



RESEARCH ARTICLE

ASSESSMENT OF ANXIETY AND PERCEPTION OF FAMILY SUPPORT IN HYPERTENSIVE PATIENTS

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ABSTRACT

Studies indicate that hypertension has no single cause but is the result of the interaction of biological, psychological and social factors. The family support may be a social aspect in the process of health disease. This study aimed to correlate indicators for anxiety and family support perception in hypertensive persons, and to seek evidences of converging validity between the variables of the Beck Anxiety Inventory (BAI) and Trace-State Anxiety Inventory (STAI) instruments. Seventy hypertensive persons, 52 women (74%), aged 27 to 65 years (M=52.3, SD=8.9), participated in the study. The tests employed were an Identification Questionnaire, BAI, STAI, and the Inventory of Perception of Family Support (IPSF). Results indicated high levels of anxiety and low levels of family support perception. The correlations between the anxiety indicators (BAI and STAI) and PFSI were found to be negative and significant.

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INTRODUCTION

Social sciences consider health as a multidimensional state involving physical, psychological, and social aspects rather than merely the absence of diseases. Therefore, to understand the health-disease process, it is essential to understand an individual's interaction with the environment. This will also help us to broaden our understanding of risk and protective factors involved in the process (Spink, 2010). Risk factors are related to negative outcomes that increase the probability of an individual to experience health problems, such as stress, adversity, difficulty to adapting environmental changes, symptoms of anxiety and depression, and limitations and lack of resources. Protective factors refer to influences that transform or improve the individual's responses; it may contribute to confronting the health-disease process and predict positive outcomes, such as life quality, including, resilience, subjective well-being, optimism, happiness, self-determination, hope, creativity, social and family support, interpersonal skills, religion and spirituality, etc (Straub, 2005). High blood pressure is considered as a risk factor for anxiety. It affects many people and can be considered as multidimensional. According to the Ministry of Health (2002), the estimated prevalence of hypertension in Brazil is 35% of the total population over the next 40 years, which represents an absolute total of 17 million carriers of the disease. Hypertension is characterized as an atypical disorder because it does not reveal any specific symptom that allows its detection, and therefore, its diagnosis should include assessment of psychosocial factors through appropriate

instruments (Soares, 2005). Usually three steps identify the chronicity of hypertension. First, the reactive pressure, which is marked by elevations in the systolic pressure that produces incorrect hemodynamic adjustment for certain situations; this is the step in which psychosocial factors mainly contribute for increase in hypertension. Second, borderline hypertension that is characterized by systolic pressure and long durations of increased heart rate; this is an alongside factor that aggravates the hemodynamic mechanisms (for e.g., alcohol, nicotine, etc). Third, essential hypertension, which is characterized by elevated systolic and diastolic pressure, having biological factors as the most aggravating, mediated by neurohormonal imbalance and renal dysfunction (Tavares, 2007). Previous studies have shown that some psychological features are also associated with hypertension (Adler and Matthews, 1994; Burd and Tavares, 2004; Diamond, 1982; Trigo *et al.*, 2000). As per the studies, a hypertensive patient is a conflicted individual, who shows hostility, impatience, rudeness, resentment, anxiety, and sense of time urgency. Often the patient also expresses his/her impulses through detachment, withdrawal, submission, compliance, and expression of anger. The considerations of Sadock and Sadock (2007) on the complexity of civilization, the rapidity of changes, and the loss of some traditional family and religious values created new conflicts and anxieties for individuals and for society. The anxiety in hypertensive patients shows two components: the perception of physiological sensations and the perception of being nervous or scared, which brings a shameful feeling in them. These components affect people's thinking, perception, and learning, which tend to produce confusion and perceptual distortions. This also reduces concentration, memory, and the ability to associate (Sadock and Sadock, 2007). Florindo

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(1991) conducted a study to evaluate the trait anxiety and state anxiety in 50 hypertensive patients in a Health Care Centre in São Paulo using the State Trait Anxiety Inventory-State (STAI) as a measuring tool. Her results demonstrated interactions between anxiety and cardiovascular activity (hypertension). As a psychic phenomenon in the process of emergence of the disease and during treatment, she suggested the need of a health team and of the patient itself to adequately cope with anxiety. In the longitudinal study by Markovitz *et al.* (1993), anxiety, symptoms of anger, anger expression, and blood pressure were measured by the Framingham Heart Study in 1123 participants (497 men and 626 women), who were all initially normotensive. The follow-up period was of 18 years, and the results showed that individuals who had high values of trait anxiety were twice as likely to develop hypertension.

