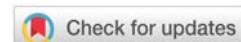


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Research Article

Relationship between Perceived Spousal Social Support and Blood Pressure Control among Hypertensive Patients Attending General Outpatient Clinic in Federal Teaching Hospital, Ido-Ekiti, Nigeria

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Abstract

Background: Despite many approaches to control hypertension, a lot of people still experience challenges keeping their Blood Pressure (BP) under control, and because the condition requires life - long treatment, many patients will need additional effort from their spouses. The spouse shares intimacy with patient and is the chief source of social support that provides financial assistance, reminds and encourages medication use, shows concern and interest by discussing issues related to the disease. Therefore, exploring the relationship between Perceived Spousal Social Support (PSSS) and BP control will help the physician and other stakeholders harness the gains of this association to achieving BP control, prevent complications and death associated with hypertension.

Objective: To identify the relationship between perceived spousal social support and blood pressure control among hypertensive patients attending General Outpatient Clinic (GOPC) in Federal Teaching Hospital, Ido-Ekiti, Nigeria.

Materials and methods: This was a hospital - based cross - sectional study carried out between June and August 2016 among 298 hypertensive patients aged 18 and 65 years attending GOPC of the Federal Teaching Hospital, Ido Ekiti. Collection of data was done using pre-tested, semi-structured questionnaire on sociodemographic characteristics, blood pressure measurement and 4-point Likert Social Support questionnaire to measure the perceived spousal social support. Data was analysed using SPSS IBM version 17.0.

Results: Mean age of respondents was 56.0 ± 8.5 years and seventy percent were females with male to female ratio of 1:2.3. Less than half of the respondents, 47.7% and about half of the respondents, 50.3% achieved BP control and demonstrated strong PSSS respectively. There was statistically significant relationship between PSSS and BP control ($\chi^2 = 27.05$, $p < 0.001$).

Conclusion: Social support perceived by participants positively influenced their BP control. Family Physicians and other health care providers should therefore determine and enhance the level of this support and encourage spouses to provide this support for their partners who have hypertension or those having difficulty controlling their BP despite the appropriate use their medications.

Introduction

In relation to spousal social support is a psychological pathway between social relationship and health which operates via a stress buffer mechanism [1,2]. This mechanism is said to enhance the health benefits of social support through reduced reactivity of systolic and diastolic BPs and reduction in pulse or heart rate in stress situations [3]. Also, tangible social support such as financial support and reminding to use medications are said to provide a solution to the problem associated with the stress factor - financial stress by providing the means and tangible help in the event of personal difficulties or crisis, thereby reducing the stress reaction [4]. But, in the event of a breakdown of this buffer, social strain results [4,5]. The implication of this for example is that, in stressful times, social support helps people reduce psychological distress which otherwise could lead to anxiety, depressive episodes and consequent high blood pressure [5]. The perception that the spouse is perceived to be able and willing to make available needed social resources has been elucidated to redefine the potential for harm and prevent a particular situation such as hypertension from being appraised as highly stressful [5]. Ojo, et al. in a BP control study showed that strong perceived family support was an independent predictor of controlled BP [6]. Osamor likewise in a study done in Iwo, Southwest, Nigeria supported this by showing that those who had support from family members such as the spouse had better BP control than those who had no support [7]. In a hospital - based cross - sectional study among adult patients aged 18 years and above in Saki, Southwest Nigeria, it was found that about 74% of respondents with functional family support had good BP control [8]. A common denominator in these studies is the spouse who provides a broad range of emotional, psychological and material support. Therefore, a simple social approach to curtail uncontrolled BP in hypertensive patients is to involve the spouse from onset bearing in mind that the disease condition is life-long, requiring continuous management and substantial daily effort such as use of antihypertensive medications, blood pressure monitoring, physical exercise, diet and other daily habits. Given that doing this alone portends potential stress, many patients need the input of their spouses or a significant other to provide social support to help keep their blood pressure in check, prevent complications and death.

