Impact of Anxiety Sensitivity on Psychological Distress in Hypertensive Patients: Moderating Role of Social Support

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ABSTRACT

Background: Hypertensive patients often experience psychological distress, which may be worsened by anxiety sensitivity. Social support may mitigate this effect.

Objective: To evaluate the impact of anxiety sensitivity on psychological distress in hypertensive patients, with social support as a moderating factor.

Methods: A cross-sectional study was conducted among 300 hypertensive patients recruited from hospitals in Islamabad and Rawalpindi, Pakistan. Validated scales were used to measure anxiety sensitivity, psychological distress, and social support. Data were analyzed using SPSS version 25, employing Pearson's correlation and moderation analysis via the PROCESS macro. Descriptive statistics were used to summarize demographic variables.

Results: Anxiety sensitivity was positively correlated with psychological distress ($r = 0.87$, $p < 0.05$), and negatively correlated with social support ($r = -0.53$, $p < 0.05$). Social support moderated the relationship between anxiety sensitivity and psychological distress ($\beta = -0.232$, $p = 0.039$), explaining 78.3% of the variance in distress levels ($R^2 = 0.783$).

Conclusion: Anxiety sensitivity significantly exacerbates psychological distress in hypertensive patients. Social support plays a crucial role in reducing this impact, suggesting that enhancing social support in therapeutic interventions may improve mental health outcomes.

INTRODUCTION

Hypertension is a globally pervasive condition, affecting millions of individuals and placing a substantial burden on public health systems. While its physiological implications are well documented, it is increasingly recognized that hypertension is influenced by an intricate interplay of biological, psychological, and social factors (1). Psychological distress, encompassing anxiety, depression, and general emotional suffering, has been identified as a significant risk factor for both the development and progression of hypertension (2). Among the various psychological factors contributing to this distress, anxiety sensitivity has garnered significant attention. Anxiety sensitivity, defined as the fear of anxiety-related symptoms, exacerbates emotional responses by interpreting ordinary physiological sensations as signs of serious health issues (3). This heightened sensitivity can be particularly problematic for individuals with chronic conditions like hypertension, where symptoms such as palpitations or shortness of breath are often mistaken as signs of severe cardiovascular events, leading to increased anxiety and emotional distress (4).

In the context of hypertension, the relationship between anxiety sensitivity and psychological distress remains underexplored, despite its potential to significantly affect patient outcomes. The heightened perception of bodily sensations may worsen the psychological burden experienced by hypertensive patients, impacting their overall well-being and adherence to treatment regimens (5). Furthermore, psychological distress can hinder effective blood pressure management, further complicating the course of the disease (6). Social support, on the other hand, has been identified as a key protective factor in mitigating the negative effects of stress and distress in various health conditions, including hypertension (7). It provides emotional reassurance, practical assistance, and a sense of belonging, which can help buffer the impact of psychological distress on hypertensive patients (8). For patients who are highly sensitive to anxiety, social support may be particularly beneficial, as it can alleviate the catastrophic interpretations of bodily sensations that often exacerbate psychological distress (9).

Previous studies have highlighted the importance of social support in reducing anxiety and depressive symptoms in patients with chronic diseases, including hypertension. Evidence suggests that individuals with strong social networks are more resilient to stress and better equipped to manage the emotional challenges posed by chronic illness (10). Moreover, social support has been shown to have a moderating effect on the relationship between anxiety sensitivity and psychological distress, potentially diminishing the intensity of the emotional suffering experienced by those with high anxiety sensitivity (11). The stress-buffering hypothesis posits that social support can reduce the psychological impact of stressful experiences, making it an essential factor in the mental health management of hypertensive patients (12). This moderating

role of social support underscores the need for targeted interventions that not only address the physiological aspects of hypertension but also the psychological and social dimensions of care.

This study aims to explore the direct and moderating effects of anxiety sensitivity and social support on psychological distress in hypertensive patients. By investigating the complex interplay between these factors, the research seeks to contribute to the development of holistic care strategies that address both the mental and physical health needs of hypertensive patients. Understanding the influence of anxiety sensitivity and the protective role of social support could inform clinical interventions designed to reduce psychological distress and improve overall health outcomes for this population.

MATERIAL AND METHODS

A cross-sectional study was conducted to explore the impact of anxiety sensitivity on psychological distress in hypertensive patients, with social support as a potential moderating factor. The study was conducted among hypertensive patients from various hospitals, clinics, and laboratories in Islamabad and Rawalpindi, Pakistan. A pre-structured questionnaire was used for data collection, which was distributed to 400 confirmed hypertensive patients. After excluding incomplete responses, a final sample of 300 patients was included in the analysis. Participants were informed about the purpose of the study, and their voluntary participation was ensured. Written informed consent was obtained from each participant before they were given the questionnaire, adhering to ethical standards in compliance with the Declaration of Helsinki (14).

