BIOLOGICAL RELATIONSHIP BETWEEN BODY WEIGHT AND BLOOD PRESSURE –A ONE YEAR PROSPECTIVE STUDY OF PATIENT IN ORAL DIAGNOSIS AND RADIOLOGY CLINIC, UNIVERSITY OF BENIN TEACHING HOSPITAL

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ABSTRACT

Back ground: Overweight and high blood pressure are topical and challenging issues in healthcare but less stressed in dental care.

Aim:The aim of this study is to analyze the relationship between body weight and blood pressure in the patients attending dental clinic.

Methodology:This study was a one year prospective study of patients attending dental clinic between 2011-2012.African average adult weights (60.7kg) was used as baseline, above which constitutes overweight, while two times measurement and two times visit of physician classification 140/90mmHg was used as basis for blood pressure status.

Result: A total of 4756 patients were seen .50 %(2378) were overweight and2.6 %(124) were hypertensive with weight range of (91-110kg).Grand average blood pressure of patients weighing 101-110kg was139.67/91.43mmHg.

Conclusion: We therefore conclude that blood pressure check is a necessity especially in overweight patients requiring dental procedures.

INTRODUCTION

Body weight is the weight of a person without any item located on the patient, but this is not practicable in the oral diagnosis clinic, where it is usually done with clothes on but often without the shoes and heavy accessories like mobile phones, wallet and bags. It is concurrently taken with blood pressure. In many centres focus is on divine ideal body weight[1], body mass index and the Hamni Method. Here our focus is on average weight of an adult which is 70kg with a height of 1.75 metres, African average adult weight 60.7kg, with an overweight population of 28.9% of 535 million (154.62 million).[2] Abdulle et al[3] and Fah et al[4] in their study revealed a strong relationship between high blood pressure and body weight, even in pregnancy[5] and confirmed by Framingham Heart Study, a famous study for 44 years estimated that excess body weight accounted for approximately 26% of cases of hypertension in men and 28% in women[6]. In this study therefore, over weight referred to weight above established African value of 60.7kg,[2] and high blood pressure referred to physicians classification of values stage I – systolic 140 – 159/diastolic 80 90mmHg; stage 2 – Systolic > 160mmhg / diastolic > 100mmHg and is based on the average of two or more properly measured blood pressure readings at each of two or more visits after an initial screening.[7]

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METHODOLOGY

This study was prospective in an oral Diagnosis and Radiology Clinic. This clinic is the first point of visit for patients attending the Dental Centre. Here diagnosis is made before patients are referred to appropriate clinic for definitive treatment. It was a one year prospective study(2011-2012) of oral diagnosis clinic attendance archive. Data forAfrican average adult weight (60.7kg)[2] was used as base line above which constitutes over weight.[1] Blood pressure was measured using student sphygmomanometers. Patient on regular medications were excluded. Medication defaulters were included with the fresh patients. Two times

Table 1: Average Systolic/Diastolic values in mmHg; Age > 60kg

ĚĦÉ	Month	Total No Patient	Male	Female	Body Weight Kg	No of Patients	Total Systolic	Total Diastolic	AVS	AVD
1a.	July 2011	403	64	339	61-70	109	12,780	8,065	117.25	73.99
					71-80	51	6250	3810	122.55	74.71
					81-90	32	3248	2810	129.06	87.81
					91-100	17	2210	1470	130	86.47
					101-110	6 SRV	YWQ	590	143.33	98.33
(403-215) < 61kg										
b.	Aug. 2011	437	76	361	61-70	107	12570	6850	117.48	64.02
					71-80	72	8870	5680	123.19	78.89
					81-90	32	3960	2660	123.75	83.13
					91-100	15	1940	1280	129.33	85.33
					101-110	9 235	1270	870	141.11	96.67
(433-235) : 202 < 61kg										
c.	Sept. 2011	393	167	226	61-70	81	9740	6140	120.25	75.8
					71-80	51	6150	3980	120.59	78.04
					81-90	29	3570	2350	123.10	81.03
					91-100	14	1750	1190	125	85
					101-110	6 181	840	530	140	88.33
(393 – 181) 212 < 61kg										
d.	Oct. 2011	388	175	213	61-70	83	9950	6230	119.88	75.06
					71-80	45	5720	3720	127.11	82.67
					81-90	24	3170	2190	132	91.25
					91-100	12	1570	1050	130.8	87.5
					101-110	15 129	1960	1310	130.67	87.33
(381 – 179) 209 < 61kg										
e	Nov. 2011	326	146	180	61-70	51	6280	4110	123.14	80.59
					71-80	48	6031	3670	125.65	76.46
					81-90	33	4190	2760	126.97	83.64
					91-100	16	2110	1410	131.8	88.13
					101-110	11 159	1500	1010	137.27	91.82
(326 – 159) 167 < 61kg										