Subjects and methods

Study area

This study was conducted among adult hypertensive patients 18 - 65 years attending the GOPC of Federal Teaching Hospital Ido-Ekiti (FETHI), Nigeria. Ido-Ekiti is a town with a population of about 70,000 and serves as the headquarter of Ido/Osi Local Government Area [9]. The hospital offers training, health care services and research, and as a tertiary hospital, it receives patients and clients from primary, secondary and tertiary health care facilities within and outside Ekiti State. The Family Medicine (FM) is an umbrella department for general outpatient clinic (GOPC), FM sub-specialty practices such as geriatrics, palliative and lifestyle medicine, National Health Insurance Scheme (NHIS), HIV and rural health clinics. These

clinics are run by Consultant Family Physicians, Resident Doctors and Nurses.

Study design

It was a hospital - based cross - sectional study carried out among 298 adult hypertensive patients who attended the GOPC of FETHI between June and August 2016, their population estimate in 2015 was 3600.

Inclusion criteria

1. All consenting married (or living with partner) hypertensive patients who were between 18 and 65 years.
2. Hypertensive patients who have been on medication for at least 3 months.

Exclusion criteria

1. Those with complications from hypertension such as stroke or hypertensive emergencies as at the time of the study.
2. Acutely ill patients as at the time of the study.

Sample size estimation

The sample size of 298 was determined using the formula $n = z^2 p (1-p) / d^2$ [10]. At significance of 95% and precision level of 5%, $z = 1.96$, $d = 0.05$. The age-standardised proportion of controlled BP (p) among adults on antihypertensive medications in a previous study was 25.6% [11].

Therefore, using the above formula $n = 1.96^2 (0.256 \times 0.744) / 0.05^2$, $n = 292.67$, ~ 293

Since the number of adult hypertensive patients (N) at the GOPC in 2015 was 3600 ($< 10,000$), the sample size was adjusted using the formula $nf = n / 1 + (n / N)$. Then, $nf = 293 / 1 + (293 / 3600)$, $nf = 270.9$, ~ 271 . The minimum sample size was 271, and with the addition of 10% to increase the power of the study, it came to 298.

Sampling method

Systematic random sampling technique was used to recruit subjects among hypertensive patients attending the clinic. In the GOPC patient record of the hospital, 15 hypertensive patients attended the clinic daily, which translated to 75 patients per week using the lower limit and 900 within the 12-week period of the study. A sampling interval (K) was calculated using the formula: $K = N / n$, where: N = total number of patients and n = calculated sample size, therefore $K = 900 / 298 = 3$. Every 3rd hypertensive patient who met the inclusion criteria was enrolled for this research and five patients were recruited daily. In selecting the first participant each day, balloting technique was used in which three small papers were rolled, one was labelled 'Yes' and the other two had 'No' written in them. Using the balloting system for the first three hypertensive patients on the attendance list for each day, the patient who picked 'Yes' was seen first, thereafter, every 3rd hypertensive patient was

enrolled until the required number for the day was attained. For selected participants who declined to participate, he or she was given appropriate treatment, but was not included in the study. The next patient on the list was then selected for study. This was repeated every clinic day until the sample size was completed. The case file of each of the selected participants was tagged using a red colour code to prevent a second recruitment. By the end of the 12 – week period, the required number of subjects (n= 298) was attained.

Data collection tools and process

Respondent's eligibility for the study was determined, and consent taken. Data was collected by four bilingual (English and Yoruba) research assistants who were; two junior resident doctors and two nurses. A written informed consent was obtained by the principal investigator from willing participants using the information sheet as guide with an assurance of confidentiality. On daily basis, the nursing research assistants sorted out the clinical records of all adult hypertensive patients and applied the inclusion criteria. The selected patients were invited into consultation room where the researcher introduced them to the study, screened them for exclusion criteria and took informed consent. Those who did not meet the criteria or declined consent were not included in the study, but were given treatment as appropriate. Using the sampling technique, five participants were recruited per day. The respondents were then given the routine medical care for hypertension and thereafter the researcher documented the socio-demographic and the BP of participants using section A and B of the questionnaire. The participants were then led to a consulting room where a junior resident conducted an exit interview on them using the PSSS Scale to determine the level of Perceived Spousal Social Support as well as questions on medication adherence using the MMAS-8.

