Differences in Nutritional and Psychological Habits in Hypertension Patients

Maria Carreira-Míguez,1 Domingo Jesús Ramos-Campo,2 and Vicente Javier Clemente-Suárez1,3

1Faculty of Sport Sciences, Universidad Europea de Madrid, Villaviciosa de Odón 28670 Madrid, Spain
2Departamento de Salud y Rendimiento Humano, Universidad Politécnica de Madrid, Madrid, Spain
3Grupo de Investigación en Cultura, Educación y Sociedad, Universidad de la Costa, Barranquilla, Colombia

Correspondence should be addressed to Domingo Jesús Ramos-Campo; djramos@ucam.edu

Received 26 January 2022; Revised 27 June 2022; Accepted 30 June 2022; Published 8 July 2022

Academic Editor: Kazim Husain

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Multifactorial factors such as psychological and nutritional habits are controlling factors in hypertension. The aim of the present study was to analyze differences in nutritional and psychological habits in humans with hypertension. Fifty participants with hypertension (HG) (57.5 ± 13.6 years) and 100 participants as control group (CG) with no hypertension disease (48.9 ± 7.9 years) were interviewed via online questionnaire. Multifactorial items in nutrition habits and psychological profile were analyzed by a compendium of questionnaires; psychological measures refer to personality, anxiety, depression, loneliness, perceived stress, and psychological inflexibility; and a nutritional questionnaire to analyze eating habits and nutrition behaviors of the participants. CG showed significantly higher week vitality (p = 0.001), juice weekly consumption (p = 0.011), coffee weekly consumption (p = 0.050), fermented milk weekly consumption (p = 0.004), and fruit weekly consumption (p = 0.022) than HG. Lower values of weekly coffee consumption and week vitality were found in HG. According to the psychological profile, significant differences were found only depression values, finding HG more depressed than CG (p = 0.002). In conclusion, our results showed that people with better nutrition and mental health would present lower levels of blood pressure. Therefore, the combination of psychological therapy and nutritional recommendations for reducing the risk of having hypertension and improving the blood pressure levels may be needed for patient with hypertension.

1. Introduction

This article summarizes the current situation of one of the most important 21st century illness, arterial hypertension [1]. It is a problem of increasing prevalence that can be considered an epidemic at present, one of the most common health problems in the world, affects more than 46% of adults, frequently, poorly controlled [2]. Studies carried out in different Spanish populations estimate a prevalence of hypertension that varies between 30 and 50%, but the real percentage is well above that recorded by the Spanish health system, given that it is an underdiagnosed problem, and frequently, poorly controlled [3, 4]. In industrialized societies, like USA, more than 75% aged ≥70 years have hypertension [5]. The American Heart Association estimates that 1.39 billion people worldwide had hypertension in 2010 [6]. In studies carried out in USA in 2012, a high prevalence of hypertension was found (approximately 71 million of people), 48.2% had already been diagnosed, and 36.2% were unaware of the problem (approximately 13 million of people) [7]. Several factors related to nutrition and psychological health can play an important role in regulation of blood pressure. It is known that promoting healthy habits in nutrition and psychological health seems to be quite noteworthy to improve blood pressure. Nutritional habits may be considered as a useful tool to prevent immediate and long-term risk of hypertension in population. Making changes in diet is a good way to help to control high blood pressure [8]. It is very important to create a healthy meal plan because these changes can also help to lose weight and lower heart
2. Materials and Methods

2.1. Participants. In the current study, 50 participants with hypertension (57.5 ± 13.6 years) and 100 participants as control group with no hypertension disease (48.9 ± 7.9 years) were interviewed via online questionnaire. The inclusion criteria for the hypertension group were that participant was diagnosed by hypertension. Hypertension was defined by current use of antihypertensive medications or systolic blood pressure ≥ 140 mm Hg or diastolic blood pressure ≥ 90 mm Hg.

This research complied with the Helsinki declarations (revised in Brazil, 2013) on human research and was approved by the University Ethics Committee (CIP1/18/074). All participants signed an informed consent before the start of the research.

