A Pattern of Blood Pressure and Family Function in Adult Hypertensive Patients Attending a Tertiary Hospital in a Rural Area

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ABSTRACT

Hypertension (high blood pressure) is common and chronic. Early detection, coupled with the sincere dedication to treatment plans will delay/prevent complications. Late detection, lack of motivation for treatment, unhealthy lifestyle and poor adherence to medications and follow-up visits leads to early onset of complications. Motivation to adhere to therapeutic plans occurs in families with good function, and consequently good support to the hypertensive.

This descriptive and cross-sectional study was carried out in the outpatient clinic of a tertiary healthcare facility in a rural area of Edo state, Nigeria. A semi-structured, interviewer-administered questionnaire was used to obtain socio-demographic information, anthropometric parameters, the presence of risk factors for HTN, and relevant information on management. The Smilkstein,s Family System APGAR Item tool was used to assess a family member's perception of family functioning, by examining his/her satisfaction with family relationships. Data were entered into a spreadsheet and analyzed using IBM-SPSS version 2.1.

Out of the 151 participants in the study, 61.6% were females and 45.7% were in the age group 40-59 years, with the mean age 56.97±12.49 years. Majority of the respondents were civil servants (34.4%), had up to the tertiary level of education (39.1%), and were married (84.8%). Most of the respondents (78.8%) had controlled BP (<140/90mmHg). According to the Smilkstein,s Family System APGAR item scoring, 69.6% of the respondents were from highly functional families, while only 5.3% were from dysfunctional families. Seventy five (75) respondents from the highly functional families had controlled BP, while only six participants from the dysfunctional families had controlled BP. There was the significant association between blood pressure and age, and also between blood pressure and frequency of drug intake. However, there was no significant association between blood pressure and family function, sex, educational level, exercise and clinic attendance.

Findings from this study show that the control of HTN in primary care population is good. Family involvement in the management of patients with HTN, is of paramount importance to the Family Physician, to enable him/her care for them adequately.

Key Words: Hypertension, Family Function, Smilkstein's Family System APGAR, Family Physician.

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1. INTRODUCTION

Hypertension (HTN), also known as High Blood Pressure (HBP), is a long-term (chronic) medical condition in which the blood pressure in the arteries is persistently elevated [1]. Normal blood pressure at rest is within the range of 100-139mmHg systolic, and 60-89mmHg diastolic [2]. High blood pressure is present if the resting blood pressure is persistently at or above 140/90mmHg for most adults [3]. According to JNC VII, BP is classified as follows: Normal BP, with systolic of 90-119mmHg and diastolic of 60-79mmHg, High normal BP, with systolic of 120-139mmHg and diastolic of 80-89mmHg, Stage 1 HTN, with systolic of 140-159mmHg and diastolic of 90-99mmHg, Stage 2 HTN, with systolic of 160-179mmHg and diastolic of 100-109mmHg [4].

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Hypertension is the most common non-communicable disease seen in primary care [5]. It is a major public health problem in black populations worldwide [6], and a leading cause of global burden of disease with greater population burden in developing than developed countries [7]. It is estimated that nearly 1 billion people are affected by hypertension worldwide, and this figure is predicted to increase to 1.5 billion by the year 2025 [7]. The prevalence of hypertension varies considerably worldwide. It is 11-30% in Latin America in 2005, 20-33% in Africa in 2006, 18-22% in USA, 25-30% in China, Korea and Taiwan in 2004 [8]. In 2008, in South Africa, the first demographic and health survey found a 25.5% prevalence of hypertension [9]. In Nigeria, the prevalence of hypertension varied widely between studies, ranging from a minimum of 12.4% to a maximum of 34.8% [10].

It is clear that BP control is one of the challenges facing health care providers because of its high prevalence and burden. In order to consider the family as a unit of care, the Family Physician should look at the family dynamics as part of causation of illness in the person or facilitating care. The family as a group should generate, prevent, tolerate or correct health problems within its membership [11]. Members of a family especially the spouse could be said to be the most important source of social support, and account for most of the association between social support and health. It is well known that good family support can only be present in a family that is functional. It has been shown that support from sources outside the family cannot compensate for what is missing from within the family [12].