Mac Fadden and Ribeiro (1998) conducted a study that aimed to investigate the psychological dynamics involved in the etiology of hypertension through the Rorschach test and psychological interviews. Their sample consisted of 20 hypertensive patients, of both sexes, aged between 27 and 55. Their results showed that blocking the affective-emotional expression, the predominance of immature and subjective personality dynamics, and the presence of anxiety may act on the autonomic nervous system, favoring transient hypertensive crisis, which can over time turn into permanent crisis (hypertension). To assess the symptoms of depression and anxiety, Barud and Kowalik (2004) conducted a study on 38 hypertensive patients (17 women and 21 men), averagely aged 53 years. They collected the data using the Hospital Anxiety and Depression Scale (HADS) and the STAI. Their results showed moderate symptoms of depression and a high degree of state anxiety as well as trait anxiety in the sample. The researchers also highlighted that as a behavioral predisposition, these patients show high rate of anxiety. In order to evaluate the influence of anxiety on the risk of developing hypertension, myocardial infarction, and stroke, Gafarov *et al.* (2007) conducted a longitudinal study on 2,149 men, all aged between 25 to 64 years, for 10 years. The STAI was used to assess anxiety and Cox-regression model was used to estimate the relative risk. The study results showed that a high level of anxiety may result in a high risk of hypertension and cardiovascular problems in middle-aged men. Another study by Lemos *et al.* (2008) established the objective of investigating the association between depression, anxiety, and quality of life in people suffering from acute myocardial infarction (AMI), a problem that occurs in comorbidity of hypertension. Their sample consisted of 168 participants of both sexes, 82 males and 86 females, average age group, divided into three groups: 60 patients with AMI, 49 outpatients without AMI but diagnosed with cardiovascular disease, and 59 normal patients, aged 35 to 65 years. The instruments used were the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and the World Health Organization Quality of Life (WHOQOL). The results suggested that depressive disorders were not triggered by AMI; rather they were present in patients before they were admitted in the hospital. AMI patients and outpatients showed high levels of anxiety, and in relation to quality of life, the physical domain had the lowest values in the outpatient control group.

Chaves and Cade (2002) conducted a descriptive and correlational study to investigate the relationship between coping strategies with states of anxiety and depression in hypertensive people. They treated 78 women at the Heart Institute (InCor) of the Medicine School of the University, São Paulo. They used three instruments: the Coping Strategies Inventory (CSI), STAI, and BDI. Results showed that the sample, mostly showed an average trait, moderate state anxiety, and lack of depression. The coping strategy of escape-avoidance prevailed in the sample. In addition, less adaptive coping strategies were found associated with depression. No significant coping strategies were associated with anxiety. From the above mentioned studies, it is evident that anxiety is one of the psychological aspects of the disease process in individuals suffering from hypertension (Campos, 2004; Demanuele and Brigham, 2006). In the study on protective factors by Chaves and Cade (2002), the coping strategies did not associate with anxiety, showing that these variables are not influenced in hypertensive individuals. From prior literature reviews, Baptista (2009) concluded that a high level of perceptive family support is associated with low prevalence of mood and anxiety disorders, and positively influences the outcome of psychotherapy treatment. Souza (2007) agreed that the appropriate perception of family support is associated with an increased sense of security in relation to survival, especially in individuals with frequent health crises, and can reinforce healthy habits. People who perceive an emotional support from family expect to live longer, i.e., they show higher subjective life expectancy.

