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EC CLINICAL AND MEDICAL CASE REPORTS

Research Article

Cardiovascular Risk Management in Patients with Arterial Hypertension Over 40 Years of Age, in Two Hospitals in Tegucigalpa - Honduras, January-June 2022

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Received: November 15, 2023; **Published:** December 06, 2023

Abstract

Background and Objective: Establish a strategy for cardiovascular risk management in patients with Arterial Hypertension over 40 years of age in two hospitals in Tegucigalpa - Honduras, January - June 2022, for monitoring and scheduled intervention through teleconsultation.

Methodology: The study, carried out at the University School Hospital and the Honduran Institute of Social Security in Honduras, was descriptive, observational and longitudinal, focused on patients over 40 years of age. It involved clinical and laboratory tests, as well as teleconsultation follow-up, to evaluate cardiovascular risk and other parameters in 1,000 patients. Primary outcomes included deaths, cardiovascular events, and hospital readmissions. The limitations were budgetary, internet access and laboratory standardization. The data was analyzed with Epi Info and TGF Medical Software, and the findings were shared via Zoom on February 7, 2022.

Results: The study showed that the majority of patients over 40 years of age were women (67.4%), with an average age of 60 years. High blood pressure and type 2 diabetes mellitus were common, affecting 72.6% and 66.7% respectively. Almost half of the hypertensive patients (49.2%) had a moderate cardiovascular risk. Furthermore, 33.9% of hypertensive patients had high cholesterol, and 35.4% were classified as overweight. Regarding satisfaction with teleconsultation, 39.2% of respondents expressed satisfaction, with 34.1% very satisfied.

Conclusion: In the study, 49.2% of participants showed a moderate cardiovascular risk and 30.8% of hypertensive patients were dissatisfied with virtual medical care. Evaluating satisfaction was difficult for 60% of the cases due to telephone changes or deaths.

Keywords: *Cardiovascular Risk Management; Arterial Hypertension; Honduras; Internal Medicine*

Introduction

Cardiovascular diseases are the main cause of death [1], representing a great economic cost in the world [2,3]. The global cardiovascular risk, defined as the probability of presenting an event in a given period [2], is considered the best method of addressing atherosclerotic disease [3]. The calculation method, through the tables of cardiovascular risk, has been widely disseminated as a result of the Framingham study [4] the basis of almost all of them.

The societies scientific (American College of Cardiology/American Heart Association [ACC/AHA], American College of Cardiology/ American Heart Association, and World Health Organization [WHO]) in its recommendations for the prevention of coronary heart disease [5], they use these tables to identify high-risk patients, priority when intervening with drugs, based on the different risk factors. Knowing the cardiovascular risk of the individual makes it possible to define preventive strategies, determine treatments and establish public policies [6].

Treatment of cardiovascular risk factors depends on valid risk prediction equations [7], but these have been previously developed and validated for populations in high-income countries. However, the Globorisk prediction equation, for cardiovascular diseases meets the need for a unified risk score that can be used in different countries.

The risk score can be recalibrated and updated for use in different populations and years with routinely available information, and allows the effects of sex and age on cardiovascular risk to vary between countries [8]. The Global HEARTS Initiative of the WHO seeks to improve practices in the control of cardiovascular diseases. Various global actors participate in it: among them the United States Centers for Disease Control and Prevention (CDC) and the Resolve to Save Lives initiative, among others.

HEARTS8, is being implemented and expanded in 16 countries in the Latin America and Caribbean region, to include 739 health facilities, which together cover approximately 7.5 million adults in the respective catchment areas. Planned to be the cardiovascular risk management model, including: arterial hypertension, diabetes mellitus and dyslipidemia, in primary health care in the Region of the Americas by 2025 [8].

Methodological Design

The study was carried out in two locations in Honduras: The Hospital Escuela Universitario, located in the Colonia Alameda of Tegucigalpa, and the Honduran Institute of Social Security, located in the La Granja neighborhood. The first was close to several landmarks such as the Juana Laínez Ecological Park and the Faculty of Medical Sciences, while the second was surrounded by places such as the Country Club Golf and the Humuya Colony.

This was a descriptive, observational and longitudinal study with a quantitative approach. A probabilistic and systematic sampling was used. The universe of the study included the population over 40 years of age, based on data from the XVII population census and the statistics department of the Teaching Hospital. Specifically, approximately 17,244 annual patients over 40 years of age were treated at this hospital.