Participants' selection and collection of background information

Pre - tested semi - structured interviewer - administered questionnaire drafted in English language was used for this study. It was translated into Yoruba language for respondents who spoke only Yoruba and back translated into English language by the bilingual research assistants. The questionnaire was divided into four sections namely: Section A is a proforma for socio-demographic characteristic. The information collected included age, gender, family type, level of education, occupation and income. Section B was used to record Blood Pressure (BP) measurements of the respondents. The next section was the perceived spousal social support questionnaire used to assess the level of the perceived spousal social support. It is a 4-point Likert-type adapted from the Social Support questionnaire for compliance, which has been used in Nigeria [12]. The original questionnaire is a Multi - dimensional Scale of Perceived Social Support developed by Zimet, et al. in 1988 and has an alpha reliability of 0.88. The modification was that the word 'family' in the four questions in the perceived family social support section used by Pauline was replaced by 'spousal'. The questionnaire consists of 4 questions and the response included any of the following: "(0) I Don't know" "(1)

Not very", "(2) very" or "(3) Extremely". The four domains of the PSSS were combined in a construct such that the higher the score, the stronger the level of PSSS. The maximum score was 12 and 4 was the minimum with PSSS score of < 5, 5 to 8 and 9-12 as Poor PSSS, Fair PSSS and Strong PSSS respectively.

Blood pressure estimation

The researcher used Accosson® brand of Mercury Sphygmomanometer to measure the blood pressure of participants in sitting position using the left arm with a stethoscope and appropriate blood pressure cuff after at least 5 minutes of rest in a sitting position with the legs uncrossed. The blood pressure cuff was at the level of patient's heart and the forearm was rested on a table, the brachial pulse was palpated in the antecubital fossa of the arm, and the cuff was inflated to 20mmHg above the point at which the brachial pulse disappeared. The cuff was deflated and the pressure at which the pulse re-appears was noted (rough systolic). The cuff was re - inflated to 20mmHg above the point at which the brachial pulse disappeared. The stethoscope diaphragm was placed over the brachial artery ensuring complete skin contact with no clothing in between. The cuff was deflated slowly (2 mmHg per second) while listening for the first and fifth Korotkoff sounds which correspond with the systolic and diastolic blood pressure respectively. A cut off level of BP measurements of < 140mmHg and < 90mmHg for systolic and diastolic blood pressure respectively was considered controlled BP while \geq 140 mmHg and \geq 90 mmHg for systolic and diastolic BP were considered uncontrolled BP according to JNC - 7.

Data analysis

The dependent variable was the BP while the independent variable was PSSS level. The data were summarised and analysed using the IBM SPSS version 17.0. Data collated were summarised with descriptive statistics and association between categorical variables were analysed using chi-square at significance level less than 0.05 Tables 1-5.

Discussion

The result of this study showed that the mean age of respondents, 56.0 ± 8.5 years is comparable with the work done by Ojo, et al. in Abeokuta, which found an overall mean age of 55.4 ± 10.5 years in a study conducted among hypertensive patients [6]. In a related study to determine the link between social support and adherence to medications among hypertensive patients, Ofoli, et al. reported a mean age of 56 ± 11.6 years [13]. This observation is not surprising because reports from similar studies have shown that the prevalence of hypertension increases with age in most populations [14-16]. However, this result is higher than that in Ibadan which reported 42.1 ± 21.6 years and in Enugu where 43.8 ± 13.7 years was noted [17,18]. This difference could be accounted for probably because these were community - based studies. Also the fact that larger participants, including the younger population in these semi-urban areas were recruited and data was collected on other CVD risk factors such as body mass index and cholesterol level which not only affect the middle aged population but also the younger people [18]. The mean



age in this study was lower than 64.7 years reported in a study in Ireland [14]. It may be explained by the higher prevalence of hypertension among the younger population in Nigeria when compared with Caucasians.