In this context, Ceberio (2006) and Souza (2007) postulated that a family can be considered as a social device that can influence individuals in their future relationships and can function as one of the main pillars of people's psychic life. It can also influence behavior patterns, feelings of social belonging, and mental health. All social groups, including the family, are permeated with complex processes of communication, relationships, belief systems, their own rules, common values, and functions. Baptista *et al.* (2008) and Souza (2007) understand family support, attention, affection, dialogue, freedom, emotional closeness, autonomy, and independence between the family members as a manifestation (psychological characteristics), differing from the concept of family structure that refers to the number of people belonging to a family, their disposition as well as composition (physical characteristics). McFarlene *et al.* (1995) stated that family structures can offer proper family support, not showing direct correlation between these two characteristics, after a study on 810 students in which they found that the relationship between the family structure, the family integration, and welfare of the children in their teens, compared with intact families, have suffered structural changes. Baptista *et al.* (2008) outlined another study using the Inventory of Perception of Family Support (IPSF) and the BDI, to find evidence of validity for Depression Scale (EDEP) in relation to the other variables. Their sample consisted of 157 students, aged between 18 and 51 years, in which the female ratio was 75.5%. The Spearman correlation coefficient (r_s) used for non-parametric analysis showed a positive correlation between the BDI and EDEP ($r_s=0,75$; $p<0,000$) and negative correlations with the IPSF and its factors, being consistent for the Affective factor ($r_s=-0,36$; $p<0,000$), for the Adaptation factor ($r_s=-0,37$; $p<0,000$), for the autonomy factor ($r_s=-0,32$; $p<0,000$), and for

the total sum ($r_s=-0,42$; $p<0,000$). These results indicated that the higher the symptomatology is (psychological factor present in the health-disease process), the lower is the perception of family support. These considerations suggest that the absence of perception of an adequate family support can be related to the disease process, i.e., with increasing anxiety, stress, and depressive symptoms. Thus, inadequate family support can jeopardize the health, which is defined by the World Health Organization, as well as physical, mental, and social health (Spink, 2010). Anxiety, in turn, can be considered a psychological risk factor involved in the health-disease process, including hypertension.

Considering the aspects mentioned above, the present study aims to correlate indicators of anxiety and perception of family support in hypertensive patients. In the current study, family support is considered as a social aspect and a protective factor. The variable is associated with anxiety and is possibly influential in the health-disease process of hypertensive individuals (Souza, 2007). With the hypothesis that higher levels of anxiety may be associated with lower levels of perception of family support, the aim is also to assess anxiety and perception of family support of these individuals and to look for evidence of convergent validity between the instruments, i.e., BAI, which assesses symptoms of anxiety and STAI, which assesses trait anxiety (individual characteristic) and state anxiety (situational).

METHOD

Participants

This study involved 70 people, 52 women (74%) and 18 men (26%), diagnosed with hypertension three years ago or more. Their ages ranged between 27 and 65 years ($M=52,3$, $SD=8,9$). All participants underwent treatment in a Basic Health Unit (UBS) of São Paulo. Of all the participants, 74% were married, and the rest 26% were either single, divorced, or widow(er). This data was compared with previous literatures and studies, since according to Baptista (2009), different family structures can support a proper family, with no direct relationship between the concept of family structure and family support. Regarding education, 4.2% were illiterate, 35.7% had completed schooling till 4th standard, 12.9% were dropouts in the 7th standard, 18.6% had finished elementary schooling, 4.3% did not complete secondary schooling, and 24.3% had completed their high school studies. All the participants had a poor education background, but it is not possible to say whether it contributed to low levels of perception of family support. Although the IPSF manual doesn't show restrictions in terms of schooling, still a majority of prior studies had employed such instruments on college students (Aquino, 2007; Baptista, 2009, Baptista and Dias, 2007; Souza, 2007).

Instruments

An Identification Questionnaire, the BAI (Beck *et al.*, 1988; Cunha, 2001), the STAI (Biaggio and Natalicio, 1979; Spielberger *et al.*, 2003), and IPSF (Baptista, 2009) were used as analysis tools. The inventory was created by Beck (Beck, Epstein, Brown and Steer, 1988) and adapted and translated by Cunha (2001). The application of the BAI is self-administered, with estimated time of 5 to 10 minutes, and if the examiner

considers necessary to assist the examinee, we use the oral application with an average time of 10 minutes. Criteria for correction of the scores of the Portuguese version of the BAI are a number scale from 0 to 3 points each and the total sum of scores can range from 0 to 63 points. The results differ in the degree of anxiety: Minimum 00 to 10, mild 11 to 19, moderate 20-30 and severe 31-63. Its application is made individually or collectively, is suitable for clinical use in men and women aged 17 to 80 years. The inventory studies provide evidence of validity based on the content, in relations with other variables and in the internal structure (Alchieri, Noronha and Primi, 2003; Cunha, 2001).