Complications of systemic HTN occur largely due to lack of awareness about HTN status, lack of motivation for treatment, unhealthy lifestyle and poor adherence to medications and follow-up visits. A good number of patients have presented for the first time with complications. Non adherence to medications still occurs even in a population where anti hypertensive medications are given free [13]. Also, the therapy prescribed by most clinicians will control hypertension only if the patient is motivated [14]. Motivation occurs and improves when the family as a social network around patients with HTN, encourages personal attitudes that are positively associated with health, such as sharing of information, helping in moments of crisis, and cares with health in general [15], hence, the need to employ a family-oriented approach in the management of this disease.

Thus, this study which was carried out in a primary care setting, was aimed at determining the relationship between the pattern of blood pressure and level of family function in hypertensives attending a tertiary hospital in a rural area.

2. MATERIALS AND METHODS

This study was descriptive and cross-sectional in design. It was carried out in the outpatient clinic of a tertiary healthcare facility in a rural area of Edo state, Nigeria. The study period was from April to June, 2017. All hypertensive patients aged 18 years and above, who attended the clinic during the study period, and who consented to be part of the study, were recruited after obtaining informed consent. A total of 151 hypertensive patients were enrolled in the study. A semi-structured, interviewer administered questionnaire was used to obtain: socio-demographic information, anthropometric parameters (weight, height and body mass index), presence of risk factors for HTN and relevant information on management. Their weight was measured using a weighing scale to the nearest 0.5kg, with the participants wearing only light clothing and no foot wears. A studio meter was used to measure the height to the nearest 0.5cm. The weight (in kilograms) was divided by the square of the height (in meters) to obtain the BMI.

Using the WHO criteria for obesity, participants with BMI up to 30kg/m^2 and above, were regarded as obese, those with BMI of 18-24.9kg/m^2 were regarded as normal weight, while others with BMI of 25-29.9kg/m2 were regarded as overweight. The BP of each participant was measured using a stethoscope and mercury sphygmomanometer after they had rested for 5 minutes. Systolic BP and diastolic BP were measured at Korotkoff Phases 1 and V respectively [16]. Their BP were recorded, and those who had BP of less than 140/90mmHg were said to have controlled BP, while those with BP equals to or greater than 140/90mmHg, were regarded as having uncontrolled BP.

Family functioning (assessed by the degree of the relationship of family members), was determined using the Smilkstein's Family system APGAR item scoring tool. This tool was used to assess a family member's perception of family functioning, by examining his/her satisfaction with family relationships. The scores ranged from 0-10. Families with scores from 8-10 were classified as highly functional families, scores from 4-7 as moderately dysfunctional families, while scores from 0-3 was classified as dysfunctional families, depending on the total score of the respondents after responding to the items in the tool.

Data were entered into a spread sheet and analyzed using IBM-SPSS version 21.0. The data were presented as simple frequency tables and charts. Statistical test of association such as chi square was carried out for socio-demographic variables and BP control, as well as Smilkstein's family system APGAR item scoring.

3.   RESULTS AND DISCUSSION

Socio-demographic characteristics: Out of the 151 respondents who consented to be enrolled in the study, 93 (61.6%) were females. The highest number of the respondents (45.7%) was in the age group 40-59 years, while the lowest (2.0%) was in the group ≥ 80 years. The mean age was 56.97±12.49. Almost all the respondents were Christians (94.7%), and most were civil servants (34.4%) and business men/women (35.1%). Majority (39.1%) had up to tertiary education, while the smallest had no formal education (14.6%). Majority of them were married (84.8%) and from a monogamous setting (72.8%). Sixty two of the respondents (41.1%) earn from #10,000 - #50,000 monthly, while 34 (22.5%) earn #50,000 - #100,000 monthly. **See table 1**.

Association between blood pressure and socio-demographic characteristics: Findings from our study showed that respondents aged 20-39 years had better BP control (< 140/90mmHg), than the other age groups, and as the age group increases, the BP control decreases. This finding was found to be statistically significant (P=0.000). A greater proportion of females had better control of BP as compared to males but this finding was found not to be statistically significant (P=0.484). Also, among the educated, the higher the educational level attained by the respondents, the better the control of BP. However, this association was found not to be statistically significant (P=0.196). Respondents who had monthly income of more than #100,000 had better control of BP as compared to those with lesser monthly income. But this association was not statistically significant (P=0.665). Respondents who engage in exercise activities had better BP control than those who do not exercise, although the association was not statistically significant(P=0.393). Respondents who take their drugs regularly, had better BP control as compared to those with irregular drug intake, and this association was found to be statistically significant (P=0.025). Respondents with regular clinic attendance (82.7%) had better BP control, compared to those with no/irregular clinic attendance, however, this association was not statistically significant(P=0.113). **See table 2.**