The study's finding of female preponderance of 70.1% is in keeping with previous reports of female dominance compared with their male counterparts in most hospital-based studies [19,20]. This finding supports the study in Northern Nigeria which reported that 75% of hypertensive patients were females [13]. This deduction suggests that women exhibit more health caring attitude and have enough time to visit the clinic than men, this was further supported by cross-sectional studies in Spain and the US where similar findings were reported [20,21]. However, in another related study on the appraisal to determine the level of BP control in a hospital-based prospective study among 207 hypertensive outpatients in Port Harcourt, South-South Nigeria, a lower female predominance of about 52% was

Table 1: Age, Gender, Family Type and Educational Level of Participants.

Variables	Frequency n = 298	Percentage %
Age (years)		
31-40	31	10.4
41-50	38	12.7
51-60	117	39.3
61-65	112	37.6
Mean ± SD	56.0 ± 8.5	
Gender		
Female	209	70.1
Male	89	29.9
Family Type		
Monogamous	213	71.5
Polygamous	85	28.5
Educational Level		
No Primary Education	19	6.4
Primary	70	23.5
Secondary	76	25.5
Tertiary	103	34.5
Postgraduate	30	10.1

Table 2: Occupation and Monthly Income distribution of Respondents.

Variables	Frequency n = 298	Percentage %
Occupation		
Civil Servants	93	31.3
Trading	104	34.9
Farming	18	6.0
Self-Employed	32	10.7
Retired	51	17.1
Monthly income (N)		
≤ 50,000	189	63.4
>50,000 – 100,000	93	31.2
> 100,000	16	5.4
Median (Range)	30,000 (2,000 – 200,000)	

Table 3: Perceived Spousal Social Support level among Respondents.

Perceived Spousal Social Support	Frequency n = 298	Percentage (%)
PSSS Level		
Poor (0-4)	70	23.5
Fair (5-8)	78	26.2
Strong (9-12)	150	50.3
Mean PSSS score ± SD	8.0 ± 2.9	
Spousal financial support		
Extremely helpful	58	19.5
Very helpful	51	17.1
Not very helpful	189	63.4
Spousal concern		
Extremely helpful	143	48.0
Very helpful	85	28.5
Not very helpful	70	23.5
Spousal interest		
Extremely helpful	150	50.3
Very helpful	55	18.5
Not very helpful	93	31.2
Spousal reminder		
Extremely helpful	126	42.3
Very helpful	66	22.1
Not very helpful	100	33.6
Don't know	6	2.0

Table 4: Pattern of Combined Blood pressure Control among Respondents.

Blood Pressure	Frequency n = 298	Percentage %
Controlled BP (< 140/90)	142	47.7
Uncontrolled BP (≥ 140/90)	156	52.3

reported [19]. This is not unrelated to the high concentration of women in the rural area where this study was conducted in contrast with the urban area like Port Harcourt where the younger ones have migrated to.

Seventy - one percent of the subjects in this study were in monogamous marriage. This could be due to the fact that people residing in Ekiti State practice Christianity which only permits one man, one wife. In contrast, Rasaq, et al. in Kwara, North Central Nigeria reported that 71% of the people practice polygamy being Muslims [22].