2.2. Design and Procedure. Multifactorial items in nutrition habits and psychological profile were analyzed by a compendium of questionnaires, as follows.

2.2.1. Psychological Measures Were Performed by the Following Questionnaires. A short version of the Spanish version of the Big Five Inventory [18], this scale analyses five factors of personality: neuroticism, extraversion, openness, kindness, and responsibility. The reduced version is composed of 10 items that are answered on a 5-point Likert scale, where 1 means completely disagree and 5 means completely agree. An example item is "I see myself as a person who gets nervous easily." A short version of the Spanish version of Spielberger State-Trait Anxiety Inventory (STAI) [19], composed of 6 items assessing anxiety that are answered on a 4-point Likert scale where 1 means not at all and 4 means very much, was used to measure anxiety. The Acceptance and Action Questionnaire AAQ-II [20] test analyses the psychological inflexibility or experiential avoidance through 7 items, each answered by a 7-point Likert scale, where 0 means never true and 7 means always true. An example item is "Emotions cause problems in my life." High scores suggest that it is probable that there is current clinical distress. The UCLA Loneliness Scale [21] assesses the measurement of loneliness. In the present study, we used a condensed version composed by three items, each answered by a 3-point Likert scale, where 1 is never and 3 is frequently. An example item is "My interests and ideas are not shared by those around me." A short Spanish version of Perceives Stress Scale (PSS) [22], this scale assesses the level of perceived stress in a one-month period. It is composed of 14 items answered in a 5-point Likert scale, meaning 0 = never and 4 = very often. An example item is "In the last month, how often did you feel that you could not control important thinks in your life?" The Spanish version of Zung Depression Scale [23] was used to measure depression. The Zung Depression Scale uses a self-applied scale for depression, which has a sensitivity and specificity greater than 80% and consists of 20 items formulated in positive and negative terms. Somatic and cognitive symptoms are highly relevant, with 8 items for each group. The scale also includes 2 items referring to mood and 2 to psychomotor symptoms. It is composed of 4 items, from short time to most of the time.

2.2.2. Nutrition Habits Measures. We used an adapted previously used questionnaire [24] to analyze eating habits and nutrition behaviors in the last 12 months in the population related to weekly consumption frequency of different food groups, including

1. Fruit juices and nectars (250 ml)
2. Alcohol (whiskey, rum, gin…) (50 ml approx.)
3. Beer (250 ml approx.)
4. Wine (50 ml approx.)
5. Soft drinks (coke, soda…) (250 ml approx.)
6. Energy drinks (250 ml approx.)
7. Coffee (250 ml approx.)
8. Tea (250 ml approx.)
(9) Milk (250 ml approx.)
(10) Fermented products (125 g)
(11) Pastries (1 portion)
(12) Cookies-sweet cereals (30 g-250 ml)
(13) Cheese (50 g)
(14) Eggs (1 piece)
(15) Meat (150 g)
(16) Fish (150 g)
(17) Sausage/cold meat (150 g)
(18) Legumes (200 g)
(19) Rice (150 g)
(20) Pasta (150 g)
(21) Fruit (1 portion)
(22) Raw vegetables (salad) (200 g approx.)
(23) Cooked vegetables (200 g approx.)
(24) Bread (50 g approx.)
(25) Whole grain cereal (bread, rice, oat... ) (30 g)
(26) Fast food (1 serving)
(27) Protein shakes (300 ml)
(28) Vitamin supplements (1 capsule)

Each item was ranged from 1 to 6, where 1 means “I do not consume,” 2 means “less than three times per week,” 3 means “three times or more per week,” 4 means “seven or more times per week,” 5 means “ten or more times per week,” and 6 means “more than thirteen times per week.”