Ĵ O	Dec. 2011	343	146	197	61-70	73	9040	5670	123.84	77.67
					71-80	41	5142	3280	125.41	80.00
					81-90	20	2570	1710	128.5	85.5
					91-100	24	3250	2190	135.4	91.25
					101-110	9 RWX	RSZQ	870	143.33	96.67
(343 – 167) 176 < 61kg										
h.	Jan. 2012	284 (six day strike NLC)	115	169	61-70	31	3760	2390	121.3	77.10
					71-80	30	3810	2430	127.0	81.00
					81-90	37	4740	3060	128.11	82.70
					91-100	17	2470	1590	145.29	93.53
					101-110	7 122	940	6103	134.3	87.14
(284 – 122) 162 < 61kg										
i.	Feb. 2012	411	195	216	61-70	101	1225	8068	121.29	79.88
					71-80	63	10132	5310	160.83	84.29
					81-90	25	3270	2190	130.80	87.60
					91-100	9	1200	8103	133.33	90.00
					101-110	7 205	1000	690	142.86	98.6
(411 – 205) 206 < 61kg										
j.	March 2012	415	187	228	61-70	83	10260	6750	123.61	81.33
					71-80	66	8630	5590	130.76	84.70
					81-90	38	5080	3390	133.68	89.21
					91-100	14	2000	1340	142.86	95.71
					101-110	11 212	1570	1090	142.73	99.09
(415 – 212) 203 < 61kg										
K	April 2012	425	184	241	61-70	100	12290	8130	122.9	81.3
					71-80	54	7100	4740	131.48	87.78
					81-90	43	5810	3840	135.12	89.30
					91-100	4	560	350	140.	87.5
					101-110	14 215	1970	1360	140.7	97.14
(425 – 215) 210 < 61kg										

lO	May 2012	450	193	257	61-70	108	13110	874.0	121.39	80.92
					71-80	60	7720	5110	128.67	85.17
					81-90	46	6270	4070	136.30	88.48
					91-100	20	2870	1910	143.5	95.50
					101-110	11 SUV	RVRQ	1050	146.36	95.45
(450 – 245) 205 < 61kg										
m.	June 2012	481	192	289	61-70	114	13780	8650	120.88	75.88
					71-80	93	11720	7880	126.02	84.73
					81-90	55	7180	4760	130.55	86.55
					91-100	19	2500	1720	131.58	90.53
					101-110	12 293	1600	1130	133.33	94.17
Total Patients		4756	1840	2916	(481 – 293) 180 < 61kg					

Table II: Average Value of Blood Pressure by Weight Group

ĈÑĿİ ÆŁŅĿ	Male	Female	Body Wt in Kg	mmHg AVS	mmHg AVD
4756 over weight adults 2378 (50%)	39%	61%	61-70	121.10	76.96
			71-80	129.11	81.54
			81-90	120.00	86.35
			91-100	134.91	89.70
			101-110	139.67	91.43

AVS: Average systolic blood pressure
AVD: Average Blood pressure

measurement, two time visit of stage I physician classification 140/90 were used as basis for blood pressure status.

