Sex differences in Health Care-Seeking Behavior for Acute Coronary Syndrome in a Low Income Country - Peru

Catherine Pastorius Benziger, M.D.[1,2], **Antonio Bernabe-Ortiz, M.D., MPH**[2], **J. Jaime Miranda, M.D., MSc, PhD**[2], and **Gene Bukhman, M.D., PhD**[3]

[1]University of Minnesota Medical School, Minneapolis, MN, USA

[2]CRONICAS Center of Excellence in Chronic Diseases, Universidad Peruana Cayetano Heredia, Lima, Peru

[3]Division of Global Health Equity, Brigham and Women's Hospital, Boston, MA, USA

Abstract

Objective—Recognizing reasons for pre-hospital delay after symptoms of acute coronary syndrome (ACS) is established in developed countries yet evidence from Latin America is limited. We aimed to assess ACS symptom recognition, health care-seeking behavior, and confidence in local health care facilities to take care of ACS by gender in a sample of Peruvians.

Methods—A community-based interview survey in a peri-urban area in Lima, Peru. The 24-item study instrument included vignettes and questions assessing identification of urgent and emergent ACS symptoms, anticipated help-seeking behaviors, and confidence in local health care facilities.

Results—In the study population (90 people; 45.6% men; mean age 43.5 years), women were 4 times less likely to correctly attribute symptoms of chest pain to the heart (OR=0.23; 95%CI: 0.063–0.87; p=0.03). Women were much more likely to respond that a man would "Seek help" (OR=4.54; 95%CI: 1.21–16.90; p=0.024) and that "Yes," a woman would be less likely to seek help for chest pain symptoms (OR=3.26; 95%CI: 1.13–9.41 p=0.029) after adjusting for age, education level, age at migration, and history of chest pain. Women were less likely than men to think that their local Health Care Post would help them if they had a heart attack (2.1% vs. 14.6%; p=0.04) and only 18.7% of women believed that their local Emergency Room (ER) would help them.

Conclusions—Our findings suggest women are less likely to seek help for chest pain and women and men in a peri-urban area in Peru are not confident in their local health care facility to treat urgent or emergent ACS symptoms.

Corresponding Author: J. Jaime Miranda, MD, MSc, PhD, Jaime.Miranda@upch.pe, Address: CRONICAS Center of Excellence for Chronic Diseases. Universidad Peruana Cayetano Heredia, Lima, Peru.

Introduction

Cardiovascular disease (CVD) has emerged as a leading cause of death in Hispanic populations (1, 2). Cross-sectional studies in Peru have described similar cardiovascular risk factors to those in other Latin American countries but longitudinal studies are lacking (3–5). Women, particularly those in Latin America, are especially at risk as previous studies from Argentina and Brazil (6) and Hispanic women in the United States (7, 8) have shown that women have lower awareness of symptoms of CVD and higher mortality after acute myocardial infarction (AMI). The Institute of Medicine recently recommended further exploration of gender differences in CVD risk in low and middle-income countries, including unique CVD risk factors in women (9).

Previous studies have supported the fact that delaying medical attention when suffering an AMI may lead to major complications such as cardiac dysrhythmias, congestive heart failure, pericarditis, and rupture of heart structures (10–12). Data from Brazil and Argentina suggests that younger patients and men are significantly more likely to present for hospital care sooner than older patients and women (10). Since one-fourth of all AMIs are silent or unrecognized, early symptom recognition in all AMI patients is imperative for decreasing morbidity and mortality due to AMI (13).

There are conflicting data regarding whether there are gender differences in delay in treatment-seeking behaviors. While some studies have found no difference in delay times between women and men (10, 14–17), others have found that women delay longer than men (15, 18–21). Women delay seeking help for a variety of reasons, including not recognizing symptoms, perceiving heart disease as a 'male' problem and preferring to self-medicate (22, 23). In addition, previous studies have shown that women experience a different symptom set than men, including more atypical symptoms (24) and less chest pain (13). Confusion in symptom identification and interpretation by women and health care professionals has led to delay in seeking care (25). Based on prior studies in other countries (6, 21), the major barriers to seeking treatment are likely gender, culture and socioeconomic status; however, there is a limited data from Latin America and none from Peru.