Blood pressure control: Majority of the respondents (78.8%) had controlled BP (<140/90 mmHg), while 21.2% had uncontrolled BP (≥140/90 mmHg). **See fig 1.**

Smilksein's family system APGAR item scoring and BP control: Findings from our study showed that most of the respondents (69.6%) were from highly functional families, while a few of them (5.3%) were from dysfunctional families, and the remaining 25.2% were from moderately dysfunctional families. **See fig 2.** Seventy five (75) respondents from the highly functional families had controlled BP, while only six participants from the dysfunctional families had controlled BP, and thirty one of those from moderately dysfunctional families had their BP controlled. This association however, was found not to be statistically significant (p= 0.873). **See table 3.**

3.1 DISCUSSION

This study population was made up of mostly middle-aged participants. This observation agrees with the findings from other studies [16,17,18]. This finding was however, not unexpected since most chronic medical conditions begin to rear their ugly head at the middle-age period, most likely due to hardening of the arteries in the body, thereby leading to increase in peripheral resistance. In addition, menopause in females, with decline in endogenous estrogen production after 40 years, and consequently atherosclerosis tend to contribute to this occurrence in females. Also, another reason may be the fact that advancing age increases the risk of exposure to the lifestyle risk factors for HTN, and thus, the observed increase in hypertensive risk with aging.

The predominance of females in this study (61.6%), is in agreement with the reports of female preponderance in most previous hospital-based studies [17,18]. However, this is in contrast to the findings by Alabi et al [19], and Adedoy in et al [20] in their respective studies. The female preponderance in this study may be attributed to the following reasons: Firstly, more females may have attended the clinic within the study period, rather than an increased prevalence of HTN in females compared to males. Secondly, women tend to have better health seeking behaviour for chronic diseases than men [21]. Thirdly, in traditional African society, males are the major bread winners for their families and thus lacked the time to present themselves at the hospitals for screenings or follow-up. Lastly, women are more likely to have their asymptomatic HTN detected through BP check due to more contact with health care facilities during their reproductive years.

Findings in this study showed that most of the respondents were married (84.8%). This agrees with the finding by Oluwaseun et al [22], but disagrees with that of Alabi et al [19], who found that most of the people studied were previously married (divorced, separated, widowed). According to previous studies [23,24], married individuals are physically healthier, have less psychological distress than the separated, widowed, divorced and never-married, and that being married protects against cardiovascular diseases like hypertension. However, the finding of majority in our study being married may be a reflection of the pattern of patient presentation at the clinic, and also the culture of the environment - it is rare to find divorced or separated individuals in this part of the country, the belief being that marriage is for better or for worse. Thus, the majority of middle aged and the elderly, are married with few being widowed.

This study found that more than half of the respondents (78.8%), had controlled BP (<140/90mmHg). This is however in contrast to the lesser finding (46.4%) by Oluwaseun et al [22] in their study. In most parts of the world especially in developing countries, suboptimal BP control was found to be prevalent [16, 25, 26]. Control rates of 36% was found in Ibadan, South West Nigeria[13], 24.2% in Port Harcourt, South-South Nigeria [17], and 12.4% in Zaria, Northern Nigeria [27].This BP control of 78.8% found in our study was high when compared to the rates reported in former local studies. The reason for this could be explained by the study population. All the studies mentioned above recruited participants from the cardiology clinic, and the observed difference could be ascribed to the fact that patients with complicated HTN and thus, difficult BP control are likely to be seen in this clinic when compared with primary care clinics.

Control of blood pressure in our study was found to be better in females than males (80.6% vs. 75.9%). This agrees with the findings in other studies that investigated the influence of gender on BP control [13, 26, 28]. Two reasons can be adduced for the better control in females: Firstly, women accept the diagnosis of hypertension readily even in the absence of symptoms and acknowledge the need to stay healthy to care for their families [29]. Secondly, the likelihood of having BP checked is higher in women than men due to more contact with health facilities during reproductive years [21]. In contrast to our study however, some other studies have reported better BP control in males than females [30,31], perhaps due to the fact that these studies considered older people in whom controlled BP has been shown to be more likely in males compared with females[31].

