The Influence of Stress on the Quality of Life of Hypertensive Patients

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**Abstract**

Hypertension and stress are the most prevalent risk factors in cardiovascular diseases, causing impact on quality of life of hypertensive patients. It is the aim of the study to assess the vulnerability to stress of hypertension patients and identify the factors of vulnerability to stress which interfere with quality of life of hypertension patients. Non experimental study, quantitative, transversal, descriptive and correlational. With a sample of 431 hypertension patients. Data collection took place from June to September 2012, through a questionnaire with questions concerning socio-demographic data, clinical, evaluation of the quality of life of hypertensive patients and evaluation of vulnerability to Stress. The main results are 43.15% were male, 56.84% female aged between 30 and 95 years old. There is influence of gender, age, marital status, education, employment status, cohabitation and monthly income, both in vulnerability to stress as in quality of life. Worse quality of life, female literacy, with average higher than male (M = 8.81 in mental status, M = 3.93 in somatic manifestations and M = 0.73 in overall impact). The vulnerability to stress has also an influence on the quality of life. 44.2% of hypertensive patients are vulnerable to stress, with percentage value for females (51.2%). It is essential to know the factors of vulnerability to stress predictors of quality of life of hypertension patients in order to operate and improve their quality of life.

**Keywords:** hypertension, stress, quality of life

**Introduction**

In Portugal cardiovascular diseases are the leading cause of death, and nowadays hypertension is the cardiovascular risk factor with the highest prevalence in Portugal and worldwide. Associated mortality and morbidity are becoming a real public health problem, so is essential to reduce the value of blood pressure to prevent cardiovascular disease (Portugal, Ministério da Saúde, Direcção Geral da Saúde [Portugal, MS, DGS], 2011).

The diagnosis of hypertension is defined as a “a elevação persistente, em várias medições e em diferentes ocasiões, da pressão arterial sistólica igual ou superior a 140mmHg e/ou da pressão arterial diastólica igual ou superior a 90mmHg” (Portugal, MS, DGS, 2011, p. 1).

About three million Portuguese suffer from hypertension and the World Health Organization predicts a significant worsening in the following years (Macedo et al., 2007).

The study of Macedo et al. (2007) reveals that the prevalence of hypertension in Portugal is 41.2%; it highlights a tendency to increase blood pressure with age and that there is an increased prevalence of hypertension in under 64 year old males. After that age, the difference between genders tends to be attenuated.
The quality of life of the patients can be affected by a simple diagnosis of disease, by the side effects of therapy or even by changes in their lifestyle (Gusmão & Pierin, 2009).

According to the World Health Organization (WHO), quality of life is related to the perception that people have about their lives in a context of culture and value systems in which they live in relation to the goals, expectations, standards and concerns (WHO, 2001).

Quality of life is an indicator of good health and this improvement has become one of the expected outcomes of health professionals in the sector of health promotion and disease prevention (Seidl & Zannon, 2004).

The quality of life is used to evaluate the physical and psychosocial impact that disease causes to patients, thereby allowing a better knowledge of the patient and his perception of disease (Carvalho et al., 2012). Also according to Gusmão and Pierin (2009), quality of life encompasses aspects related to the physical, psychic, social and individual impact of health on their ability to get on with the patient’s life.

Previous investigations have shown that clinical and sociodemographic variables affect the patient’s quality of life, reporting that in hypertension patients there is a decrease of it (Carvalho et al., 2012; Cavalcante et al., 2007; Melchiors, 2008; Melchiors, Correr, Pontarolo, Santos, & Souza, 2010). However there are studies that have concluded the opposite and state that there is no decrease in the quality of life of hypertension patients (Ramos, Oliveira, & Freitas, 2009).

Evaluate the quality of life of hypertension patients is essential to know what is the real impact of the disease on their lives. However, clinical practice tells us that quality of life is not only affected by chronic illness or by demographic data but also by the stress that can cause illness or even a change in the everyday lives of patients.

Stress raises emotions, behavior changes and interferes with cognitive and biological mechanisms. Due to health, stress may be a precipitating factor in cardiovascular diseases such as hypertension (Vaz-Serra, 2000).