In order to fill this information gap and implement prevention and pre-hospital treatment measures in this area a pilot study was conducted in a peri-urban area in Peru through interviews (in Spanish) with adults over the age of 35. Our study aimed to assess identification of ACS symptoms, anticipated treatment-seeking behavior for ACS, and confidence in local Health Care Post and Emergency Room (ER) to take care of ACS.

Methods

Setting

This cross-sectional study was conducted in three of the most peri-urban and underserved communities (Santa Rosa, 28 de Julio and San Gabriel) of the district of Carabayllo in Lima. For contextual purposes, and according to Peru's national 2007 census, this district's social indicators are much worse than the averages of Lima. For example only 30% of Carabayllo's adult population reached technical or university type of education (vs. 43% Lima), 35% of its population had any type of health insurance (vs. 42% Lima), 49% had access to water inside their household (vs. 75% Lima) ([26]). Also, 58% of its population were classified as migrants defined by place of birth (vs. 38% Lima).

Participants

A questionnaire-based interview was undertaken over a 3-week period in September 2007 in Caraballyo, Lima, Peru. All households were visited by pre-trained field workers and all

adults over the age of 35 were selected and interviewed. All households with an adult within the age range of interest were identified from a 2004 census conducted by Socios En Salud, Lima and selected for a visit. From a total of 115 adults identified from the census and attempted to be contacted, 24 were not traced (moved away or household was abandoned), 31 were not available during the visits (up to 3 visits per household), 1 died, and 5 rejected to take part in the interview. Additionally, 41 new adults not listed previously in the census were identified and accepted to take part of the study.

Study variables

Questionnaire (appendix A): The 24-item study instrument included a short vignette describing the imaginary case of a man with urgent ACS symptoms (this vignette will be referred to as "typical chest pain") followed by 6 questions assessing symptom attribution, anticipated help-seeking behaviors, and identification of local health care centers. The second vignette added shortness of breath and described a patient with emergent ACS symptoms (subsequently referred to as "typical heart attack"), followed by an identical set of 6 questions. The first question in each question set was, "What organ is most likely responsible for the symptoms?" followed by "What would the man do in this situation?" The last question was, "If the person were a woman, would they be less likely to seek help?"

The instrument included socio-demographic characteristics, including: age, gender, place of birth, age at migration (a proxy measure of acculturation), age at arriving in Lima (urban area) and length of residence in Lima, and education level; 4 questions regarding personal history of chest pain and actual treatment seeking behavior; and 8 questions regarding proximity, mode of transportation, and confidence in local Health Care Post and ER.

Statistical Analysis

Data for continuous variables are presented as means ±standard deviations, whereas proportions are presented as frequencies and percentages, with difference and 95% confidence intervals of the difference reported when appropriate and student's t-test was used. Chi-squared was used to compare two categorical variables and Fischer's exact test was used if one or more of your cells had an expected frequency of five or less. Non-normally distributed variables are presented as medians [interquartile ranges (IQR)] and the Mann-Whitney test was used. Kappa statistics were used to assess the agreement beyond chance for attributing the symptoms to the heart. For binary outcomes, odds ratios (95% confidence intervals) were estimated using logistic regression and adjusting for age, education level, age at migration, and history of chest pain. All tests were two-sided and $\alpha < 0.05$ was considered to be statistically significant. STATA 10 for Windows (Stata Corp, TX, USA) was used for all analyses.

Ethical considerations

This study was approved by the Partners Human Research Committee of Brigham and Women's Hospital and Massachusetts General Hospital, Boston, MA, USA, and local IRB at Universidad Peruana Cayetano Heredia (UPCH), Lima, Peru. All patients gave written consent.

Results

Out of 95 adults interviewed, 4 were excluded from the study because they were younger than 35 years old and 1 because the residency status in the area of the study was not permanent (only 15 days in total in the area). Table I shows the baseline characteristics of the study population. The study population consisted of 90 people (45.6% men) aged 35–71 years (mean 43.5 years), mostly rural-to-urban migrants who reside in Carabayllo, Peru.