In our study, a significant proportion (69.6%) of respondents from highly functional families, and a lesser number (25.2%) from moderately dysfunctional families had strong perceived family support and consequently controlled BP. This proved to be a predictor of controlled BP – respondents with good perceived family support were more likely to have better BP control than those without good perceived family support. This corroborates the fact that Africans have a naturally rich social support network, probably due to the extended family system in our environment. It is clear that in family-centered societies like ours, people tend to gain good support from family, as noted in previous studies [32,33]. Family members have obligations to provide a broad range of emotional, social, psychological and material support [11], and a spouse is in the best position to provide all these. A good number of research work done in developed countries confirmed the strong positive association between level of family support and BP control [4,15,34, 35].

The positive relationship between family support (family function) and BP control may be attributed to several reasons. First, presence of a good social network can attenuate the cardiovascular response in a situation of stress, thereby avoiding the accompanying increase in BP [36]. Secondly, those who had support from friends or family members had better compliance with treatment than those who did not [34, 37]. Thirdly, reduced level of family support could lead to the adoption of fewer habits related to a healthy lifestyle [38]. However, in contrast to the above studies, Redondo-Sendino et al [39] failed to find a positive association between BP control and family support.

Good family support is essential in the long term management of HTN, which requires a life-long change in the lifestyle of the affected individual. A highly functional family with strong family support will improve their self confidence and motivation. A well motivated hypertensive will invariably tend to adhere to therapeutic plans and ultimately, achieve better BP control.

In a dysfunctional family, due to lack of good family support, members are prone to psychological stress which may predispose to hypertension and poor control [40]. Studies have shown that good and quality marital relationship was positively related to immunological, cardiovascular and neurobiological wellness [41], and this is lacking in a dysfunctional family.

In this study, majority of the respondents with good family function and support had controlled BP. This was however, not statistically significant (p=0.873). This association will tend to portray that strong family support is essential in the maintenance of normal (controlled) BP.

4. CONCLUSION

Good family function (with strong family support) is very essential in achieving good blood pressure control in hypertensive patients. The family organization and its interactions directly influence the success of hypertension treatment. The family plays a major role in various aspects of hypertension management including lifestyle modification, adherence to medication and follow-up visits. Thus, the need to employ a family oriented approach to its management. Lack of interest in the treatment, with difficulties in adherence to medication, increases when the family is not involved in the patient's daily care, and when there is conflicting relationship among the family members.

Conflict of interest

There are no conflicts of interest.