The objective of the research was to analyze patients over 40 years of age treated in the emergency rooms and hospitalization wards of both institutions. For the sample, a confidence level of 95% and an error of 5% was considered, initially estimating 17,244 inhabitants and expanding the sample to 1,000 individuals (500 from each institution). The inclusion criteria were patients over 40 years of age who attended the emergency room or graduated from Internal Medicine and who agreed to participate in the study. Pregnant women and patients with physical or mental disabilities that prevented them from answering questionnaires were excluded.

Data collection was divided into two stages. The first stage included the application of a screening test and the measurement of clinical parameters such as weight, height and blood pressure. Laboratory tests were also performed to measure blood glucose and cholesterol. The second stage involved monitoring patients through teleconsultation for approximately three months after medical discharge, evaluating the modification of cardiovascular risk and other parameters.

Primary outcomes included death, acute myocardial infarction, cerebrovascular events, and medical discharges. Secondary outcomes included post-discharge deaths, hospital readmissions, cardiovascular risk modification, and study discontinuation.

The data collection instrument was validated with the WHO Global HEARTS initiative. Limitations of the study included budget, Internet access, and standardization of laboratory tests. The data were processed and analyzed with the Epi Info statistical program and the TGF Medical Software digital platform. The socialization of the project took place via Zoom on February 7, 2022.

Results

Sex	**% (F)**
Man	32.6% (132)
Women	67.4% (273)
Average age (years)	60 ± 12
Average size (meters)	1.62 ± 0.4
Average weight (Kg)	74.6 ± 14.2
Catchment site	
IHSS	27.7% (108)
HEU	73.3% (297)
Previous diagnosis of high blood pressure	
Yeah	72.6% (294)
No	27.4% (111)
Previous diagnosis of type 2 diabetes mellitus	
Yeah	66.7% (270)
No	33.3% (135)
Previous cerebrovascular event	
Yeah	10.9% (44)
No	89.1% (361)
Previous diagnosis of chronic kidney disease	
Yeah	8.4% (34)
No	91.6% (371)
Smoking	
Yeah	14.8% (60)
No	85.2% (345)
Smoking	
Low risk	15.3% (62)
Moderate risk	17.5% (71)
High risk	61.7% (250)
Very high risk	5.4% (22)

Table 1: *General characterization (n = 405).*

Sex	% (F)
Man	16.9% (11)
Women	83.1% (54)

Table 2: *Distribution of hypertensive patients according to sex (n = 65).*

Of a total of 65 patients with high blood pressure, 83.1% were female and 16.9% were male. Of the total number of hypertensive patients, the average age in men is 62 years and in women it is 63 years.

Range	% (F)
40 - 50	12.3% (8)
50 - 60	33.8% (22)
60 - 70	21.5% (14)
> 70	32.3% (21)

Table 3: *Distribution of patients by age range (n = 65).*

The predominant age range is 50 - 60 years (33.8%), followed by those >70 years (32.3%). More than 66% of the patients are elderly.

Hospital Institution	% (F)
University Teaching Hospital	89.2% (58)
Honduran Social Security Institute	10.8% (7)

Table 4: *Distribution of patients by recruitment site (n = 65).*

89.2% of the hypertensive patients interviewed are patients of the University School Hospital and a smaller proportion (10.8%) are patients of the Honduran Institute of Social Security (IHSS).

Cardiovascular risk	% (F)
0 - 3 (Low Risk)	29.2% (19)
4 - 6 (Moderate Risk)	49.2% (32)
7 - 10 (High Risk)	21.5% (14)

Table 5: *Distribution of patients according to the cardiovascular risk scale (n = 65).*

When applying the cardiovascular risk scale (HEARTS), 49.2% of hypertensive patients present moderate cardiovascular risk.

Sex and Cholesterolemia Levels	% (F)
Man	16.9% (11)
< 200	13.8% (9)
> 200	3.1% (2)
Women	83.1% (54)
< 200	52.3% (34)
> 200	30.8% (20)

Table 6: *Cholesterolemia levels according to sex (n = 65).*

Of the total group of hypertensives, 33.9% had total cholesterol levels greater than 200 mg/dl. The proportion of female patients with hypercholesterolemia is higher than that of men.