Stress is an exciting potential in the reactivity of hypertensive cardiovascular patients as well as painful episode can be stressful to patients, depending on the level of control of the hypertension person (Lipp, Frare, & Santos, 2007). Vaz-Serra (2000, 2002) states that someone feels stressed out when he thinks that he does not have skills or resources to overcome a situation that requires more handling than usual. Thus that person will develop the perception of having no control over the situation and begins to feel vulnerable to that circumstance. A chronic disease such as hypertension requires more from the person and requires a change in lifestyle as well, although the person may or may not feel able to overcome this new situation. The same author underlines that stress can have consequences at the individual, familiar and social issues which also affect the quality of life of people.

Vulnerability to stress varies from person to person. There are individuals that support a large number of adversities and others that become depressed to the least unpleasant situation. Thus the concept of vulnerability “deve ser entendido na relação específica que se estabelece entre o indivíduo e determinada circunstância.” (Vaz-Serra, 2000).

Studies by Nobrega, Castro, & Souza (2007) had reported that hypertension patients were submitted to a mental test of stress and blood pressure values achieved high levels in an overstated way.
There are few studies in Portugal that relate stress vulnerability to the quality of life of hypertensive patients. For this reason, it is important to investigate this area because clinical practice indicates that stress changes the values of blood pressure and consequently the quality of life of people.

Our research objectives were to assess the stress vulnerability of hypertension patients and to identify the factors of vulnerability to stress that influence the quality of life of hypertensive patients.

**Material and Methods**

This is a quantitative, descriptive, correlational and cross conducted in a non-probabilistic convenience sample study, consisting in the analysis of 431 hypertension patients of both genders and with different age groups, from the center of Portugal. The method of data collection consists in a questionnaire that enables a sociodemographic characterization and it was associated the scales that measure the quality of life of hypertension patients (MINICHAL) and the stress vulnerability (Vaz-Serra, 2002) and it was applied during the consultation surveillance of hypertension.

This questionnaire provides answers about age, gender, educational level, marital status, employment status, monthly income and cohabitation as well as determining the quality of life of hypertensive and vulnerability to stress.

The rating scale of quality of life of hypertensive (MINICHAL) was developed in Spain in 2001 and contains 16 items. The domain of mental status includes questions from 1-9 and has a maximum score of 27 points. The somatic manifestations field includes questions from 10-16, with a maximum score of 21 points (Schulz, Rossignoli, Correr, Fernández-Llimós, & Toni, 2008). Both the original Spanish version as the Brazilian one includes a last question concerning overall impact of hypertension on the quality of life of the individuals. The patients should answer to the questions referring to the past seven days. The score scale is Likert-type with four possible answers (0 = not at all, 1 = yes, a little, 2 = yes, medium, 3 = yes, really). The points range from 0 (best health status) to 30 (worst health status) due to the dimension “mental status”. To the “somatic manifestations” dimension it ranges from 0 (best health status) to 18 (worst level health) (Carvalho et al., 2012).

The scale MINICHAL was measured for the sample under study. It was considered both domains; however “mental status” domain includes items 1-10 with a maximum score of 30 points. The “somatic manifestations” domain includes items 11-16 and it has a maximum score of 18 points. The last item is the same and it has a maximum score of 3 points.

The scale of Vulnerability to Stress (23 QVS) was created by Vaz-Serra (2000). The 23 QVS is a Likert scale. It is a tool for self-assessment and evaluates the individuals’ vulnerability to stress. Each question has five possible different choices (0-5), with inversion of values on some questions. Questions 1, 3, 4, 6, 7, 8, and 20 are sorted from left to right, taking the values 0, 1, 2, 3, 4; remain questions are reversely classified. Overall score value can vary from a minimum of 0 to a maximum of 92. The questions are scored so that the higher value corresponds to the higher level of vulnerability to stress. A rating of 43 points represents the cutoff point above which a person is vulnerable to stress (Vaz-Serra, 2000). However for further study, Vaz-Serra (2000) proposed the calculation of seven factors. This division of vulnerability to stress allows the researcher to have an insight that makes the individual more vulnerable. These factors are (Vaz-Serra, 2000): 1—Perfectionism and intolerance to frustration;
2 — Inhibition and functional dependence; 3 — Lack of social support; 4 — Adverse living conditions; 5 — Self-dramatization; 6 — Subjugation; 7 — Deprivation of affection and rejection.

The target population consisted of 431 patients who attended to the surveillance consultations of hypertension in health facilities in the center of Portugal during the period June to September 2012. The patients that were included were the ones that, after explanation of this study’s objectives and after clarifying all doubts, were available to collaborate with the research.