Table 1: Socio-demographic characteristics of respondents

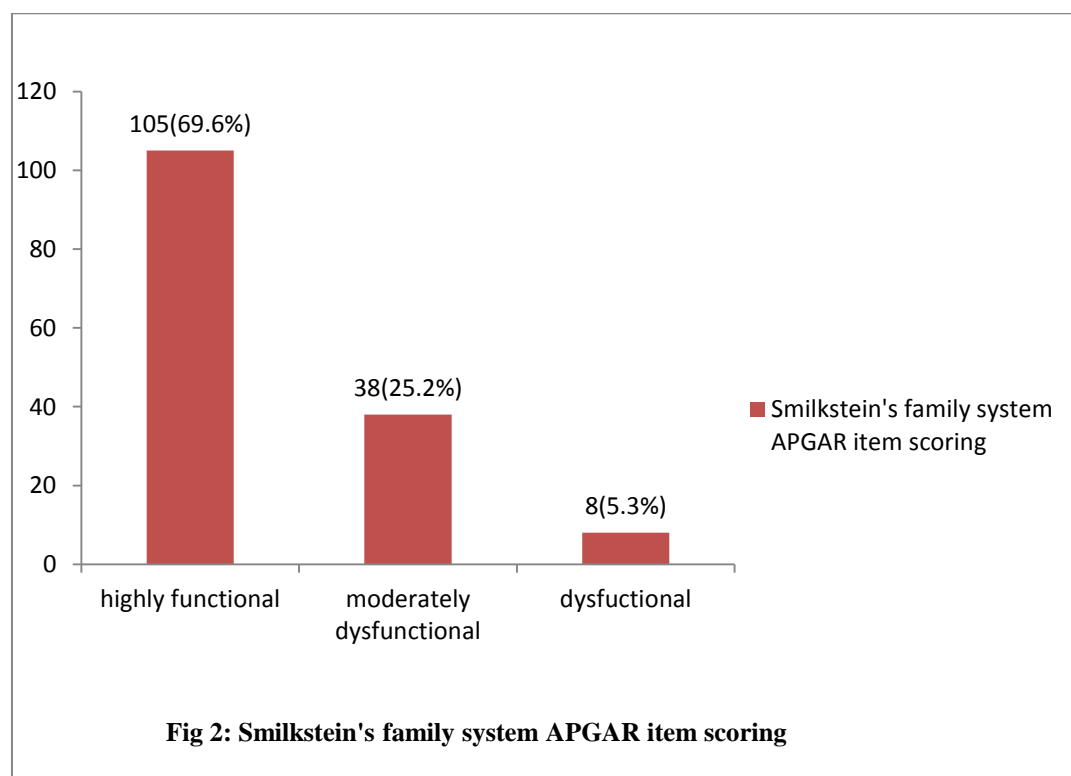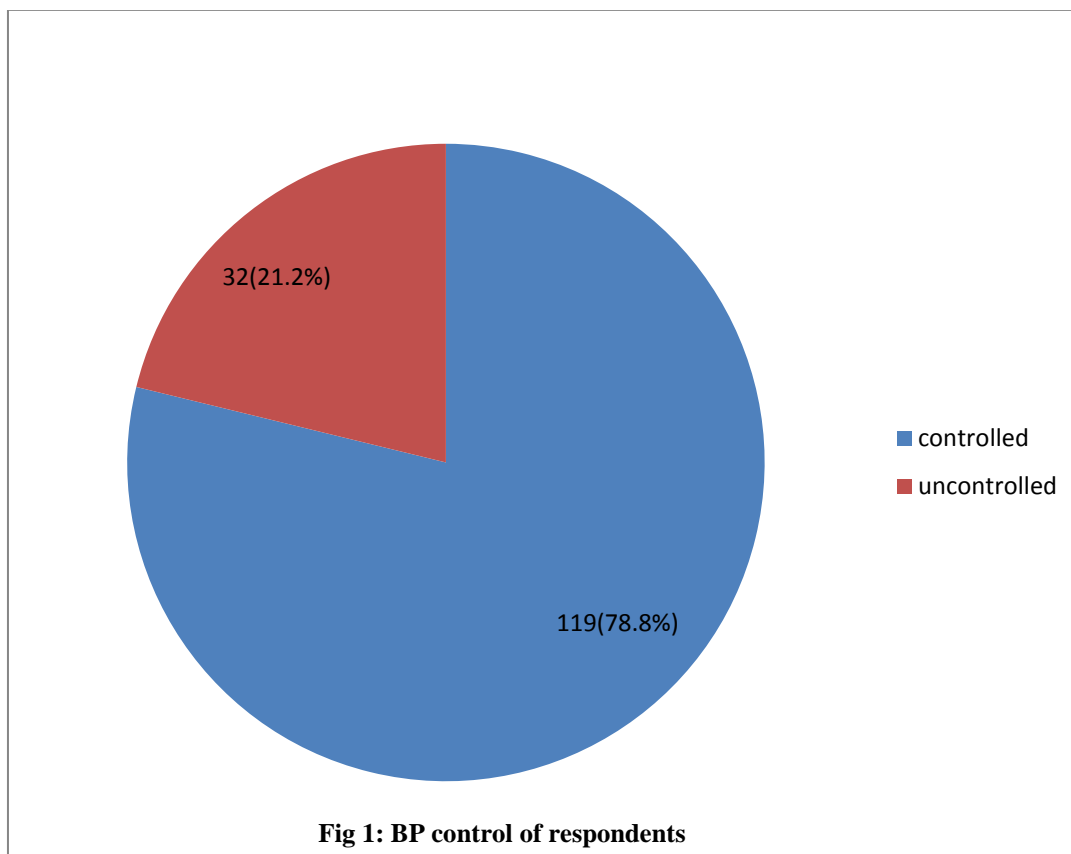| Variables	Frequency, n=151	Per cent
Age group		
20-39	12	7.9
40-59	69	45.7
60-79	67	44.4
≥80	3	2.0
Mean±SD =56.97±12.49		
Religion		
Christianity	143	94.7
Muslim	6	4.0
African Traditional religion	2	1.3
Occupation		
Unemployed	22	14.6
Civil servant	52	34.4
Business	53	35.1
Retired	24	15.9
Level of Education		
No formal	22	14.6
Primary	35	23.2
Secondary	35	23.2
Tertiary	59	39.1
Marriage type		
Monogamy	110	72.8
Polygamy	41	27.2
Marital status		
Single	1	0.7
Separated	1	0.7
Widowed	21	13.9
Married	128	84.8
Sex		
Male	58	38.4
Female	93	61.6
Monthly earning		
< 10,000	26	17.2
10,000-50,000	62	41.1
51,000-100,000	34	22.5
>100,000	29	19.2