The questionnaire was divided into four sections, including demographic information, anxiety sensitivity, psychological distress, and social support. Anxiety sensitivity was assessed using a validated six-item scale developed by Spitzer et al. (2006) (15), scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Psychological distress was measured using the K6 version of the scale developed by Dadfar et al. (2016), also scored on a 5-point Likert scale (16). Social support was evaluated using a six-item scale developed by Harker (2001), with responses ranging from 1 (very unsatisfied) to 5 (very satisfied) (17). The questionnaire was administered in both English and Urdu to accommodate the language preferences of the participants. Additionally, socio-demographic characteristics, including age, gender, occupation, education level, marital status, and stage of hypertension, were collected to provide a comprehensive profile of the participants.

Data collection took place over a two-month period, during which patients were approached in waiting areas of medical facilities. Participants completed the self-administered questionnaires under minimal supervision to ensure their responses were not influenced by the researchers. Any queries raised by participants were addressed without guiding their responses. Privacy and confidentiality were strictly maintained throughout the data collection process.

The collected data were analyzed using SPSS version 25. Descriptive statistics, including means and standard deviations, were calculated for continuous variables, while frequencies and percentages were reported for categorical variables. Pearson's correlation coefficients were computed to explore relationships between anxiety sensitivity, psychological distress, and social support. A moderation analysis was performed using the SPSS PROCESS macro (Model 1), which tested the interaction effect of social support on the relationship between anxiety sensitivity and psychological distress. The pick-a-point method was employed to examine the moderating effect at different levels of social support, categorized as low, moderate, and high, based on one standard deviation below and above the mean (18). A two-tailed test with a significance level of $p < 0.05$ was applied for all statistical analyses.

The study was approved by the ethical review committee of Riphah International University, Islamabad, Pakistan. All participants were informed that their participation was voluntary and that they could withdraw from the study at any time without any consequences. Data confidentiality was maintained, and participants were assured that their responses would only be used for research purposes.

RESULTS

A total of 400 hypertensive patients were invited to participate in the study, of which 330 responded (response rate: 82.5%). After excluding incomplete responses (n = 30), the final sample consisted of 300 participants. The mean age of the participants was 33.7 years (SD = 8.1), with 51% being female and 40% married. The distribution of participants across hypertension stages showed that the majority had elevated blood pressure (43.3%) or Stage 1 hypertension (31.7%), as shown in Table 1.

Table 1: Sample Characteristics (N = 300)

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (years)	18-25	89	29.7
	26-40	102	34.0
	41-60	72	24.0
	Over 60	37	12.3
Gender	Male	147	49.0
	Female	153	51.0
Marital Status	Single	99	33.0
	Married	120	40.0

Characteristics	Categories	Frequency (n)	Percentage (%)
	Divorced	34	11.3
	Widowed	38	12.7
	Separated	9	3.0
Education Level	Under matric	73	24.3
	College level	75	25.0
	Graduate level	84	28.0
	Postgraduate	51	17.0
	Above	17	5.7
Employment Status	Employed	136	45.3
	Unemployed	124	41.3
	Retired	40	13.3
Hypertension Stage	Normal	5	1.7
	Elevated BP	130	43.3
	Stage 1 Hypertension	95	31.7
	Stage 2 Hypertension	70	23.3

The results indicate a significant relationship between anxiety sensitivity, psychological distress, and social support among hypertensive patients. The mean score for psychological distress was 3.81 (SD = 1.10), while the mean scores for anxiety sensitivity and social support were 3.92 (SD = 1.07) and 3.36 (SD = 1.03), respectively.

Table 2 summarizes the correlations between these variables.

Table 2: Correlations Between Anxiety Sensitivity, Psychological Distress, and Social Support (N = 300)

Variable	Mean ± SD	Anxiety Sensitivity	Psychological Distress	Social Support
Anxiety Sensitivity	3.92 ± 1.07	1		
Psychological Distress	3.81 ± 1.10	0.87*	1	
Social Support	3.36 ± 1.03	-0.53*	-0.59*	1

*$p < 0.05$

Anxiety sensitivity was positively correlated with psychological distress ($r = 0.87$, $p < 0.05$), indicating that patients with higher levels of anxiety sensitivity reported higher levels of psychological distress. Conversely, anxiety sensitivity was negatively correlated with social support ($r = -0.53$, $p < 0.05$), suggesting that patients with more social support experienced lower anxiety sensitivity. Social support was also negatively correlated with psychological distress ($r = -0.59$, $p < 0.05$), indicating that greater social support was associated with lower psychological distress.