Seventy percent of subjects in our study achieved secondary school education and above. This is similar to 60.2% quoted by Ojo, et al. in Abeokuta and 63.6% by Fatusin in Ekiti respectively [6,23]. This is because, like any South-western State of Nigeria, Ekiti indigenes are well educated. This finding could also be because many of the participants enjoyed the free education of the old south-western region. However, Pauline in a community-based cross-sectional descriptive social support and hypertension management study of 440 community residents in Idikan community in Ibadan, reported that about 50% of the respondents had no formal education

**Table 5:** Relationship between Perceived Spousal Social Support and BP Control.

Perceived Spousal SocialSupport (PSSS)	Blood Pressure Control(n = 298)		χ^2	df	p-value
	Uncontrolled n = 156 (%)	Controlled n = 142 (%)			
Poor PSSS (0-4)	52(74.3)	18(25.7)	24.58	2	<0.001*
Fair PSSS (5-8)	45(57.7)	33(42.3)			
Strong PSSS (9-12)	59(39.3)	91(60.7)			
Spousal financial support					
Extremely helpful	27 (46.6)	31 (53.4)	1.17	2	0.557**
Very helpful	26 (51.0)	25 (49.0)			
Not very helpful	103 (54.5)	86 (45.5)			
Spousal concern					
Extremely helpful	52 (36.4)	91 (63.6)	30.81	2	< 0.001*
Very helpful	52 (61.2)	33 (38.8)			
Not very helpful	52 (74.3)	18 (25.7)			
Spousal interest					
Extremely helpful	65 (43.3)	85 (56.7)	13.77	2	0.001*
Very helpful	28 (50.9)	25 (49.1)			
Not very helpful	63 (67.7)	30 (32.3)			
Spousal reminder					
Extremely helpful	53 (42.1)	73 (57.9)	23.07	3	< 0.001f
Very helpful	34 (51.5)	32 (48.5)			
Not very helpful	69 (69.0)	31 (31.0)			
Don't know	0(0.0)	6(100.0)			

*: Statistically Significant; **: Not Statistically Significant; f: Fischers Exact Test

[12]. The difference is obvious going by the hospital - based nature of this study when compared with the one at Idikan, Ibadan.

Most of the participants were either civil servants or traders indicating that Ekiti State is a civil service state and that women, who are known for trading constituted the larger percentage of the study.

The income of participants in this study ranged from N 2,000 to N 200,000 (\$ 5-500) while the median income was N 30,000 about \$ 75 per month (\$1 = N 400). This view was also shared by Fatusin, et al. who found a range of N 10,000 and N 194,000 [23]. This could be attributed to the level of education and the high employment rate among them, bearing in mind that the monthly minimum wage of an average Nigerian is N 18,000 or \$45 or less than two dollars a day [24]. However, about 63% of the respondents lived on a monthly income of \leq N 50,000. This corroborates Ojo in Abeokuta and Rasaan in Ibadan, in which 64% of their study respondents also earned \leq N 50,000 monthly [6,25]. Also, in a descriptive cross - sectional study of high blood pressure in a semi-urban area in Uyo, South-South Nigeria, Ekanem, et al. reported that majority of the participants, 45% earned between N 30,000 and N 50,000 monthly [26]. In a Lagos study on the prevalence and socio-demographic profile of hypertensive outpatients, majority, 45% of the respondents earned less than N 10,000 monthly [27]. The reason for this is probably because many Nigerians

are underemployed and live from hand to mouth due to the poor economic state of the country.

The finding of 50% and 76% of the participants having strong and fair/strong spousal social support respectively, lays credence to a cross - sectional study on BP control and perceived social support conducted by Ojo and colleagues in Abeokuta, Southwest Nigeria in which about 79% of the respondents reported strong perceived social support [6]. This corroborates the naturally rich social support network Africans demonstrate in the face of financial difficulties. The strong family ties of the Yoruba culture and the rural nature of the study area could also be responsible and because the participants were in a marital relationship. A similar study done in Ibadan among the hypertensive patients reported that 93% of the subjects received some social support from family members [12]. Previous research works have also shown that in family - centered societies, people tend to gain support from family members, especially the spouse or the significant other [28,29].