We used statistical program SPSS (Statistical Package for the Social Sciences) version 20.0 (2011) for Windows for data processing.

Results

From 431 hypertensive patients who answered the questionnaire, 56.84% are female and 43.15% male.

Considering age group, it varies between 30 and 95 years, with an average age of 66.97 years. The average age for males is 67.24 years and for females is 66.76 years. Men are on average older than women but the differences are not statistically significant as shown by the t test ($t = 0.430, p = 0.667$).

In order to relate gender to age group of hypertension patients it was necessary to provide homogenous groups of frequencies. So it was found that the age group with the highest prevalence in females is of ≥ 76 years (26.9%) and in males is 60-68 years (26.9%). There are no significant differences ($\chi^2 = 2.130, p = 0.546$).

According to education levels it was found that the majority (68.7%) of patients attended school until the 4th grade in females (70.6%) and in males (66.1%). Only 8.1% attended higher education. There are significant differences ($\chi^2 = 11.926, p = 0.008$) situated in the 5-9th grades in males and females due to higher education.

Concerning marital status, the majority of patients (72.2%) is married or live with a partner, with 80.6% for males and 65.7% for females. Only 27.8% are single / separated / divorced / widowed, with the largest representation in women (34.3%). There are statistically significant differences ($\chi^2 = 11.732, p = 0.001$).

After analysis of the employment situation it can be concluded that 69.8% of individuals are already retired, with 72% for men and 68.2% for women. The differences between groups are not significant ($\chi^2 = 2.451, p = 0.294$).

Regarding cohabitation, 51% of patients live with their spouse, 31.8% with family. The patients who live alone (17.2%) are mostly women (19.6%). There are significant differences ($\chi^2 = 7.566, p = 0.023$) and which are located in the male spouses.

According to the monthly income, 43.9% of patients earn between 500-1000 euros: 47.3% are men and 41.2% women. Only 9.5% have a monthly income above 1,500 euros, with 9.1% for males and 9.8% for females. The differences between groups are not significant ($\chi^2 = 3.192, p = 0.363$).

Due to the analysis of vulnerability to stress, patients were divided into two groups “vulnerable” and “not vulnerable”. We considered the factors that make people more vulnerable, namely “Perfectionism and intolerance to frustration”, “Inhibition and functional dependence”, “Lack of social support”, “Adverse living conditions”, “Self-dramatization”, “Subjugation”, “Deprivation of affection and rejection”. The division into two groups as well as the determined factors was the same defined by Vaz-Serra (2000).
Total stress has an average of 40.74 which is very close to the cutoff point (43) established by the author of the scale we used, above which patients are named as vulnerable to stress.

