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Preparedness for Cardiac Emergencies among Cambodians with Limited English Proficiency

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Abstract

In the United Sates, populations with limited English proficiency (LEP) report barriers to seeking emergency care and experience significant health disparities, including being less likely to survive cardiac arrest than whites. Rapid utilization of 9-1-1 to access emergency services and early bystander CPR (cardiopulmonary resuscitation) is crucial for successful resuscitation of out-of-hospital cardiac arrest patients. Little is understood about Asian LEP communities' preparedness for emergencies. In this exploratory survey, we sought to assess intentions to call 9-1-1 in an emergency and knowledge of CPR in the Cambodian LEP community. We conducted an in-person interview with 667 Cambodian adults to assess their intentions to call 9-1-1 and their awareness of and training in bystander CPR. While the majority of participants stated that they would call 9-1-1 in an emergency, almost one-third of the sample would call a friend or family member. Awareness of CPR was very high but training in CPR was lower, especially for women. A higher level of English proficiency and greater proportion of time in the US was a strong predictor of CPR training and intention to call 9-1-1 in an emergency. This suggests that greater efforts need to be made to reach the most linguistically-isolated communities (those with little or no English) with emergency information in Khmer.

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Keywords

CPR; immigrants; limited English proficiency; language; emergency preparedness

Introduction

Rapid utilization of 9-1-1 to access emergency services and early application of CPR (cardiopulmonary resuscitation) by bystanders is crucial for successful resuscitation of out-of-hospital cardiac arrest patients. [1] It is known that early bystander CPR, prior to the arrival of emergency medical services (EMS), increases the chance of survival in cardiac arrest cases. [2,3] In a recent comparison of Limited English Proficient (LEP) and English-fluent callers to 9-1-1, it was found that a lower proportion of LEP cardiac arrest cases received bystander CPR or survived to hospital discharge. [4] Additionally, recent research conducted with a Chinese LEP population suggests high anxiety and reticence to call 9-1-1 due to fears about communicating effectively and concerns about financial and legal implications. [5] Taken together, these recent studies indicate that the barriers to accessing and utilizing emergency services and skills lead to serious health implications for LEP populations.

Although Washington State has the third largest Cambodian community in the United States [6], very little research has been conducted with this linguistically-isolated population, nearly half of whom report speaking English less than very well. Additionally, compared to other Asian American groups, the Cambodian population experiences a higher rate of poverty and is a more aged population [6]. In a California study, Cambodians reported very poor health status when compared to the general population and to other Asian immigrants. The disparities were only slightly reduced when the Cambodian sample was compared to a subsample of Asian immigrants who were matched on gender, age, income, and urbanicity. [7] No research has focused on this vulnerable group's knowledge of or access to emergency medical services and skills. In this exploratory survey, we sought to assess intentions to call 9-1-1 in an emergency and knowledge of CPR in the Cambodian LEP community.

Methods

Study Setting

We surveyed Cambodian households in the city of Seattle, as well as communities in surrounding areas of King County and Snohomish County, Washington. Our survey was conducted over a six-month period (February–July, 2010). The Fred Hutchinson Cancer Research Center Institutional Review Board approved our survey instrument and study procedures.

Sampling

This study was part of a larger study to assess attitudes and behaviors regarding hepatitis B testing among Cambodians. Since commonly used survey sampling methods, such as random digit dialing, are cost-prohibitive for surveys of smaller racial/ethnic populations [8] we applied a list of Cambodian last names to an electronic database of telephone listings for the metropolitan Seattle area. Specifically, we identified 1,147 addresses that were located in our target zip codes and were associated with one of the Cambodian last names. All these addresses were included in our survey sample.