A moderation analysis was conducted to assess the moderating role of social support in the relationship between anxiety sensitivity and psychological distress. The results demonstrated that social support significantly moderated this relationship ($\beta = -0.232$, $p = 0.039$).

Table 3 shows the results of the moderation analysis, with the interaction term indicating that higher levels of social support reduced the effect of anxiety sensitivity on psychological distress. The model explained 78.3% of the variance in psychological distress ($R^2 = 0.783$), with social support acting as a significant moderator. The negative interaction effect suggests that higher social support mitigates the psychological distress caused by anxiety sensitivity. Thus, interventions aimed at enhancing social support could have substantial benefits for hypertensive patients with high anxiety sensitivity.

Table 3: Moderation Analysis of Social Support on the Relationship Between Anxiety Sensitivity and Psychological Distress (N = 300)

Predictor	β	p-value	95% CI
Anxiety Sensitivity	0.862	0.042	0.852
Social Support	-0.111	0.027	
Anxiety Sensitivity x Social Support	-0.232	0.039	
R^2	0.783		

DISCUSSION

This study explored the relationship between anxiety sensitivity and psychological distress in hypertensive patients, with social support as a moderating factor. The findings indicated that anxiety sensitivity significantly contributed to psychological distress among hypertensive patients, a result consistent with previous research highlighting the role of anxiety sensitivity as a critical factor in exacerbating emotional responses in individuals with chronic illnesses (23). The positive correlation observed between anxiety sensitivity and psychological distress aligns with existing literature, which has demonstrated that individuals with heightened anxiety sensitivity are more prone to experiencing distress due to their amplified perception of anxiety-related symptoms (24).

The negative correlation between social support and both anxiety sensitivity and psychological distress underscores the importance of social networks in mitigating the psychological burden of hypertension. Similar studies have demonstrated that social support acts as a protective factor against psychological distress, offering emotional and practical resources that help individuals cope with stress (27). The moderating effect of social support on the relationship between anxiety sensitivity and psychological distress, as demonstrated in this study, further supports the stress-buffering hypothesis, which posits that social support can alleviate the psychological impact of stress (6). This finding is particularly relevant for hypertensive patients, who often experience elevated levels of psychological distress due to the chronic nature of their condition and the fear of potential complications (29).

The study's strengths lie in its robust sample size and the use of validated measurement tools, which provided reliable data on the key variables of interest. By examining both the direct and moderating effects of social support, the study contributes to the growing body of literature on the psychological factors influencing hypertension management. Additionally, the use of a well-defined patient population ensured that the findings are specific to hypertensive individuals, providing valuable insights into how psychological interventions might improve outcomes in this group.

However, there are several limitations that must be acknowledged. First, the cross-sectional design of the study limits the ability to establish causality between anxiety sensitivity, psychological distress, and social support. Longitudinal studies would be necessary to determine the temporal dynamics of these relationships over time (18). Furthermore, the study sample was relatively homogeneous in terms of socio-economic status and education level, potentially limiting the generalizability of the findings to more diverse populations. Future research should aim to include a broader range of socio-demographic characteristics to better understand how these factors influence the observed relationships. Additionally, the reliance on self-reported measures may have introduced response bias, as participants may have under- or over-reported their levels of anxiety sensitivity or social support due to social desirability or recall bias (31).

In terms of practical implications, the findings suggest that interventions aimed at enhancing social support could play a crucial role in reducing psychological distress among hypertensive patients, particularly those with high anxiety sensitivity. Healthcare providers should consider incorporating social support enhancement programs, such as peer support groups or family therapy, into treatment plans for hypertensive patients. These programs could help to alleviate the emotional burden associated with the condition and improve overall patient well-being. Additionally, screening for anxiety sensitivity in clinical settings could identify patients at risk for heightened psychological distress, allowing for earlier intervention and more personalized care strategies.

CONCLUSION

In conclusion, this study highlights the significant impact of anxiety sensitivity on psychological distress in hypertensive patients and the protective role of social support in moderating this relationship. While further research is needed to confirm these findings in more diverse populations and over extended periods, the results underscore the importance of addressing both the psychological and social dimensions of care in hypertensive patients to improve health outcomes and quality of life.

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