Biaggio and Natalicio (1979) were responsible for the translation and adaptation of the Brazilian population State - Trait Anxiety Inventory (STAI). The studies presented norms for adults and adolescents. The instrument contains two scales, each of which contains 20 items that individuals should self-evaluate on a scale of four points. The scale categories for the A-State scale are: 1. Absolutely not, 2. A little, 3. Enough and 4. A lot. The categories for the A-Trait scale are: 1. Almost never, 2. Sometimes, 3. Often, and 4. Almost always. The STAI can be used in adolescents and adults and the material is distributed by CEPA (Applied Psychology Center), consists of manual and protocol called self-assessment questionnaire. The form of administration can be individual or collective and there is no time limit, the time varies by level of education and emotional conditions, an average of 6 to 12 minutes is needed for each of the scales and 15 to 20 minutes for both scales approximately. The IPSF assesses the perception that an individual has of the support he/she receives from his/her own family. It is composed of a three-point likert scale, i.e., always, sometimes and never, with 42 items. After the factorial analysis made with the sample composed of 1064 participants, it presented three dimensions, named below with their respective Cronbach alpha coefficients: *Affective-consistent* ($\alpha=0,91$), composed by 21 items that refer to the affectionateness expression between the family members (verbal and non-verbal), among other manifestations. *Family adaptation* ($\alpha=0,90$), composed by 13 items referring to negative feelings and behavior in relation to the family, such as anger, isolation, incomprehension, aggressive relations (fights and screaming), among others. Thus, the items of this factor are inverted in order to calculate with valence equal to the other dimensions' items; and *Family autonomy* ($\alpha=0,78$), composed by eight items referring to trust, freedom and privacy relationships among the members. The minimum possible score is 0 and maximum 84 Baptista, 2009). These inventory studies provide evidence of validity based on the content, in relation with other variables and the internal structure (Alchieri *et al.*, 2003; Cunha, 2001).

Procedure

The research objectives of this study were discussed with the Secretary of Health, responsible for the Basic Health Unit (UBS) and the doctor responsible for the National Program for Attention to Hypertension and Diabetes Mellitus. After a mutual agreement, the project was submitted to the Ethics Committee in Research of the University of São Francisco. With the committee's approval, the application of self-administered instruments occurred in two stages: first with 61% of the sample, and the second with 39%. In the second stage, the application was done orally, due to reading and

understanding difficulties of the participants. The questionnaire was first delivered to the participants. Then, the Identification Questionnaire, the BAI, the IPSF, and lastly, the STAI were applied sequentially, so that the participants need not answer two instruments that assess anxiety sequentially. All the instruments were applied to each group for 70 minutes.

RESULTS AND DISCUSSION

When tested for chronic diseases, 59% of participants didn't report any other health problems other than hypertension and about 20% participants were found diabetic. This data converges with those found by Gafarov et al. (2007), Lemos et al. (2008), Straub (2005), etc, who postulated that the prevalence of comorbidities between diabetes and hypertension. In addition, 16% reported high cholesterol levels, 3% reported cardiac dysfunction, and 3% reported obesity. When checked for ethnicity, 70% of participants considered themselves as white. Because a few people (14%) were of black ethnicity, therefore, it was not possible to compare these results with previous studies that indicated a higher prevalence of hypertension in blacks. When investigated for family structure (composition - physical characteristics), most participants (57%) answered that they lived with their spouse (M/F) and children, only 6% lived alone, and 4% lived with parents and siblings. The other 33% lived only with their children, husband/wife and others. As per BAI scores, participants scored between 0 and 57 points ($M=24.44$, $SD=13.46$). According to the classification suggested by the manual, 34% have severe anxiety, 29% had moderate anxiety, 20% had minimum anxiety, and 17% had mild anxiety. On analyzing the results, high symptomatic degrees of anxiety were found in the sample. This result is in agreement with other studies, such as Demanuele and Brigham (2006), Florindo (1991), Lemos et al. (2008), Markovitz et al. (1993), etc, who assessed the psychological aspects of health-disease process, in which anxiety was considered a risk factor.