Table 2: Blood pressure control and socio-demographic factors

Variables	Categories	Controlled BP(n=151)	Uncontrolled BP(n=151)	TOTAL	χ^2	P
Age group	20-39	11(91.7%)	1(8.3%)	12(100.0%)		
	40-59	61(88.4%)	8(21.6%)	69(100.0%)	19.158	0.000
	60-79	47(70.1%)	20(29.9%)	67(100.0%)		
	≥80	0(0.0%)	3(100.0%)	3(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Sex	Male	44(75.9%)	14(24.1%)	58(100.0%)	0.489	0.484

	Female	75(80.6%)	18(19.4%)	93(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Educational level	No formal	18(81.8%)	4(18.2%)	22(100.0%)		
	Primary	23(65.7%)	12(34.3%)	35(100.0%)	4.692	0.196
	Secondary	29(82.9%)	6(17.1%)	35(100.0%)		
	Tertiary	49(83.1%)	10(16.9%)	59(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Monthly income	<10,000	19(73.1%)	7(26.9%)	26(100.0%)		
	10000-50,000	49(79.0%)	13(2.10%)	62(100.0%)	1.575	0.665
	51,000-100,000	26(76.5%)	8(23.5%)	34(100.0%)		
	>100,000	25(86.2%)	4(13.8%)	29(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
BMI	18-24.9(normal)	25(71.4%)	10(28.6%)	35(100.0%)		
	25-29.9(over weight)	55(78.8%)	15(21.6%)	70(100.0%)	4.291	0.368
	30-34.9(mild obesity)	23(92.0%)	2(8.0%)	25(100.0%)		
	35-39.9(moderate obesity)	12(80.0%)	3(20.0%)	15(100.0%)		
	≥40(severe obesity)	4(66.7%)	2(33.3%)	6(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Exercise	Yes	47(82.5%)	10(27.5%)	57(100.0%)	0.730	0.393
	No	72(76.6%)	22(23.4%)	94(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Frequency of exercise	None	79(76.7%)	24(23.3%)	103(100.0%)		
	Daily	12(70.6%)	5(29.4%)	17(100.0%)		
	Once a week	8(100.0%)	0(0.0%)	8(100.0%)		
	Twice a week	7(77.8%)	2(22.2%)	9(100.0%)	5.416	0.492
	Thrice a week	5(83.3%)	1(16.7%)	6(100.0%)		
	Infrequently	8(100.0%)	0(0.0%)	8(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Frequency of drug intake	Regular	93(83.8%)	18(16.2%)	111(100.0%)	7.388	0.025
	Irregular	26(65.0%)	14(35.0%)	40(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		
Regular with clinic visit	Yes	86(82.7%)	18(17.3%)	104(100.0%)	4.365	0.113
	No	33(70.2%)	14(29.8%)	47(100.0%)		
	Total	119(78.8%)	32(21.2%)	151(100.0%)		

Table 3: Smilkstein's Family System APGAR Items Scoring And BP Control

Smilkstein's family system APGAR items scoring	BP Control of respondents		TOTAL
	Controlled BP	**Uncontrolled BP**	
Highly Functional	75(78.1%)	21(21.9%)	96(100.0%)
Moderately dysfunctional	31(81.6%)	7(18.4%)	38(100.0%)
Dysfunctional	6(75.0%)	2(25.0%)	8(100.0%)
Total	112(78.9%)	30(21.1%)	142(100.0%)
$\chi2=$ **0.271**	P=0.873		

Fig 1: BP control of respondents

Fig 2: Smilkstein's family system APGAR item scoring

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