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Anger expression in patients with arterial hypertension: the influence of antihypertensive treatment

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Introduction: The evidence linking hypertension with personality or psychological characteristics, such as anger, remains equivocal. This may be due in part to limitations of personality theory, confounding by awareness of hypertension, and/or inherent difficulties in measuring blood pressure (BP). Recent research findings suggest that anger and hostility contribute to the pathogenesis of many common medical disorders, including hypertension. These findings also seem to indicate that the way in which anger is expressed, as well as the amount of anger experienced, is a critical variable. The aim of this study is to investigate the relationship of anger as an emotional state (state anger), individual differences in anger proneness as a personality trait (trait anger) and anger expression (anger-in, anger out and anger control) according to Spielberger's approach using the State-Trait Anger Expression Inventory (STAXI), with BP among hypertensive patients under antihypertensive therapy.

Method: A prospective survey was carried out where 5 standardized questionnaires were sent to 300 Portuguese community pharmacies. The questionnaires were self-administered or administered by a pharmacist. Subjects were recruited at the community pharmacy. Measurements included the STAXI of Spielberger to assess anger dimensions, the BDI-II and the BAI, both from Beck, to evaluate depressive symptoms and anxiety, a Demographic Questionnaire, medical information and the measurement of systolic and diastolic blood pressure (SBP and DBP). SBP was considered under control if BP values were <140mmHg and DBP < 90mmHg and out of control if values were SBP >140 and DBP >90. The data were analyzed using SPSS software with statistical tests such as t-test and chi-square. **Results:** A total of 414 patients, mean age 61.21 ±12.33 years, completed the questionnaires. Correlation between State anger and hypertension duration was positive and significant ($z = 0,156, p = .004$). The study of the relationship between anger and SBP revealed a significant correlation coefficients with State anger ($z = 0,142, p = .008$), Anger out ($z = 0,172, p = .002$), Anger expression ($z = 0,194, p = .001$) and anger control ($z = -0,200, p < .001$). The study of the relationship between anger and DBP revealed a significant correlation with Trait anger ($z = 0,139, p = .012$), Angry temperament ($z = 0,143, p = .009$), Angry reaction ($z = 0,145, p = .007$), Anger control ($z = -0,231, p < .0001$) and Anger expression ($z = 0,157, p = .008$). The mean values of the dimensions of anger were higher in the group of patients with uncontrolled BP. Anger-Out scores on the State-Trait Anger Expression Inventory were positively correlated with the angiotensin receptors antagonists (ARA) induced control in systolic blood pressure ($p = .027$); Trait Anger was negatively correlated with the ARA induced control in systolic pressure ($p = .036$). Responses to diuretics or angiotensin-converting enzyme inhibitors were not correlated with psychological characteristics. **Discussion:** The results of this study are consistent with some published research indicating the influence of the different dimensions of anger on BP.