According to the vulnerability to stress results, 55.8% of users are non-vulnerable; however 44.2% are presented as vulnerable (Table 1).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Non Vulnerable</th>
<th>Vulnerable</th>
<th>Total</th>
<th>N.V.</th>
<th>V.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Male</td>
<td>121</td>
<td>50.6</td>
<td>65</td>
<td>34.4</td>
<td>186</td>
</tr>
<tr>
<td>Female</td>
<td>118</td>
<td>49.4</td>
<td>124</td>
<td>65.6</td>
<td>242</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 59 years</td>
<td>69</td>
<td>28.9</td>
<td>35</td>
<td>18.5</td>
<td>104</td>
</tr>
<tr>
<td>60-68 years</td>
<td>72</td>
<td>30.1</td>
<td>42</td>
<td>22.2</td>
<td>114</td>
</tr>
<tr>
<td>69-75 years</td>
<td>52</td>
<td>21.8</td>
<td>49</td>
<td>25.9</td>
<td>101</td>
</tr>
<tr>
<td>≥ 76 years</td>
<td>46</td>
<td>19.2</td>
<td>63</td>
<td>33.3</td>
<td>109</td>
</tr>
<tr>
<td>Qualifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 4th grade</td>
<td>147</td>
<td>61.5</td>
<td>146</td>
<td>77.2</td>
<td>293</td>
</tr>
<tr>
<td>5th-9th grade</td>
<td>56</td>
<td>23.4</td>
<td>18</td>
<td>9.5</td>
<td>74</td>
</tr>
<tr>
<td>10th-12th grade</td>
<td>15</td>
<td>6.3</td>
<td>11</td>
<td>5.8</td>
<td>26</td>
</tr>
<tr>
<td>University</td>
<td>21</td>
<td>8.8</td>
<td>14</td>
<td>7.4</td>
<td>35</td>
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<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widower/widow</td>
<td>45</td>
<td>18.8</td>
<td>74</td>
<td>39.2</td>
<td>119</td>
</tr>
<tr>
<td>Married/Cohabitation</td>
<td>194</td>
<td>81.2</td>
<td>115</td>
<td>60.8</td>
<td>309</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>65</td>
<td>27.2</td>
<td>32</td>
<td>16.9</td>
<td>97</td>
</tr>
<tr>
<td>Unemployed</td>
<td>13</td>
<td>5.4</td>
<td>19</td>
<td>10.1</td>
<td>32</td>
</tr>
<tr>
<td>Retired</td>
<td>161</td>
<td>67.4</td>
<td>138</td>
<td>73.0</td>
<td>299</td>
</tr>
<tr>
<td>Cohabitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>138</td>
<td>57.7</td>
<td>80</td>
<td>42.3</td>
<td>218</td>
</tr>
<tr>
<td>Relatives</td>
<td>69</td>
<td>28.9</td>
<td>67</td>
<td>35.4</td>
<td>136</td>
</tr>
<tr>
<td>Alone</td>
<td>32</td>
<td>13.4</td>
<td>42</td>
<td>22.2</td>
<td>74</td>
</tr>
<tr>
<td>Monthly income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 500€</td>
<td>61</td>
<td>25.5</td>
<td>69</td>
<td>36.5</td>
<td>130</td>
</tr>
<tr>
<td>500€ - 1000€</td>
<td>107</td>
<td>44.8</td>
<td>81</td>
<td>42.9</td>
<td>188</td>
</tr>
<tr>
<td>1000€ - 1500€</td>
<td>38</td>
<td>15.9</td>
<td>31</td>
<td>16.4</td>
<td>69</td>
</tr>
<tr>
<td>&gt; 1500€</td>
<td>33</td>
<td>13.8</td>
<td>8</td>
<td>4.2</td>
<td>41</td>
</tr>
</tbody>
</table>

When we compare genders and vulnerability to stress, 65% of women are vulnerable to stress and 50.6% of men are not. There are highly significant results ($\chi^2 = 11.322, p = 0.001$), concluding that gender is connected to stress.

In all the factors of vulnerability, female averages are higher than the male’s. The highest average for both males ($M = 2.37$) and females ($M = 2.56$) is the factor of “perfectionism and intolerance to frustration”. According to the t-test are highly significant differences in the “functional dependence and inhibition” ($t = -3.255, p = 0.001$) as well as overall stress ($t = -4.479, p = 0.000$) and significant differences in “adverse life conditions” ($t = -2.269, p = 0.024$) and “self-dramatization” ($t = -2.248, p = 0.025$).
Comparing the age groups, it is concluded that people aged ≥ 76 years are the most vulnerable to stress, with 63%. The other groups have lower percentages related to vulnerability. According to the Chi-square test, results are highly significant ($\chi^2 = 16.130, \ p = 0.001$). Therefore age is correlated to stress.

Regarding educational qualifications (Table 1), it is shown that hypertension patients, who attended school, until the 4th grade are more vulnerable to stress: 77.2%. According to the Chi-square differences are statistically significant ($\chi^2 = 15.908, \ p = 0.001$). We conclude that the qualifications constitute an explanation to stress.

Concerning marital status, single/separated/divorced/widowed people are more vulnerable to stress, with 39.2%. According to the Chi-square statistical differences are highly significant ($\chi^2 = 21.720, \ p = 0.000$). After analyzing Table 1, we find that retirees are vulnerable to stress with 73%, and the unemployed also with a percentage of 10.1%. However, the residual value is not significant for both. Statistical differences are significant ($\chi^2 = 8.394, \ p = 0.015$). So, marital status explains the vulnerability to stress.

Regarding cohabitation there are hypertension patients who live alone (22.2%) and those who live with family (35.4%) that are vulnerable to stress. The residual value is significant in people who live alone. Statistical differences are quite significant ($\chi^2 = 11.123, \ p = 0.004$).