Secondary education or higher was completed in fewer women than men. More women than men had a self-reported history of chest pain.

Identification of ACS symptoms

In the first vignette "typical chest pain", majority of women (80%) and men (68%) correctly attributed their symptoms as originating the heart (rather than stomach, liver or lungs). In vignette 2, "typical heart attack", fewer people attributed their symptoms correctly (57.1% women vs. 63.4% men; p=0.66). After adjusting for age, education level, age at migration (a proxy for acculturation), and history of chest pain in both vignettes, women were four times less likely than men to correctly attribute the symptoms of chest pain to the heart in the first vignette (OR=0.23; 95%CI: 0.063–0.87; p=0.03).

Anticipated Treatment-Seeking Behavior

Responses to open-ended questions about health care-seeking treatment for chest pain and heart attack symptoms demonstrated that most people report that they would seek treatment. Actual answers included seek help (60.0%), seek professional help (15.6%), rest (11.1%), self-medicate (7.8%), seek a traditional healer (4.4%) and do nothing (1.1%). There were more women than men responded that the man in vignette 1 would "seek help" for his symptoms (p=0.006) (Table II).

More women than men responded, "Yes," women would be less likely to seek help for the same symptoms (p=0.09). The reasons cited for responding "Yes," included family obligations (31.1%), not thinking that it was a serious problem (12.2%), economic reasons (8.2%), women prefer treatment with herbal remedies (3.3%), and no response (48.9%). In the more emergent vignette 2 "typical heart attack" most women and men reported that men would seek help and the initial female disadvantage observed in vignette 1 disappeared.

After adjusting for age, education level, age at migration, and history of chest pain, women were much more likely to respond that a man would "Seek help" (OR=4.54; 95%CI: 1.21–16.90; p=0.024) and that "Yes," a woman would be less likely to seek help for the same symptoms in the vignette "typical chest pain" (OR=3.26; 95%CI: 1.13–9.41; p=0.029) (table III). In the 2nd vignette, "typical heart attack," such differences between genders disappeared.

Seeking Help in the Local Health Care Post or Emergency Room

The self-reported mean transportation time was 9.3 minutes to the local Health Care Post (95%CI: 8.0–10.5) and 15.7 minutes to the local ER (95%CI: 13.1–18.3).

Most participants, and over 90% of women, reported that their local Health Care Post would not help them if they had a heart attack (table IV). Women were much more likely than men to think that their local Health Care Post would not help them (93.8% vs. 75.6%; p=0.04). Reasons stated for not believing the local health post would help include: do not have appropriate equipment (53.7%), no doctors (35.3%), only treat serious problems (4.9%), bad reputation (2.4%), not open all day (2.4%), "only go there to die" (1.2%), too small (1.2%), and other (3.7%). Only 18.7% of women and 31.7% of men believed that their local ER would help them and reasons stated for not believing the local health post would help include: do not have appropriate equipment (40.2%), no specialty doctors (23.9%), only treat serious problems (13.4%), takes too much time (7.5%), bad reputation (3.0%), "only go there to die" (1.5%), and other (9%).

Discussion

The findings suggest that there are similarities and differences between women and men with regards to recognition of typical chest pain and heart attack symptoms, correct symptom attribution (to the heart), and confidence in local Health Care Post and ER to take care of them if they had a heart attack. Based on a clinical scenario, women report that men would seek help for chest pain symptoms; yet, report more often that "Yes" women are less likely to seek help. After adjusting for confounding factors, women also report that they would be less likely to seek treatment for typical chest pain symptoms than a man in the same vignette.

While female gender disadvantages were observed for recognition and attribution, both sexes showed strong lack of confidence in their local facilities' ability to care for them. Despite close proximity to local facilities, less than 20% of women and only one-third of men believe that their local ER would help them if they had a heart attack. Women were more likely than men to say that the local Health Care Post would not be able to help them if they had a heart attack. These findings in women, in addition to the fact that they are less likely to correctly attribute their symptoms to the heart, may contribute to longer prehospital delays in women with chest pain and heart attack symptoms.