Cardiovascular Risk and Hypercholesterolemia	% (F)
> 200	
0 - 3 (Low Risk)	13.6% (3)
4 - 6 (Moderate Risk)	54.5% (12)
7 - 10 (High Risk)	31.8% (7)

Table 7: *Cardiovascular risk in hypertensive patients with hypercholesterolemia (n = 22).*

In the study, it was found that of the population group with high blood pressure who had a cholesterol level greater than 200 mg/dl, 13.6% (3) had cardiovascular risk, moderate risk, 54.5% (12), and high risk, 31.8% (7), according to the scale. cardiovascular risk Heart Score.

Patients who died by sex	% (F)
Women	100.0% (4)
Man	0.0% (0)

Table 8: *Hypertensive patients who died by sex (n = 4).*

Of the population group of hypertensive patients, 6% (4) died, of which 100% (4) belonged to the female gender.

Cardiovascular risk by age range	% (F)
50 - 60 years	25.0% (1)
0 - 3 (Low Risk)	25.0% (1)
> 70 years	75.0% (3)
0 - 3 (Low Risk)	50.0% (2)
4 - 6 (Moderate Risk)	25.0% (1)

Table 9: *Cardiovascular risk by age range in deceased hypertensive patients (n = 4).*

In the study, it was found that of the patients who died belonged to the following age group and cardiovascular risk: 75% (3) over 70 years of age, of which 66% (2) had low cardiovascular risk and 33% (1) moderate cardiovascular risk. And 25% (1) belonged to the age group of 50 - 60 years, 100% (1) with low cardiovascular risk.

BMI and High Blood Pressure	% (F)
Normal weight	21.5% (14)
Under weight	16.9% (11)
Pre-obesity or Overweight	35.4% (23)
Class I Obesity	12.3% (8)
Class II Obesity	9.2% (6)
Class III Obesity	4.6% (3)

Table 10: *Body mass index in patients with arterial hypertension over 40 years of age (n = 65).*

Regarding the WHO classification on the body mass index, hypertensive individuals over 40 years of age, 35.4% (23) belong to the overweight group. And only 4.6% (3) belong to the Class III Obesity group.

Comorbidities	% (F)
Arterial hypertension	16.0% (65)
HTA +1 Comorbidity	46.2% (187)
HTA +2 Comorbidities	8.6% (35)
HTA +3 Comorbidities	1.7% (7)

Table 11: *Prevalence of high blood pressure along with other non-communicable chronic diseases in hypertensive patients over 40 years of age (n = 294).*

Of the participants with high blood pressure, it was found that 42.6% (187) had high blood pressure plus 1 non-communicable chronic disease.

	% (n = 294)
Arterial Hypertension Only	16.1% (65)
0 - 3 (Low Risk)	4.7% (19)
4 - 6 (Moderate Risk)	7.9% (32)
7 - 10 (High Risk)	3.5% (14)
HTA +1 Comorbidity	46.2% (187)
0 - 3 (Low Risk)	0.7% (3)
4 - 6 (Moderate Risk)	3.7% (15)
7 - 10 (High Risk)	38.8% (157)
+10 (Very High Risk)	2.9% (12)
HTA +2 Comorbidities	8.6% (35)
4 - 6 (Moderate Risk)	1.7% (7)
7 - 10 (High Risk)	6.9% (28)
HTA +3 Comorbidities	1.7% (7)
+10 (Very High Risk)	1.7% (7)

Table 12: *Cardiovascular risk in only hypertensive patients vs. patients with arterial hypertension and other concomitant non-communicable chronic pathologies.*

The distribution of patients according to cardiovascular risk and population group according to the number of chronic non-communicable diseases, it was found that the group with the highest prevalence was the one that had high blood pressure with 1 chronic non-communicable disease, presenting high cardiovascular risk, which represents 38.7%. (157) of all patients in the study.

	% (n = 148)
Yeah	39.2% (58)
No	60.8% (90)

Table 13: *Patients who responded to the satisfaction survey.*

Of the participants surveyed, only 39.19% (58) agreed to fill out the satisfaction survey.