The results showed that the STAI scores for state anxiety ($M=70.93$, $SD=25.92$) remained a little higher than the trait anxiety ($M=70.09$, $SD=24.89$). According to the normative data provided in the manual for samples of the Brazilian population, the scores remained among $M=49.64$ for State and $M=49.06$ for A-Trait. The results of this study demonstrated a high level of A-state (situational) and A-Trait (characteristic of the individual). These results are consistent with some studies; among them are those of Barud and Kowalik (2004), Demanuele and Brigham (2006), Florindo (1991), Lemos et al. (2008), Gafarov et al. (2007), and Markovitz et al. (1993), who demonstrated anxiety symptoms in hypertensive patients. All of them considered anxiety as one of the psychic phenomena included in the health-disease process, and as a risk factor related to negative events that increases the likelihood of a person to health problems. The IPSF results showed an average total score of 51.74 points ($SD=14.54$, $Min=18$, $Max=84$) for the dimensions, the consistent-affective remained in 22.26 ($SD=8.38$, $Min=3$; $Max=42$), the family adaptation of 17.54 ($SD=5.22$; $Min=6$; $Max=26$), and family autonomy of 11.94 ($SD=3.03$, $Min=5$, $Max=16$). According to the proposed classification levels, 54% of participants had a low level of perception of family support, 26% showed a middle-low level, 10% had a medium-high level, and 10% had

high perceptual level. These data and the levels through dimensions are detailed in Table 1.

Table 1. Participants' perception of family support levels according to the IPFS

IPSF Level	Consistent-Affective		Family Adaptation		Family - Autonomy		IPSF Total	
	N	%	N	%	N	%	N	%
Low	36	51.4	36	51.4	16	22.9	38	54.3
Middle-Low	18	25.7	18	25.7	22	31.4	18	25.7
Middle-High	9	12.9	8	11.4	12	17.1	7	10.0
High	7	10.0	8	11.4	20	28.6	7	10.0

The results indicate low levels of perception of family support. These data corroborate researches in this area, such as Aquino (2007), Baptista (2009), Baptista et al. (2008), and Souza (2007), who have linked low levels of perception of family support with poor health, high prevalence of anxiety disorders, and mood disorders. There is, therefore, a need for greater attention toward psychosocial factors of hypertensive patients, highlighting the importance of social support, mainly family support. For a correlation analysis between indicators of anxiety (BAI and STAI instruments) and the level of perception of family support (IPSF), the results showed that the larger the degree of anxiety, the lower is the perception of family support. The correlations were found negative, but were moderate and significant; a result consistent with other studies, since high levels of anxiety are associated with low perception of family support (Baptista, 2009; Burd and Tavares, 2004; Campos, 2004). This data is presented in Table 2.

Table 2. Pearson Correlation among the scores of BAI and STAI instruments with IPSF and the related dimensions

	Consistent-Affective	Family Adaptation	Family - Autonomy	IPSF Total
BAI	$r=-0.42$ $p=0.000^{**}$	$r=-0.45$ $p=0.000^{**}$	$r=-0.35$ $p=0.003^{*}$	$r=-0.47$ $p=0.000^{**}$
STAI	$r=-0.52$ $p=0.000^{**}$	$r=-0.49$ $p=0.000^{**}$	$r=-0.22$ $p=0.073$	$r=-0.52$ $p=0.000^{**}$
A-State	$r=-0.48$ $p=0.000^{**}$	$r=-0.50$ $p=0.000^{**}$	$r=-0.34$ $p=0.004^{*}$	$r=-0.53$ $p=0.000^{**}$
A-Trait				