Prior studies about delay times between women and men are conflicting since several studies have found no difference in delay times between women and men (10, 14–17) while others have found that women delay longer than men (15, 18–21). A variety of factors, including sociodemographic, behavioral, clinical and contextual characteristics have been examined in association with length of pre-hospital delay after the onset of ACS symptoms (22, 27). Gender differences in behavioral and clinical risk factors may contribute to the lower awareness of ACS symptoms in women. In Peru, women have a lower CVD risk profile than men but tend to be more obese and have higher prevalence of low high-density lipoprotein (3, 28, 29). The clinical significance of these risk factors has not been evaluated by a longitudinal study in Peru.

In the subset of patients in Argentina and Brazil in the GRACE study, older patients, patients with more co-morbidities, and women were significantly more likely to present for hospital care later (>2 hours) than younger patients, those with less co-morbidities, and men (10). Our results from a clinical scenario suggest that gender differences in symptom recognition and perceptions of receiving care may delay actual treatment-seeking behavior for symptoms of ACS as well as factors noted in the GRACE study.

While decreasing pre-hospital delay in this setting is important to reduce morbidity and mortality, educational programs that aim to increase awareness of chest pain in the community may have unclear benefits. Educational programs may cause increased anxiety about non-cardiac symptoms leading to increased health care utilization for non-cardiac chest pain. Meanwhile those with actual cardiac chest pain symptoms may be more likely to seek care than those with non-cardiac chest pain and so the educational programs may have a negative impact if it does not lead to increased health care utilization among those with actual disease.

Even though primary percutaneous coronary intervention (PCI) is preferred over the use of early administration of thrombolytic therapy (TT) since PCI is associated with reduced duration of hospital stay, readmission, reinfarction, and mortality compared to TT (30), in a resource-poor country where catheterization labs are not widely available, TT can save lives even when compared with primary angioplasty (10). Despite the fact that early administration of low-molecular weight heparins and anti-platelet agents for non-STEMIs can also prevent death and heart failure, the GRACE study showed that the length of pre-

hospital delay was associated with the use of fibrinolytic therapy with increasing use in patients who presented later (10).

Limited experiments have begun with TT in private ambulances in major cities of low and middle-income countries; yet these initiatives fail to address the problem of ACS in peri-urban areas where most people still live without emergency medical services. In Peru, an extensive yet thoroughly understaffed and undersupplied network of health care facilities exists. Therefore, this study is important because it suggests that health care seeking for chest pain is low and it highlights alternative reasons, such gender differences in risk perception, inadequate symptom recognition, and low confidence in local health care facilities as factors that may contribute to pre-hospital delay after the onset of ACS symptoms in a Peru other than infrastructural inadequacies.

Limitations in this study include limited sample size of a peri-urban population and may not be generalizable to the general population in Lima. Chest pain in our questionnaire was self-reported and was not confirmed using medical or laboratory testing. Non-cardiac causes of chest pain are possible but because chest pain was not an outcome in our study, only a potential confounding variable, we believe it is important to include in our analysis. The treatment-seeking behaviors were based on a clinical vignette and not confirmed in an actual clinical setting. Confidence intervals for some variables were large due to the small sample size of this pilot study. We were not powered to do subgroup analysis using older and younger patients but would be interesting to evaluate in the future. Future study to evaluate the feasibility of pre-hospital TT in this peri-urban setting was planned after this pilot program but has not begun at this time.

Further studies are needed to identify what factors cause delay and better understand what kind of interventions are most beneficial in this population. Potential barriers to care that warrant further investigation include the cost of health care utilization and availability of the appropriate personnel and diagnostics in these areas. After we better understand these attitudes and beliefs, we can focus on education to raise people's awareness of their cardiovascular risks and educate them on symptom recognition and appropriate health care-seeking behaviors.