	% (n = 58)
Medical School	70.7% (41)
Very satisfied	23.8% (14)
Satisfied	28.5% (17)
Not satisfied	16.6% (10)
IHSS	29.3% (17)
Very satisfied	10.3% (6)
Satisfied	12.1% (7)
Not satisfied	6.9% (4)
Total	100.0% (58)
Very satisfied	34.1% (20)
Satisfied	40.6% (24)
Not satisfied	23.5% (14)

Table 14: *Satisfaction levels in patients contacted through teleconsultation.*

Discussion

In the present study, the sex predominantly affected by Hypertension disorder was female 54 (83.1%), contrasting with the PAHO report of 2017 where, according to the National Registry in Argentina, a higher prevalence is evident in men (48.7%) compared to women [9], similarly in Peru a secondary analysis of the 2017 National and Demographic Health Survey was carried out, finding that the prevalence of HTN was 17.8% in men and 11.4% in women [10,11].

In December 2021, the results of a study carried out in Cuba were published, which sought to demonstrate the association of sex and high blood pressure through an observational, retrospective, cross-sectional and analytical study with a population of 628 patients where a prevalence of sex was found. female (36.31%) versus (28.27%) agreeing with the results obtained in our analysis [12].

According to the results found, it is noted that 32.3% of those interviewed were within the age range of 70 years. According to a study in Peru, high blood pressure (HTN) in the elderly represents a growing public health problem, first and foremost. place because life expectancy increases in developed countries and the trend is similar in developing countries, constituting the population group with the greatest proportional growth [13]. According to the INEI, the population over 60 years of age was 6.1% in 1990, 7.1% in 2000, it was estimated at 9.4% for 2014 and is projected at 11.2% for 2021, consistent with the data obtained in the present study.

The Nephrology service at Hospital del Mar, Barcelona Spain conducts a review where they analyze the evidence between the relationship between Hypertension and Obesity, finding a prevalence of 40% of obese patients compared to those of normal weight. In 2017, Saudi Arabia carried out a cross-sectional study of hypertensive patients in primary care centers, finding that 28.7% had a BMI ≥ 30 kg/m^2. This does not agree with the data obtained since the population studied shows that only 8 (12.3%) are classified within this category according to the WHO, with 23 (35.4%) predominating as overweight, BMI ≤ 30 kg/m^2 [14].

Taking into account that cardiovascular risk factors are those biological signs and acquired habits, according to our results in hypertensive patients, 14% had a high cardiovascular risk, contrasting with a cohort of more than 15 million patients aged 30 years or

older without a brain event. vascular baseline, including 20% with baseline treated hypertension, patients with baseline hypertension had a lifetime risk of 63.3%. However, coinciding with a separate study by the INTERHEART group, hypertension represented 18 percent of the population's attributable risk of a first myocardial infarction [15].

Dyslipidemia is the group of asymptomatic diseases that have in common abnormal concentrations of lipids in the blood. They are risk factors for the development of cardiovascular diseases [16]. In the present study, the prevalence of dyslipidemia found based on sex predominated, the female sex was 83.1% over 16.9% for the male sex, agreeing on the prevalence of sex with a study carried out in Cuenca Ecuador with results of 71.3% of those affected. They were women compared to 28.7% of men [17]; with hypercholesterolemia found was 32.8% with this similarity in the present study being 33.9%.

Dyslipidemia causes an increase in the tone of the vascular wall, which in turn causes an increase in peripheral vascular resistance, ultimately causing an increase in blood pressure. The prevalence of arterial hypertension as the only comorbidity in the present study was 65 patients who They are equivalent to 16% of the total sample, data that do not agree with those found in the prevalence of arterial hypertension found in a study carried out in Ecuador, which was 18.33% [18].

Of the group of individuals evaluated in the study, 6% (4) died during the six months in which the teleconsultation was carried out, being lower than the mortality percentage found in the Morbimortality of Arterial Hypertension study. conducted in Chile where they found 15.8% mortality over the 30-year follow-up period, which can be associated with the follow-up time of their population group. In the study, 30.8% of patients reported being very dissatisfied or dissatisfied with this type of care, which contrasts with the study on functionality and user satisfaction in telehealth in Danlí Honduras, in which they found that 79% of the population They felt very satisfied with the teleconsultation strategy [19].

Conclusion

In the study carried out, it was found that 49.2% of the participants had a moderate cardiovascular risk, identified mainly at the University Teaching Hospital (96.8% of cases). Additionally, a notable 30.8% of patients over 40 years of age with hypertension expressed dissatisfaction with virtual healthcare. However, there were difficulties in assessing satisfaction in 60% of participants due to problems such as changes or deactivation of telephone numbers and, in some cases, death.

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Volume 6 Issue 12 December 2023