* $p<0.01$; ** $p<0.001$

On analyzing the correlations between the instruments of anxiety with each IPSF dimension, defined by Baptista (2009), it was observed that the Affective-Consistent dimension is a minor perception of positive affective family relationships, interest among members, expression of warmth, clarity of roles and rules, as well as reduced ability to cope with problems. For the dimension of Family Adaptation, the higher the level of anxiety, the greater is the perception of negative feelings towards the family, such as isolation, exclusion, anger, shame, aggressiveness relationships, irritation, misunderstanding, competition, and culpability in the family. Finally, for Family Autonomy dimension, the anxiety is associated with a minor perception of autonomy, trust, privacy, and freedom that the individual perceives about its family. It should be noted that the dimension of the STAI that evaluates state-anxiety was not significantly associated with the dimension of the Family Autonomy IPSF. Therefore, for this sample it is suggested that the state of anxiety has no association with the aspects related to family autonomy (Baptista, 2009).

Even if the results of these associations remained consistent with other studies (Baptista *et al.* 2006; Baptista and Oliveira, 2004; Baptista *et al.*, 2008), still it is necessary to pay attention that there might be other factors that influence these correlations. As an example, the socio-economic conditions of participants and also the way in which these individuals interact with their families may be distorted due to the presence of psychological changes, such as hostility, impatience, rudeness, resentment, the sense of time urgency, and others. Anyhow, it emphasizes the importance of considering psychosocial factors present in the health-disease process of hypertensive patients (Adler and Matthews, 1994; Diamond, 1982; Straub, 2005; Trigo, *et al.*, 2000). Regarding correlation analysis between the instruments that assessed anxiety, results showed a strong positive and significant association between them. BAI and STAI scores increased simultaneously to the same extent. To discriminate these associations between BAI and A-State ($r=0.58$, $p=0.000$), and BAI and A-Trait ($r=0.60$, $p=0.000$).

For the first association, the higher the anxiety scores of physical and psychiatric symptoms are, the higher is the anxiety state observed at a given point in life. It is possibly associated with some stressful event, high or attenuated, due to the presentation or removal of the event. For the second, the greater are the presence of anxiety symptoms, the more one has the tendency to feel anxiety; this predisposition is determined by genetic influences and previous experiences as a characteristic of the individual (Spielberger *et al.*, 2003). These results converge with other studies that have indicated the presence of considerable degrees of anxiety in hypertensive patients. Anxiety is considered as a risk factor present in the disease process Studies by Barud and Kowalik (2004), Chaves and Cade (2002), Florindo (1991), Gafarov *et al.* (2007), Mac Fadden and Ribeiro (1998), and Markovitz *et al.* (1993) also support the hypothesis. In addition, the instruments that assessed anxiety, failed to maintain high correlation coefficients. This makes the comparison of this study with other studies difficult and influences the magnitude of the association with other constructs. Also noteworthy is the significant and positive correlation between A-State and A-Trait ($r=0.80$, $p=0.000$). Considering a high association, it indicated that a person who has an elevated state of anxiety at a particular point of life, usually has a tendency, as a feature, to feel a greater degree of anxiety. According to studies by Barud and Kowalik (2004) and Spielberger *et al.* (2003), people who have high levels of trait-anxiety also have high levels of state-anxiety, as they react to situations as if they were threatening or dangerous, more often.

Conclusion

The present study deepens our understanding on the complexity of the health-disease process and the involvement of various risk and protection factors. High degrees of anxiety were found in all the evaluated hypertensive persons. It is therefore, considered as a potential risk factor. As for the perception of family support, it is considered as a protection factor, as in this study, participants reported low levels of family support. A moderate association was noted between these variables and their influence on the worsening of the disease. Because of this, we recommend the use of appropriate measuring instruments. In this study, both instruments that assessed anxiety showed similar coefficients in association

with other variables, but when correlated, they maintained association levels that need further clarification by specific studies. Still, the results attribute to evidence of convergent validity. It is evident that psychology in healthcare, including psychological evaluation in this context, may contribute to the understanding of illness. This contribution collaborates with the most appropriate interventions and with the prognosis of chronic diseases, and overall with the possibility of structuring preventive efforts and public policies that aims at a better quality of life. The subjects covered and the constructs assessed were not exhausted. The importance of studies is emphasized with other factors involved in the health-disease process of hypertension and other related health problems. In addition, differentiated samples and control of substance use are also considerable issues.

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