Author's response to reviews

Title: Factors associated to hypertension prevalence, unawareness and treatment among Costa Rican elderly

Authors:

Ericka Mendez-Chacon (ericka@ccp.ucr.ac.cr)
Carolina Santamaria-Ulloa (santamaria@wisc.edu)
Luis Rosero-Bixby (lrosero@ccp.ucr.ac.cr)

Version: 2 Date: 14 March 2008

Author's response to reviews: see over
Factors associated to hypertension prevalence, unawareness and treatment among Costa Rican elderly

REVIEWER #1

Title: Factors associated to hypertension prevalence, unawareness and treatment among Costa Rican elderly

Version: 1 Date: 2 January 2008

Reviewer: George Fodor

Reviewer's report:

Reviewer's Comments

General:
Reliable data on the prevalence of hypertension in the elderly in the Carribean area are scarce. Information concerning the prevalence of hypertension and its determinants are providing useful knowledge. The objectives of the study are well defined. The sampling is appropriate and the sample size sufficient for making valid conclusions.

Major Compulsory Revisions:

1. There are problems with the definition of the hypertensive status. An individual is described as hypertensive based on the BP values but also if he/she claims that a doctor told them that they are hypertensives. Although this information is of value when the awareness of hypertension is being assessed, it is not satisfactory for a prevalence study.

We thank the reviewer very much for his comment. In the results section, we state that there are 8% hypertensives who might be false-positives given that the only criteria is their claim of a medical diagnose of the condition. For the remaining 92% there are at least two criteria or one “objective” criteria (taking medicines or with high blood pressure in our exam). In the discussion we address again this issue and show what would it happened when all the potentially false positives are excluded. We wrote:

“As mentioned, about 8% of our hypertensive individuals were classified as such exclusively on basis of their claim that a physician diagnosed hypertension in the past. They were neither taking medicines nor had high blood pressure in the exams. Therefore,
some or even all of them could be false positives. We tested the sensitivity of our results to the exclusion of this 8% of potentially false positive from the group of hypertensive individuals. This exclusion reduced the prevalence percentage by five points, increased the percentage unaware by three points, and the percentage treated (conditional to be aware) by nine points. The results of the three logistic regressions were essentially the same after this exclusion. The only worth mentioning changes were that alcohol consumption among women stopped being a significant protective factor of hypertension prevalence and that residence in San Jose became a factor that significantly increases awareness of hypertension among men. Overall, however, our results are not sensitive to the inclusion or exclusion of these potential false-positives in the definition of who is hypertensive.”

Discretionary Revisions:

1. It would have been of interest if the prevalence of current smokers had been listed instead of a category â##has ever usedâ## tobacco, in Table 1.

   Done. In table 1 we included the prevalence of current smokers.

2. In Table 2, it would be of interest to know how many hypertensives were labeled as such on the basis of BP measurement vs. self-reporting.

   Done. Table 2 now decomposes prevalence in the different criteria to define hypertensives.

The paper reads well; if the above questions can be clarified the paper is suitable for publication in the BioMed Central.

What next?: Accept after minor essential revisions
Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests: I declare that I have no competing interests.

REVIEWER #2

Title: Factors associated to hypertension prevalence, unawareness and treatment among Costa Rican elderly

Version: 1 Date: 27 October 2007
Reviewer: Miguel Gus

Reviewer's report:

General
This is a cross-sectional study with a representative sample of the elderly population from Costa Rica. The results showed a high prevalence of hypertension and substantial proportion of unawareness of this condition in men and women. The main factors associated with hypertension were age, obesity and family history of hypertension. These findings are not new and reproduce results from other population-based studies. Even so, this manuscript has merits because it has a large sample, a well-established hypertension measurement with an automatic blood pressure device and shows that the hypertension is a world-wide problem.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached):

1. There wasn't a sample size calculation. Some of the findings in table 3 may be due to a type II error.

   We thank the reviewer very much for his comment. At the end of the discussion section we added information about statistical power in our analyses:

   “Many variables did not showed significant effects in the three logistic regression analyses of this study. Being non-significant does not necessarily mean that the relationship does not exist. It could be that our sample sizes have not enough power to detect some relationships. The 0.80 statistical power of the sex-stratified regressions in this study allows for the identification of odds ratios approximately lower than 0.80 or higher than 1.25. Small effects within this interval may exist in the population but could not be detected by our analyses.”