Survey Recruitment

Addresses in our survey sample received an introductory letter (Khmer and English versions) from the project. Surveys were conducted in participants' homes by bilingual, bicultural Cambodian interviewers. Male survey workers interviewed men and female survey workers interviewed women. Respondents were given the option of completing their survey in Khmer or English, and received a $20 grocery store card as a token of appreciation for their time. Five door-to-door attempts were made to contact each household (including at least one daytime, one evening, and one weekend attempt). Each interview took approximately 30 minutes to complete.

Participant Selection

Cambodians in the 20–64 age group were included in our survey. Because the survey was used to recruit men and women for a subsequent liver cancer control household intervention program, we aimed to interview a man and a woman ages 20 to 64 years in each household (rather than one individual in each household). If a household included more than one age-eligible Cambodian man, we attempted to interview the man with the most recent birthday. The same approach was used if a household included two or more age-eligible Cambodian women [9].

Measures

To assess intentions to call 911 for an emergency we asked participants "whom would you call for an emergency" (9-1-1; family; friends/other).

To assess awareness of and training in CPR we asked participants if (before today) they had heard of CPR (yes; no) and if they had received training in CPR skills (yes; no).

Demographic characteristics included: age, education (in years), marital status (currently married; previously married or never married) and proportion of life in the United States. English proficiency was asked by the question: "How well do you speak English" (fluently, very well, so so, poorly, not at all).

Data Analysis

Proportion of life in the US (which is considered to be a proxy measure of acculturation) was calculated from responses to questions addressing age and years since immigration [10]. Categories for this variable were <25%, 25–49%, and ≥50%. US-born respondents were included in the ≥50% category. English proficiency was categorized as (speaking English fluently or very well; so so; poorly or not at all).

Our study sample included men and women from the same households and individual responses from the same household may have been correlated (i.e., the independence of observations could not be assumed). To account for the potential correlation of observations, the modification of unconditional logistic regression by Generalized Estimating Equations (GEE) [11] was used in the analysis of binary responses. When characteristics with more than two response categories were compared between men and women, the bootstrapping technique (with re-sampling of households) was used to account for potential within-household correlations [12].

We first examined the associations between demographic variables and the three outcome variables of interest (i.e., intent to call 9-1-1 for an emergency, awareness of CPR, and CPR training) by men and women separately in bivariable analysis. Chi-square tests were used to examine the relationship between each demographic variable and intent to access 911 or having been trained in CPR[not shown]. The modification of multivariable log-binomial

regression models by Generalized Estimating Equations (GEE) [11] were used to assess independent associations between the variables. Associations were quantified as relative risks (RR) with corresponding large-sample 95% confidence intervals (CI). Because the bivariable analyses suggested possible interactions between gender and English proficiency (for calling 911) and gender and marital status (for CPR training), interaction terms were included in the respective analyses. In cases where log-binomial models did not converge with the standard algorithm of SAS for fitting generalized linear models, the COPY method of Deddens and Petersen was employed [13]. All data analyses were performed with SAS version 9.2 (SAS institute, Cary, North Carolina).

Results

Survey Response

Of the 1,147 addresses in our survey sample we were able to verify that 580 of the addresses were Cambodian households (included one or more Cambodians). A total of 667 Cambodian participants completed a survey. Surveys were completed by 300 (67%) of the 449 Cambodian men that interviewers were able to contact, and 367 (73%) of the 501 Cambodian women that interviewers were able to contact. In total, respondents represented 414 Cambodian households. In 253 of these households, both a Cambodian man and woman participated in the survey. In 47 of these households a man (but not a woman) participated, and in 114 of these households a woman (but not a man) participated.

Table 1 reflects the demographic characteristics of our sample. Participants tended to be middle aged and married, with men reporting more years of education than women. While a majority of participants stated that they would call 9-1-1 for an emergency, almost one-third of the sample would call a friend or family member for an emergency. Awareness of CPR was very high among this sample but training in CPR was much lower, especially for women.