RESULTS

Tables 1a, b, c, g, I, j, k, l, showed overweight and blood pressure. Weight 101-110kg showed values > 140/90mmHg physician classification. Tables h, j, l, weight 91-100kg showed valuesgreater than 140/90mmHg physician classification. African average adult weight is 60.71kg.[2] Tables 1a-g I,k,m, 61-100kg are normotensive except tables j and l. Average values of blood pressure by weight group 139.67/91.43mmHg (Table II) and average values of blood pressure from over-weight (97 – 110kg) group is143.21/96.67.

DISCUSSION

The interrelationships between hypertension and overweight, two common and major health hazards is a challenge. Overweight hypertensive patients are likely to experience coronary heart disease. These two combinations are likely to pose serious challenges of morbidity and mortality[8], as confirmed by Mertens and Van Gral.[9-10] In an overweight adult, study population of 50% (2378/4756) Tables I & II. (against African 28.9%), Average values of blood pressure from total study population of 4756 by

Table III:Average Value of Blood Pressure from Hypertensive Group

ĚIÉ	Month	Body Weight Range	mmHg AVS	mmHg AVD
1.	July 2011	101-110 (6)	143.33	98.33
2.	Aug. 2011	101-110 (9)	141.11	96.67
3.	Dec. 2011	101-110 (9)	143.33	96.67
4.	Jan. 2012	91 – 100 (17)	145.29	93.53
5.	Feb. 2012	101-110 (7)	142.86	98.6
6.	March 2012	91 – 100 (14)	142.86	95.71
	March 2012	101-110 (11)	142.73	99.09
7.	April 2012	101 – 110 (14)	140.70	97.14
8.	May 2012	91 – 100 (20)	143.5	95.50
	May 2012	101-110 (11)	146.36	95.45
Total		**(118/2378) 4.96%**	**143.21**	**96.67**

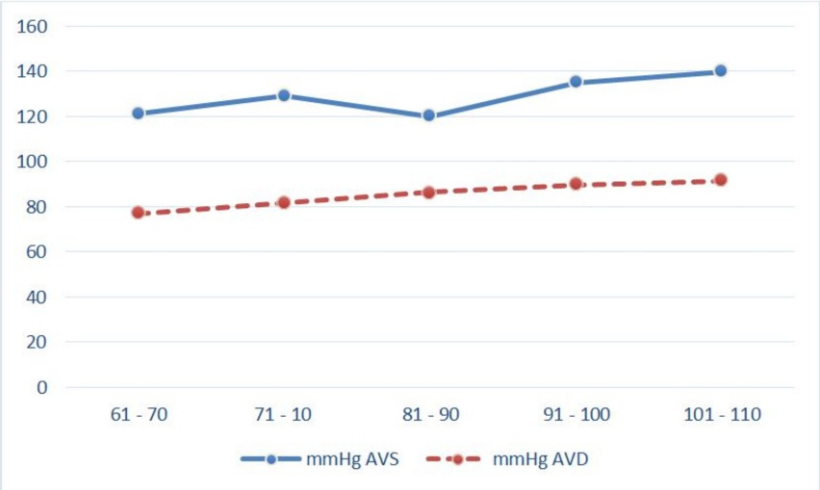

Fig I : Average value of blood pressure by weight group

weight group showed 101-11-kg body weight as 139.67/91.43mmHg (Table II). This is significant, more so when the average value of blood pressure from hypertensive group from overweight adult population of 2378 (50%) (Table III) 143.21/96.67mmHg. This represents 4.96% hypertensive overweight population.

This study sensitizes the mind for the need to continue blood pressure checks on all dental patients. As dentophobia been linked

with elevation of blood pressure in patients visiting dental clinic. This may be due to the previous dental experience.

CONCLUSION

We therefore conclude that blood pressure checks is a necessity especially in overweight patients requiring dental intervention.

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