On the topic of the monthly income, patients with an income < 500 euros are more vulnerable with 36.5%, followed by those who earn between 1000-1500 euros. However, we only found one significant residual value in people with income < 500 euros. Statistical differences are quite significant ($\chi^2 = 14.397, \ p = 0.002$).

The quality of life of hypertensive patients is evaluated by the domain “mental status”, “somatic manifestations” and by the item “overall impact of hypertension on quality of life of the patient”. The field of “mental status” has an average of 7.73, followed by the “somatic manifestations” with 3.48 and finally by “overall impact” with 0.63, where women present higher scores.

Aiming to investigate if the quality of life of hypertensive patients is influenced by gender, it was verified that females have a lower quality of life in the field of “mental status” and in the “somatic manifestations”. Highly significant differences exist in the field of “mental status” ($\ p = 0.000$) and very significant in “somatic manifestations” ($\ p = 0.004$), according to t-test.

Thus we can conclude that gender influences “mental status”, “somatic manifestations” and “overall impact of hypertension on quality of life of the patient”.

In order to find out whether age influences the quality of life of hypertensive patients, it seems that the higher levels are at ages above 76 years, i.e. over 76 year old people have lower quality of life in the area of “mental status” and “somatic manifestations”. The differences were highly significant, so that was the reason why we needed to clarify between which groups that differences were.

Tukey’s test indicates that the highly significant differences lie between the two domains for people who are between ≤ 59 and ≥ 76 years old and between 60-68 years old and those with ≥ 76 years old. For the mental status among people who have ≤ 59 years and 69-75 and between 60-68 and 69-75 years. Consequently, we can conclude that age has a direct relation with mental status and somatic manifestations.
The average ranking is higher in hypertension patients aged ≥ 76 years. The Chi-square test shows that there are significant differences. Therefore age influences the overall impact. Turkey's test shows that the differences rely between ≤ 59-year-old and ≥ 76-year-old people.

**Associations Between Sociodemographic Variables and Quality of Life**

**Association Between Quality of Life and Educational Level** — It is concluded that the best medium scores are the ones associated to people who only studied up to 4th grade, followed by those who attended higher education. The significant differences are between people who have studied up to 4th grade and those who attended the 5th to 9th grade with probabilities $p = 0.000$ for the “mental status”, $p = 0.013$ for “somatic manifestations” and $p = 0.031$ in “overall impact”. It was demonstrated that the educational level influences the quality of life of hypertension patients.

**Association Between Quality of Life and Marital Status** — After applying the Mann-Whitney U test between “mental status”, “somatic manifestations”, “overall impact of hypertension on quality of life of the patient” and the marital status of hypertensive patients, it was observed that the greatest rates obtained in the two areas and the “overall impact” were on the single, separated and divorced patients. This group of people presents a lower quality of life. And the result is highly significant, so marital status is related to the quality of life level.

**Association Between Quality of Life and Employment Status** — Unemployed patients are those who have a poorer quality of life, since they have “mental status”, “somatic manifestations” and “overall impact of hypertension on quality of life of the patient” labels with the highest comparison sorts, followed by retired patients. As the differences are highly significant, we can infer that employment status influences the quality of life of hypertension patients.

The differences lie between employees and unemployed people and between employees and retired people.

**Association Between Quality of Life and Cohabitation** — In the “mental status”, “somatic manifestations” and “overall impact of hypertension on quality of life of the patient” domains, the highest comparison sorts are referred to people who live alone, or the ones who have the poorest quality life: OM = 251.61, OM = 243.36 and OM = 236.31, respectively.

There are significant differences in mental status and overall impact of hypertension on quality of life of the patient, so therefore we proceeded to Tukey’s test to survey where the differences were. They are located in both mental status and impact of hypertension in the general quality of life of the patient in people who are married and who live alone.

**Association Between Quality of Life and Monthly Income** — All factors of quality of life have higher values in people who have a monthly income under 500 euros. These people have a lower quality of life. The differences are highly significant, and then one can infer that the monthly income is related to quality of life. There are highly significant differences.