Table 2 shows that participants between the ages of 35–49 were more likely to respond that they would call 9-1-1 for an emergency (versus their older or younger counterparts). Among women, those with higher English proficiency were more likely to report calling 9-1-1 for an emergency. However, level of English proficiency (fluent, so-so, or poorly or not at all) did not influence men’s likelihood of calling 9-1-1.

Table 3 shows that proportion of life in US and fluency in English were related to awareness of CPR. Respondents with higher proportion of life in US and greater English fluency were more likely to have heard about CPR compared to those who had lived in the US less (and who reported speaking English poorly or not at all).

Table 4 shows that years of education, proportion of life in the US, and English fluency were related to having been trained in CPR. Those with the most education, greatest fluency in English, and greatest proportion of life in US were more likely to have received CPR training than those with less education, limited English proficiency, and less proportion of life in the US.

Interestingly, while marital status was not associated with CPR training for men, there was a marital status interaction for women. Women who were previously or currently married were less likely to have been trained in CPR than women who were never married. To better understand this gender and marital status difference, participant employment status was also factored into the analysis (since CPR training is frequently conducted at worksites). However, inclusion of employment status did not change the association between CPR training and women who had never been married (data are not shown).

Discussion

The objective of this study was to assess intentions to call 9-1-1 in an emergency and knowledge of CPR in the Cambodian LEP community. The results show that awareness of 9-1-1 and CPR was generally high, and that a higher level of English proficiency and greater proportion of time in the US was a strong predictor of CPR training and intention to call 9-1-1 in an emergency. This suggests that greater efforts need to be made to reach the most linguistically-isolated communities (those with little or no English) with emergency information in Khmer. In particular, interventions need to be designed to target married (or previously married) women who do not speak English well. In this study, being female and married was associated with less CPR training. This is particularly concerning in light of the fact men are twice as likely as women to suffer cardiac arrest, which means their spouses (older women) are much more likely witnesses to cardiac arrest [14].

Limitations

This study measured intentions to call 9-1-1 in an emergency (versus actual experience with the 9-1-1 system) and awareness and self-reported behavior about CPR training (compared to actual training or simulated CPR performance). Intentions do not necessarily reflect actual behavior. As well, although recent research affirms that LEP callers are less likely to accept and perform 9-1-1 dispatch-assisted telephone instructions for CPR during a cardiac event [4], we cannot be sure that this is true specifically for LEP Cambodian callers to 9-1-1.

Conclusion

For many in the United States, a language barrier may be a serious hindrance to accessing and effectively utilizing emergency skills and services. Ethnic groups with Limited English Proficiency (LEP) are shown to have even less access to medical care and lower health literacy than English speaking minority groups who suffer from significant health disparities. [15,16] This is particularly concerning given the rapid growth of the LEP population in the United States. One fifth of the US population now reports speaking a language other than English at home and 46 percent of this group reports speaking English less than very well. The number of Asian language speakers in the US has increased over 18% in the last decade to 8.3 million, representing many different ethnicities and language groups. [6] These changing demographics point to the importance of understanding and overcoming barriers to emergency services that these communities face. This current study adds new information about gender and marital differences in CPR training and intentions to call 9-1-1 that could be used to develop culturally-appropriate educational interventions with Cambodian immigrants.

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Table 1

Demographic variables

Variable	Men N=300 n (%)	Women N=367 n (%)	p-value
Age (years)			0.13
<35	58 (19)	91 (25)	
35–49	128 (43)	134 (37)	
≥50	113 (38)	140 (38)	
Education (years)			
<7	78 (26)	148 (41)	<0.001
7–11	60 (20)	94 (26)	
≥12	158 (53)	121 (33)	
Marital status			
Currently married	221 (74)	256 (70)	<0.001
Previously married	26 (9)	67 (18)	
Never married	53 (18)	43 (12)	
Proportion of life in US (%)			
<25	30 (10)	66 (18)	<0.001
25–49	87 (29)	119 (33)	
≥50	182 (61)	180 (49)	
Whom would you call for emergency?			
9-1-1	222 (74)	252 (69)	0.15
Other (non 9-1-1)	78 (26)	114 (31)	
Before today, have you ever heard of CPR?			
Yes	267 (89)	324 (88)	0.74
No	33 (11)	43 (12)	
Have you ever received training in CPR skills?			
Yes	173 (58)	160 (44)	<0.001
No	127 (42)	207 (56)	