We also evaluated the vitality during the week and at the end of the week in two questions each answered by a 10-point Likert scale, where 0 means very low and 10 means very high. For the question “Do you have Migraine headache?” is answered by a 10-point Likert scale, where 0 means rarely got it and 10 means very often. For the question “How satisfied do you feel with your weight?,” the answers were “completely satisfied,” “I would like to increase weight,” and “I would like decrease weight.” For the question “How many glasses of water do you drink per day (250 ml)?,” the answers ranged from “0” to “more than 10.” For the question “How many sugar spoons takes per day?,” the answers ranged from “0” to “more than 5.” For the question “How do you have post-meal digestion?,” the answers were “I feel good normally,” “sometimes I feel hard, heavy digestion,” and “very often I feel hard, heavy digestion.” For the question “In the last week, which type of feces did you have?,” were 1 means “shard chunks,” 2 means “sausage shape,” 3 means “noodle form,” 4 means “snakes,” 5 means “soft chunks,” 6 means “soft chunks with undone limits,” and 7 means “watery with no solid chunks” we used Bristol Scale [25].

2.3. Statistical Analysis. The statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS) version 24.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (mean and standard deviation) were calculated for each variable. To analyze group differences between control group and hypertension group, an independent T test was conducted. The significance level was $p \leq 0.05$.

3. Results and Discussion

3.1. Results. Table 1 shows the results of the nutritional variables. CG showed significantly higher week vitality ($p = 0.001$), juice weekly consumption (250 ml) ($p = 0.011$), coffee weekly consumption (250 ml) ($p = 0.050$), fermented milk weekly consumption (125 g-ml) ($p = 0.004$), and fruit weekly consumption (1 unit) ($p = 0.022$) HG. Lower values of coffee weekly consumption and week vitality were found in HG.

According to the psychological profile, significant differences were found only in the Zung Depression Scale variable, showing HG higher values than CG ($p = 0.001$) (Table 2).

4. Discussion

The aim of the present study was to analyze differences in nutritional and psychological profiles of hypertensive patients and a control healthy participants. The initial hypothesis was realized when behavioral differences between hypertensive and control groups were observed.

Previous evidence showed that multifactorial factors such as psychological and nutritional habits are controlling factors in development disease. Therefore, as a result, we hypothesized that people with better nutrition and mental health would present lower levels of blood pressure, and the initial hypothesis was confirmed.

According to the dietary habits, some differences were found between both groups. CG presented significantly higher values in week vitality, juice, coffee, fermented milk, and fruits weekly consumption, than HG. Nonsignificant differences were found in the rest of nutritional variables analyzed. In this line, overweight and blood hypertension presented a direct relationship, showing the importance of nutritional habits and physical activity, highlighting that these factors that occur at an earlier age [26]. To support governments in strengthening the prevention and control of cardiovascular disease, WHO and the United States Centers for Disease Control and Prevention provide a strategic approach to improve cardiovascular health in countries across the world, limiting the intake of foods high in saturated fats, eating more fruit and vegetables, and eliminating/reducing trans fats in diet [2]. In Spain, government promoted the campaign “5 a day.” It is a worldwide movement endorsed by the World Health Organization (WHO) that promotes the consumption of a minimum of 5 servings of fruits and vegetables a day as the basis of a healthy diet. The campaign slogan refers to the importance of eating a minimum of five daily servings of fruit and vegetables for the correct nutrition of children. In addition, they served
related with the higher use of medication in this group, since to prevent diseases that appear in adulthood, such as hypertension and cardiovascular problems [27].

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Because hypertension and depression share

patients is a simple and cost-effective tool that may improve outcomes [38]. Because hypertension and depression share common pathways, it is possible that each disease has an impact on the natural history of the other. Greater healthcare utilization among patient depression may contribute to faster hypertension control [39].

### 5. Conclusions

We found how hypertensive patients presented lower consumption of fruits, juices, and fermented milk products, lower vitality, and higher levels of depression. The results of this study open a new multidisciplinary field in the treatment of hypertension, so present in the world today. The combination of psychological therapy and nutritional recommendations could be and efficient tool to decrease the risk of hypertension in futures generations and to improve blood pressure in patient with diagnosed hypertension. Finally, future prospective observational studies are needed to establish the causal role of diet factors more clearly in the development and progression of hypertension.

### Data Availability

All data are present in the manuscript.

### Conflicts of Interest

The authors declare no conflict of interest.

### References