Post-hoc test showed differences between income < 500 euros and 500 euros -1000, in < 500 euros and 1000 euros -1500 and between < 500 euros and > 1500 euros.
Association Between Quality of Life and Vulnerability to Stress — Through the analysis between the association among quality of life and vulnerability to stress, (Table 2), it was shown that the higher average of quality of life concerns people vulnerable to stress with an average of 12,613 in "state of mind", 5,529 in "somatic manifestations" and 1.04 in "overall impact". The differences are highly significant according to the t test. Therefore, stress has a direct relation to hypertension patients' quality of life.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Non vulnerable to stress</th>
<th>Vulnerable to stress</th>
<th>Levene's (p)</th>
<th>Test t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental health</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.8703</td>
<td>12,613</td>
<td>0.000</td>
<td>-14,620</td>
<td>0.000</td>
</tr>
<tr>
<td>SD</td>
<td>4.4025</td>
<td>7.2298</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Somatic manifestations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.8703</td>
<td>5.529</td>
<td>0.000</td>
<td>-10,552</td>
<td>0.000</td>
</tr>
<tr>
<td>SD</td>
<td>2.5789</td>
<td>4.1789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall impact</strong></td>
<td></td>
<td>0.31</td>
<td>0.002</td>
<td>-10,308</td>
<td>0.000</td>
</tr>
<tr>
<td>Mean</td>
<td>0.568</td>
<td>1.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.843</td>
<td>0.843</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Considering mental status domain, we note that the correlations between the “mental status” and the factors of vulnerability to stress vary from a very low association to factors such as self-dramatization and to subjugation. There is also a low association concerning perfectionism and intolerance to frustration, lack of social support, adverse living conditions and deprivation of affection and rejection. We concluded that is a moderate association between inhibition and functional dependence and total stress. We also found that “mental status” establishes associations with all highly significant stress factors except with self-dramatization factor (0.033).

Quality of Life

“State of Mind” — We performed a multiple regression and the first variable to run in the model is “total stress”, because it is the one with a higher coefficient correlation according to absolute values. This variable explains 44.7% of the variation of “mental status” and the standard error of regression is 5.4032, corresponding to the difference between the observed and estimated rates of “mental status”.

In the second regression model, in addition to the total stress income we registered the entrance of inhibition and the functional dependence and these two variables explained 47.6% of the total variability of the “mental status”, and the estimated error decreased to 5.2678. In the final regression model we have considered the variable of lack of social support, and these three variables explained 48.9% of the total variability of “mental status” with an estimated error of 5.2091. Thus, we can assure that these three variables are predictors of “mental status”. The correlation that these variables set with the “mental status” is moderate ($r = 0.699$).

Finally through standardized beta coefficients we figured that the total stress is the one with the greatest predictive value, followed by lack of social support, and finally by inhibition and functional dependence. We concluded that the higher the association between variables and the “mental status” the worse the quality of life.

“Somatic Manifestations” — Concerning “somatic manifestations” domain, we note that the correlations between the “somatic manifestations” and the factors of vulnerability to stress vary from very low according to the association between factors of perfectionism and intolerance to frustration, lack of social support, living conditions and self-dramatization; a low association between subjugation, deprivation of affection and rejection; and moderate one between factors such as inhibition, dependence and the total stress. We also concluded that “somatic manifesta-
tions" domain establishes an association with all highly significant stress factors except with the factor of self-
dramatization (0.044).

The first variable to enter the regression model is the total stress, because it is the one with a higher correlation
coefficient in absolute value. This variable explains 25% of the variation of “somatic manifestations” and the re-
gression standard error is 3.3243, corresponding to the difference between the observed and estimated rates of
“somatic manifestations”.

In the second regression model, in addition to the total stress we registered inhibition and functional dependence.
These two variables explained 27.4% of the total variability of “somatic manifestations”, and the estimated error
decreased to 3.2747. In the final regression model we have considered the variable of “self-dramatization” and
these three variables explain 28% of the total variability of the “somatic manifestations” with an estimated error
of 3.2543. Therefore we can verify that these three variables are predictors of “somatic manifestations”. The cor-
relation that these variables set with “somatic manifestation” is moderate (r = 0.543).

Finally according to the standardized beta coefficients we can verify that the total stress is the one with the highest
predictive value, followed by inhibition and functional dependence and finally self-dramatization. In this sense, it
can be assured that the higher the association between the variables the worse the quality of life in the field of
“somatic manifestations”, but it also true that better is self-dramatization rates.