Table 2

Results of multivariable analysis for the question: Whom would you call for emergency? (9–11 vs. other)

Variables	RR	95% CI	p-value
Age (years)			
<35	0.9	0.8 – 1.1	0.33
35–49	1.1*	1.00 – 1.29	0.049
≥50	1.0		
Education (years)			
<7	1.0	0.9 – 1.1	0.85
7–11	1.0	0.8 – 1.1	0.55
≥12	1.0		
Marital status			
Currently married	1.0	0.9 – 1.1	0.91
Previously married	1.0	0.9 – 1.2	0.61
Never married	1.0		
Proportion of life in US (%)			
<25	1.0	0.8 – 1.2	0.82
25–49	1.0	0.8 – 1.1	0.44
≥50	1.0		
Gender, English language proficiency			
Male, speaks fluently or well	1.2	0.99 – 1.47	0.06
Male, speaks so so	1.2	0.98 – 1.36	0.08
Male, speaks poorly or not at all	1.2*	1.02 – 1.45	0.031
Female, speaks English fluently or well	1.3**	1.1 – 1.6	<.001
Female, speaks English so so	1.2	0.98 – 1.37	0.08
Female, speaks English poorly	1.0		

*P<0.05

**P<0.01

Table 3

Results of multivariable analysis for the question: Before today, have you ever heard of CPR?

Variables	RR	95% CI	p-value
Gender			
Male	1.0	1.0 – 1.0	0.42
Female	1.0		
Age (years)			
<35	1.0	0.97 – 1.08	0.33
35–49	1.0	0.97 – 1.08	0.33
≥50	1.0		
Education (years)			
<7	1.0	0.9 – 1.0	0.32
7–11	1.0	0.96 – 1.01	0.33
≥12	1.0		
Marital status			
Currently married	1.0	1.00 – 1.00	0.60
Previously married	1.0	0.9 – 1.0	0.36
Never married	1.0		
Proportion of life in US (%)			
<25	0.8*	0.7 – 1.0	0.010
25–49	0.9	0.9 – 1.0	0.08
≥50	1.0		
English language proficiency			
Speaks fluently or well	1.1**	1.1 – 1.2	<.001
Speaks so so	1.1**	1.03 – 1.21	0.006
Speaks poorly or not at all	1.0		

*P<0.05

**P<0.01

Table 4

Results of the multi-variable analysis for the question: Have you ever received training in CPR skills?

Variables	RR	95% CI	p-value
Age (years)			
<35	0.9	0.7 – 1.1	0.24
35–49	1.0	0.8 – 1.2	0.91
≥50	1.0		
Education (years)			
<7	0.8**	0.6 – 0.9	0.006
7–11	0.8	0.7 – 1.0	0.05
≥12	1.0		
Proportion of life in US (%)			
<25	0.6**	0.4 – 0.8	0.003
25–49	0.8	0.7 – 1.0	0.09
≥50	1.0		
English language proficiency			
Speaks fluently or well	1.9**	1.4 – 2.5	<.001
Speaks so so	1.6**	1.2 – 2.0	<.001
Speaks poorly or not at all	1.0		
Gender and marital status			
Male, married	0.9*	0.8 – 1.0	0.037
Male, previously married	0.7	0.5 – 1.1	0.10
Male, never married	0.8*	0.6 – 1.0	0.036
Female, married	0.8**	0.7 – 0.9	<.001
Female, previously married	0.8*	0.6 – 1.0	0.038
Female, never married	1.0		

*P<0.05

**P<0.01