0.787)	74.583	54	134	80		2.423 (1.125)	0.102	Not Sig
	Total	74.523 (0.367)	72.388	45	134	89				
Body mass index (kg/m2)	Business (control)	26.376 (0.276)	25.86	17.1	47.62	30.52	Not Sig (F= 0.264, P=0.901)	-	-	-
	Drivers	26.409 (0.251)	26.05	17.92	38.27	20.35		0.033 (0.374)	1.000	Not Sig
	Officer workers	26.359 (0.298)	25.935	19	43.6	24.6		-0.017 (0.374)	1.000	Not Sig
	Farmers	26.064 (0.246)	25.61	19.72	42.2	22.48		-0.312 (0.379)	0.828	Not Sig
	Technicians	26.305 (0.255)	26.135	17.86	45.83	27.97		-0.071 (0.374)	0.999	Not Sig
	Total	26.305 (0.119)	25.887	17.1	47.62	30.52				

Table 23: Test of variance, and mean difference of waist circumference, hip circumference and waist-hip ratio between the control and other job descriptions

Parameter	Occupation	Mean (SEM)	Grouped Median	Min	Max	Range	ANOVA	POST-HOC (DUNNET) TEST		Inference
								Mean Difference (SED)	Sig.	
Waist circumference (cm)	Business (control)	85.883 (0.754)	84.364	42	133	91	Sig (F= 8.764, P<0.001)	-	-	-
	Drivers	90.45 (0.743)	89.059	67	130	63		4.568 (0.999)	<0.001	Sig
	Officer workers	89.675 (0.715)	88.842	67	125	58		3.793 (0.999)	<0.001	Sig
	Farmers	87.30 (0.586)	86.588	72	120	48		1.418 (1.012)	0.43	Not Sig
	Technicians	90.63 (0.726)	90.75	55	130	75		4.748 (0.999)	<0.001	Sig
	Total									
Hip circumference (cm)	Business (control)	96.825 (0.594)	96.6842	42	127	85	Sig (F= 6.818, P<0.001)	-	-	-
	Drivers	98.91 (0.628)	98.7778	40	125	85		2.085 (0.810)	0.036	Sig
	Officer workers	99.84 (0.541)	99	81	121	40		3.015 (0.810)	<0.001	Sig
	Farmers	96.184 (0.588)	96.1304	64	127	63		-0.641(0.821)	0.852	Not Sig
	Technicians	98.505 (0.524)	99.3462	51	126	75		1.68 (0.810)	0.123	Not Sig
	Total	98.072 (0.261)	98.0333	40	127	87				
Waist-hip ratio	Business (control)	0.881 (0.006)	0.8791	0.13	1.1	0.97	Sig (F= 1.741, P=0.134)	-	-	-
	Drivers	1.820 (0.644)	0.9097	0.68	98	97.32		0.939 (0.594)	0.323	Not Sig
	Officer workers	0.898 (0.004)	0.89	0.77	1.07	0.3		0.016 (0.594)	1.000	Not Sig
	Farmers	0.944 (0.044)	0.8947	0.81	9.29	8.48		0.063 (0.602)	1.000	Not Sig
	Technicians	2.008 (0.676)	0.9195	0.79	96	95.21		1.127 (0.594)	0.179	Not Sig
	Total	1.314 (0.189)	0.8991	0.13	98	97.87				

DISCUSSION

This study was done to evaluate the relationship between low back pain duration and selected anthropometric parameters (such as age, height, weight, BMI, WHR) among workers in Port Harcourt.

The frequency distribution of three to six months duration of LBP as shown in Table 2 and Table 3 shows that in the control group, LBP was lower than that of farmers and office workers. This is because the work done by farmers has to do with awkward posture. This agreed with the report by [2], [10] that flexion or lateral bending of the trunk and bending and rotation of the trunk are considered potential risk factors for low back pain. More of the technicians, present with LBP compared to drivers. The high percentage of LBP among drivers agrees with the report of Vasant [13] that among the LBP sufferers 73% of drivers and 50.5% of non-drivers had chronic LBP and this difference was statistically significant. Scouting and lifting might be responsible for this among technicians. For 3 to 6 months duration, a higher percentage of farmers on the average reported LBP compared to other occupations. For the same period, there was significant association ($p<0.001$) between various occupations and control.

In table 4 the frequency of LBP was lower among control than farmers and office workers but in this case, drivers had more symptoms than technicians while in Table 5 drivers and technicians had the same frequency for pain. Significant association ($p<0.001$) existed in all the various occupation and control. These results were similar to the findings of a recent study that reported that there was an association of LBP among taxi drivers with self-perceived job stress (OR 1.75; 95% CI 1.20-2.55) and job dissatisfaction (OR 1.44; 95% CI 1.05-1.98). [14] They are also in agreement with the reports of Davis [15] and Damian [16] who observed that job satisfaction and job stress were more consistently associated with the development of LBP than psychosocial work characteristics themselves.

LBP duration as shown in Table 6 – 9 were common between overweight and obese people than underweight and normal weight. This implies that overweight and obesity increase the risk of LBP. Concerning body proportions, more of the subjects in the overweight category were found to have LBP from 3 to 12 months duration. This report agrees with Deyo and Winstein [17] which reported an increased prevalence of LBP particularly in obese subjects (BMI > 29 kg/m2), while Bener [18] reported that obesity is moderately associated with LBP.

LBP was more frequent within 30-39 and 40-49 years, and lowest within 19-29 years increasing with aging with respect to three, six, nine and twelve months duration of LBP. Significant association ($p<0.001$) was observed between age and LBP duration. Similar findings were made by Buckwalter [11]. LBP was common within age 30-39 years followed by 40-49 years.

From Table 14 – 17 male workers were mostly found to report LBP compared with female workers. The 1988 National Health Survey in the USA reported a higher prevalence of low back pain in male workers [19] and a

study on LBP in Japan showed that the incidence in male workers was about four times greater than in female workers. [20] But in a French study, LBP occurred more often and was more severe among women [21]. In line with our study, there was no significant association between sex and LBP duration as also reported by Shyamal *et al* [22]. This report supports our findings.

Concerning Waist Hip Ratio (WHR), workers at low, moderate and high-risk had LBP. More of low risk workers had low back pain compared to the moderate and high-risk workers. Significant association was observed between low back pain duration and WHR for 3, 6 and 9 months, but not for 12 months duration.

CONCLUSION

It may be concluded from the present study that overweight is significantly associated with LBP duration. In addition, it was found that occupation, and age greatly influence the incidence of low back pain. Waist-to hip ratio, a determiner of internal body fat, was equally found to be weakly associated with duration of low back pain, but sex has no influence on low back pain.

CONFLICT OF INTEREST

There was no conflict of interest among the authors.

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