"Overall Impact” — Regarding “overall impact”, it can be noted that the correlations between the “overall impact”
and factors of vulnerability to stress vary from very low association according to the factors of perfectionism and
intolerance to frustration, lack of social support, adverse living conditions and the drama of existence; a low asso-
ciation with subjugation, deprivation of affection and rejection; and moderate association with inhibition and de-
pendence and total stress. We also found that “overall impact” establishes a highly significant relation with all the
stress factors, except with the factor of self-dramatization (0.354), which association is not significant.

The first variable to enter to the regression model is the total stress, because it is the one with a higher correlation
coefficient in absolute values. This variable explains 24.6% of the variation of “overall impact” and the standard
error of regression is 0.688, corresponding to the difference between the observed and estimated rates of “overall
impact”.

In the second regression model, in addition to the total stress, inhibiting and functional dependence were added
and these two variables explain 25.6% of the total variability of the “overall impact”, and the estimated error de-
creased to 0.685. In the final regression model, the variable deprivation of affection and rejection was added, and
these three variables explain 26.1% of the total variability of the “overall impact” with an estimated error of 0.681.
Therefore, these three variables are predictors of “overall impact”. The correlation between these variables and
“overall impact” is moderate (r = 0.516).

Finally, the standardized beta coefficients show us that the total stress is the one with the greatest predictive
value, followed by inhibition and functional dependence and finally by deprivation of affection and rejection. The
higher the association between variables the worse the quality of life in “overall impact” is.
Discussion and Conclusions

Being hypertension the risk factor with the highest prevalence in the onset of cardiovascular disease and once the stress is part of day-to-day life of each person, it becomes relevant to assess the quality of life of hypertension patients and their vulnerability to stress.

The sample consisted of 431 hypertension patients in central Portugal, of both genders, aged between 30 and 95 years. Hypertension patients in our study are mostly married with 72.2% living with spouses (51%) and 40.6% live in small villages. Considering educational levels, we found that 68.7% had studied up to 4th grade and only 8.1% attended higher education. Regarding occupation, 41.8% of women do not have a skilled profession, but 31.2% of men are skilled workers in industry, construction and craftwork. At this time, 69.8% of our sample is constituted by retired patients and 43.9% have a monthly income between 500-1000 euros. The religion is practiced by 87.9% of hypertension patients, with the highest percentage for females (93.5%). The Catholic religion was the most commonly reported (94.7%).

Regarding the assessment of the quality of life of hypertension patients by Minichal scale, the average state of mind is 7.73. When compared with the results of the study by Carvalho et al. (2012), an average of 6.6 demonstrates a lower quality of life in mental status in the hypertension patients of this study.

Regarding somatic manifestations, the study of Carvalho et al. (2012) scores an 5.0 higher average than the one found in our study (3.48), which shows that in the somatic manifestations our sample has a lower quality of life commitment.

According to the results, hypertension patients with increased vulnerability to stress have higher results in the mental status domain (average 12,613); in the somatic manifestations, with an average of 5,529; and an average of 1,04 for the overall impact compared to hypertension patients that are not vulnerable to stress. We may thus conclude that the stress affects the quality of life. Therefore, the greater the vulnerability to stress the worse will be the quality of life of hypertension patients. Although there are not many studies on the influence of vulnerability to stress of hypertension patients quality of life, clinical practice has shown that stress interferes in life quality.

Although the results show us that stress influences the quality of life, we find important to check the factors of vulnerability that affect most the quality of life of hypertension patients.

By Pearson’s correlation and the regression model between mental status and vulnerability factors, we prove that overall stress, inhibition, functional dependency and lack of social support are predictor factors of mental status, and that they began to explain 48.9% of the total variability of the mental status, i.e., the higher the relationship between the variables and the mental status the worse the quality of life.

Regarding somatic manifestations, overall stress has the highest correlation coefficient. Therefore, it is the first predictive variable; it follows the factor of inhibition and functional dependence and finally self-dramatization. These three variables are predictors and began to explain 28% of the somatic manifestations.

As for the overall impact, full stress and inhibition and functional dependence are the first two predictors of overall impact. As a third variable, the factor of deprivation of affection and rejection was added. The three variables explain 26.1% of the overall impact. In this sense, we can say that the higher the relationship between the variables the worse the quality of life regarding overall impact.
Notes
i) Translation: “Persistent elevation in several measurements at different times, systolic blood pressure less than 140 mmHg and / or diastolic blood pressure less than 90 mmHg.”
ii) Translation: “Should be understood in the specific association that is established between the individual and specific circumstances.”

References