2. A more detailed explanation needs to be given regarding the definition of family history of hypertension.

   Done. The following explanation was included in methods:

   “..., alcohol intake history; past and current smoking behavior; physical activity; family history of hypertension (If one of their parents or siblings ever had a hypertension diagnosis); having been home-visited by community health workers during the last year; high calories consumption...”

3. A more detailed explanation needs to be given regarding the sample selection.
The following explanation was included in methods section.

The Costa Rican Study on Longevity and Healthy Aging (CRELES) is a on-going longitudinal study of a nationally representative sample of 3,000 adults born in 1945 or before (ages 60 and over at the first interview) and residing in Costa Rica by the year 2000, with over-sampling of the older old. For this analysis we use the data for the first wave of interviews, conducted from November 2004 to September 2006. A “mother” sample of 9,600 individuals was randomly selected from the 2000 census database after stratification by 5-year age groups. Sampling fractions ranged from 1.1% among those born in 1941-45 to 100% for the born before 1905. The in depth study of about 3,000 individuals is a sub-sample of 60 “health areas” out of 102 for the whole country. This subsample was taken in a probabilistic way in order that all individuals in the mother sample have the same probability to fall in the subsample. “Health Areas” are administrative population units defined by the government with the purpose of providing health care services nation wide. The sub-sample of 60 areas included near 5,300 individuals of the mother sample, yielding the following non-response rates: 19% deceased by the contact date, 18% non-found in the field, 2% moved to other addresses, 2% rejected the interview, 2% pendant interviews after several visits (likely rejections).

The 20% who had moved or were not localized, concentrate at younger ages. To take this into account, we use normalized sampling weights that reproduce both the five-year age structure of the Costa Rica population at the index date (mid 2005) and the sample size (about 3,000). These weights range from 2.44 in ages 60-64 to 0.09 in ages 95 and over.

All the data and specimens in the study were collected at the participants’ homes, usually in two visits. In the first visit, participants provided written informed consent and answered a 90-minute long questionnaire (including some mobility tests and two blood-pressure measures) as well as a 10-minute frequency of tracer food consumption questionnaire.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions  
Level of interest: An article whose findings are important to those with closely related research interests  
Quality of written English: Acceptable  
Statistical review: No, the manuscript does not need to be seen by a statistician.  
Declaration of competing interests:  
I declare that I have no competing interests
REVIEWER #3

Title: Factors associated to hypertension prevalence, unawareness and treatment among Costa Rican elderly.

Version: 1 Date: 13 January 2008

Reviewer: Theodore Kotchen

Reviewer’s report:

1. Within each Health Area, how were subjects selected for study? What was the refusal rate for participation? How many subjects are in each of the following age groups: 60-69; 70-79; 80+? Were participants asked to give informed consent?

   Done. We write more details about sampling in methods section as follows:

   About subjects selection Within each Health Area: The in depth study of about 3,000 individuals is a sub-sample of 60 “health areas” out of 102 for the whole country. This subsample was taken in a probabilistic way in order that all individuals in the mother sample have the same probability to fall in the subsample.
   … The sub-sample of 60 areas included near 5,300 individuals of the mother sample, yielding the following non-response rates: 19% deceased by the contact date, 18% non-found in the field, 2% moved to other addresses, 2% rejected the interview, 2% pendant interviews after several visits (likely rejections).

   How many subjects are in each of the following age groups: 60-69; 70-79; 80+?: this information is in table 1.

   Were participants asked to give informed consent? Yes, they were. In the first visit, participants provided written informed consent. There are a statement regarding consent in the methods section.

2. Please provide more information about the accuracy and reliability of the automatic, digital blood pressure measuring device. Was cuff size adjusted for arm girth?