Conclusion

Based on this preliminary study, women are less likely to seek help for chest pain than men and both genders have low confidence in the local Health Care Post or ER to take care of them with urgent or emergent ACS symptoms. Our results suggest that gender differences in symptom recognition and perceptions of receiving care may delay seeking care for symptoms of ACS and may be a potential barrier to initiating early treatment for ACS symptoms. In order to identify patients with high-risk ACS early, evaluate, and initiate treatment and provide transportation when indicated, continued efforts to understand the health care system in this area and raise awareness of cardiac chest pain is needed.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Table I

Baseline characteristics by gender

	Female	Male	Difference (95% CI of the difference)	p value
	(n = 49)	(n = 41)		
Age, years				
Mean (standard deviation)	43.0 (7.5)	44.2 (7.2)	−1.15 (−4.2; 1.9)	0.46
Education level (n, %)				0.13[*]
None/Primary	23 (46.9)	12 (30.0)		
Secondary or more	26 (53.1)	28 (70.0)		
Age at migration, years				
Median (25–75% IQR)	14.5 (8–20)	15 (11–20)		0.42[**]
History of Chest pain (n, %)[†]	29 (59.2)	17 (41.5)	0.18 (−0.03; 0.39)	0.096

Continuous variables are presented at means (±standard deviation) and non-normally distributed variables are presented as medians [interquartile ranges (IQR)]. Student´s t-test was used for the analysis unless where stated otherwise.

[*] Chi-squared test was used.

[**] Mann-Whitney test was used.

[†] History of chest pain was self-reported.

Table II

Responses to vignette questions regarding a patient with chest pain and heart attack and help-seeking behaviour

	Female (n = 49)	Male (n = 41)	p-value[*]
Vignette 1 "Typical chest pain"			
What would the man do in this situation?			
Seek help (n, %)	43 (87.8)	25 (61.0)	0.006
If the person were a woman would they be less likely to seek help?			
Yes (n, %)	30 (61.2)	17 (41.5)	0.09
Vignette 2 "Typical heart attack"			
What would the man do in this situation?			
Seek help (n, %)	47 (95.9)	40 (97.6)	1.00
If the person were a woman would they be less likely to seek help?			
Yes (n, %)	4 (8.2)	1 (2.4)	0.371

[*] Fisher exact test was used.

Table III

Logistic regression model to predict response to what the man presented in the vignette would do and the likelihood of women seeking help according to gender of participant

	Crude estimate (n=90) OR (95%CI)	Adjusted estimate (n=72)[†] OR (95%CI)
Vignette 1 "Typical chest pain"		
Man seeking help		
Male	1 (Reference)	1 (Reference)
Female	**4.59 (1.59–13.24)**[**]	**4.54 (1.21–16.90)**[**]
Woman less likely to seek help		
Male	1 (Reference)	1 (Reference)
Female	2.23 (0.96–5.20)[*]	**3.26 (1.13–9.41)**[**]
Vignette 2 "Typical heart attack"		
Man seeking help		
Male	1 (Reference)	1 (Reference)
Female	0.59 (0.51–6.72)	0.67 (0.05–9.13)
Woman less likely to seek help		
Male	1 (Reference)	1 (Reference)
Female	3.56 (0.38–33.14)	2.27 (0.20–25.56)

[†]Adjusted for age, education level, age at migration (acculturation), and self-reported history of chest pain.

[*]$p < 0.10$;

[**]**$p < 0.05$**

ACS: acute coronary syndrome

Table IV

Responses to questions regarding seeking and receiving treatment at the local Emergency Room and Health Care Center by gender

	Female (n = 48)	Male (n = 41)	p-value
Do you think the Health Care Post closest to you would be able to take care of you? (n, %)			
No	45 (93.8)	31 (75.6)	0.04[*]
Yes	1 (2.1)	6 (14.6)	
Don't know	2 (4.2)	4 (9.8)	
Do you think the local Emergency Room would be able to take care of you? (n, %)			
No	25 (52.1)	16 (39.0)	0.31
Yes	9 (18.7)	13 (31.7)	
Don't know	14 (29.2)	12 (29.3)	

Chi-squared was used unless stated otherwise.

[*] Fisher exact test was used.