The finding of the prevalence of BP control to be 47.7% among hypertensive patients in this study supports many literatures on this subject. It was reported in a systematic review on hypertension awareness, treatment and control, that, BP control in Africa hovers around 45% [30]. Studies carried out among hypertensive patients in Abeokuta and Ethiopia reported 46.6% and 46.4% respectively [6,31]. The adoption of westernised diet with high salt content, physical inactivity and low adherence to therapy among Nigerians are probably responsible for this according to Mendis [32]. Lower prevalences of 40% and 35% have been reported in a study on cardiovascular disease prevention and control in low medium income country such as Nigeria and America respectively [32]. Blood pressure control was 32% in a semi - urban population in Nsukka, South - East Nigeria. Higher prevalences of BP control have also been reported [33]. Anup and colleagues applying JNC-8 reported 58.8% in Mumbai India [34]. This disparity could be due to the larger sample sizes in these studies and the JNC-8 used in Mumbai.

This study also supports the assertion that perceived spousal social support is associated with blood pressure control as the participants with strong perceived spousal social support demonstrated controlled BP than participants with poor perceived spousal social support. This corroborates a study done in Nigeria where it was shown that strong perceived family support was an independent predictor of BP control [6]. Likewise in a study done in Iwo, Nigeria, those who had support from family members such as the spouse had better BP control than those who had no support [7]. In a hospital - based cross - sectional descriptive study among adult patients aged 18 years and above in Saki, Nigeria, 74% of respondents with functional family support had good BP control. The study showed that the spouse is in the best position to provide a broad range of emotional, psychological and material support [8]. Furthermore, spousal concern, interest and reminder to take medications were associated with BP control but financial support, a form of tangible social support was found not to



have a relationship with BP control. This finding on financial support could be attributed to the fact that most men in this study reported not perceiving any financial support from their wives owing to African tradition that men should be the sole breadwinner of the family. In contrast, a study in Nigeria documented a positive relationship between financial support and BP control [25]. Meanwhile, a cross-sectional survey using self-reported questionnaire found that cumulative perceived functional spousal support such as financial support for drug purchase, having someone to talk to about hypertension, showing concern, interest in one's spouse and reminding patients to use drugs lower the odds of high blood pressure [3]. This is probably so because of the positive buffering effect of tangible social support on psychological well-being and chronic diseases [3].

Conclusion

Fifty percent of adult hypertensive patients attending GOPC of Federal Teaching Hospital, Ido-Ekiti demonstrated strong perceived spousal social support and there positive association between strong spousal social support and controlled BP.

Therefore, spouses are encouraged to provide emotional and practical social support for their partners diagnosed with hypertension or those having trouble bringing the BP under control because this simple measure is helpful to bring down the BP.

Also, once hypertension is diagnosed, the level of spousal social support should be determined and enhanced if low as early as possible, towards the achievement of BP control, prevention of complications and death.

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Author's contribution

Ekundayo, Oladeji Olusola – Conceptualisation, manuscript writing, literature search, protocol implementation, planning, data collection, data analysis and discussion.

Elegbede, Olayide Toyin and Gabriel-Alayode, Olusegun Emmanuel – Contributed to protocol implementation, planning, proof reading of draft and proof reading of materials for intellectual content.

Agboola, Segun Matthew; Shabi, Olabode Muftau; Bello, Ibrahim Sebutu; Omosanya, Olusegun Emmanuel and Ajetunmobi, OluwaserimiAdewumi – Contributed to proof reading of draft, proof reading of materials for intellectual content.

Fashola, Adeniyi Matthew – Contributed to data analysis and discussion.

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Consent

Informed consent was carefully obtained from participants in this study.

Ethical approval

Approval to conduct this study was obtained from the Health Research and Ethics Committee of Federal Teaching Hospital, Ido-Ekiti.

Limitations

Being a cross-sectional study, inference on temporal causality could not be ascertained. Also, because it was a hospital-based study, the application of the findings of this study to the general population should be done with caution.

Areas of further research

It is expected that future studies would be conducted on the effect of specific types of perceived spousal social support on BP control and how received social support from spouses will affect blood pressure.

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