   Done. In methods section, we wrote:

   “During the main interview (usually in the first visit), two blood pressure measures were taken, 30 minutes apart from each other, using an automatic digital device (OMRON HEM-711AC, Dupont, Pressure: ±3mmHg or 2% of reading). The cuff size was adjusted for arm girth. Cases in which it was difficult to take the measurement were reported as “Unable to measure blood pressure”.”
3. The definition of "hypertension" is not clear. Is it the average of the 2 measurements or the higher measurement or the second measurement? Within the text, there seems to be some difference in the definition. If individuals have been told by a doctor that they have hypertension, but are not on antihypertensive medications and their blood pressure is not currently elevated, are they considered to have hypertension? What percent of hypertensives are defined by this criterion?


Done.  Given that CRELES collected four blood pressure measures: two for diastolic pressure and two for systolic pressure, we defined as hypertensive individuals those who have any of the following characteristics: (1) have been told by a medical doctor that they are hypertensive; or (2) have a blood pressure of 140/90 or higher in three out of the four measures; or (3) were taking antihypertensive medications.

Table 2 now decomposes prevalence in the different criteria to define hypertensives.

4. The Discussion refers to uncontrolled hypertension even in populations with good access to medical care. It would be instructive to include information about the control rates of hypertension control in these subjects.


Done.  In the discussion section we included information about the percentage of elderly visited by health workers during the previous year and the percentages with controlled hypertension among those visited.

“The high figures of prevalence and lack of control of hypertension among elderly Costa Ricans occur in a population with almost universal health insurance coverage. There is growing evidence that uncontrolled hypertension occurs even in populations with good access to health care. There is also evidence that access is not the main determinant of hypertension unawareness. Therefore, access to health care does not seem to explain these differences, which occur largely under the watchful eye of the health care system. The exception seems to be the outreach visits by primary health workers, which halve unawareness among women. The primary health program should try to extend this effect also to men. Health workers visited during the previous year to about 40% of men and 46% of women, percentages that speak well about the average of this Costa Rican program. The percentages of hypertensive individuals who had their condition under control were however substantially lower than 100 among those visited: 41% men, 45% women”

5. How was dietary intake assessed?


Done.  We write more specific details about dietary intake in methods section.

“The data on food consumption were collected using a shortened version of the food frequency questionnaire (FFQ) specifically developed and validated to assess the nutrient intake in the adult population of Costa Rica (). The FFQ asked by the average consumption during the year preceding the survey, by defining 9 possible responses to categorize the frequency of consumption, ranging from "never or less than once a month" to "6 or more times a day." The FFQ also asked about the
consumption of vitamins and food supplements, brands of butter, margarine and oils used and certain forms of food preparation.”

6. The text states that 27% of hypertensives who are unaware of their condition are under treatment. Please explain.

We explain this in results section.

“Only about 27% of those hypertensives who are unaware of their condition are under treatment, with no differences by sex. So, they are taking antihypertensive medications but do not report to ever had a hypertension diagnosis. This might be due to errors in respondents’ answers.”

7. More recent NHANES references about hypertension prevalence and control rates in the U.S. might be cited.


8. Compared to men aged 60-69, the odds of men aged 70-79 having hypertension are not significantly increased, in contrast to the age effect in women. Could this reflect selective survival of these older men?

Yes, this could reflect selective survival as well as cohort effects of these older men. We discuss this as follows:

“Being obese and having family history of hypertension are the only two clear risk factors for hypertension in these Costa Rican data. This result is consistent with findings in many other populations. Many other effects postulated by the literature are less clear or non-significant in our data, including the effect of age, which uses to be present across different populations. Survival selection as well as cohort effects (changing life styles across cohorts) might be confounding the relationship between age and hypertension prevalence. This cross-sectional data set is not well suited to isolate true aging effects. Interestingly, the data suggest that in Costa Rica there are no socioeconomic or regional gradients in hypertension.”

9. The final paragraph in the manuscript, referring to different cut points, is confusing and seems to be a non-sequitor. What is the evidence that a blood pressure of 158/92 mmHg be a defining threshold? I strongly suggest deleting this paragraph.

Done. We deleted the paragraph.

10. The Discussion could be shortened.

Done. We shortened the discussion a bit.

What next?: Unable to decide on acceptance or rejection until the authors have
responded to the major compulsory revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests.