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Abstract

Introduction. A minority of bystanders will initiate cardiopulmonary (CPR) when a family member collapses in the home. This study sought to better understand the psychological barriers to family-initiated CPR and to determine whether sociodemographic variables are influential. **Methods.** Twelve hundred and eight people were contacted via telephone and asked about their experience with CPR experiences and attitudes toward initiating CPR on a family member. **Results.** Seventy-four percent of participants had learnt CPR and 68 percent were confident to initiate CPR on a family member. Men, people who had learnt CPR, and people with more than 11 years of education were the most confident groups. People older than 65 were the group least likely to have learnt CPR and least confident to initiate CPR. Participants confident to initiate CPR expressed concerns about fear of failing (37%) or indicated they had no concerns (30%). In contrast, those not confident were most concerned about performing CPR correctly (55%) and 30% were afraid of failing. **Conclusion** CPR courses are not reaching those most likely to be called upon to use this skill. Moreover, even among those with CPR training, the desire to "get it right" and fear of failing impair confidence. Psychological barriers to performing CPR should be addressed in training courses, particularly for those groups with the least confidence, such as older people.

Key words: heart arrest; survival; cardiopulmonary resuscitation; bystander

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Introduction

Survival from cardiac arrest outside hospital has been reported at approximately 5% percent.1–3 However,several factors positively influence survival following out-of-hospital cardiac arrest, these being early initiation of cardiopulmonary resuscitation (CPR), the quality of CPR, and early defibrillation.[4] Consequently, community CPR programs have been widely embraced, and it is estimated that between 12% and 64% of the population have been trained in this procedure.[2,5–7] Unfortunately, although the willingness of bystanders to perform CPR has been reported as being as high as 84%,[8] percent actual rates of bystanders' initiating CPR are only 15–30%.[1,9] Although the cause of failure to initiate resuscitation is multifactorial, various barriers contribute to the reluctance of bystanders to initiate CPR, including: fear of infectious disease or of failing, unattractive attributes of the victim, lack of CPR skills, and fear of possible litigation.[6,8,10,11]

Most of out-of-hospital cardiac arrests occur at home and are witnessed by a family member.[3,8,12] While studies reflect a greater willingness of individuals to initiate CPR on a family member than a stranger,[6] fewer people receive CPR at home.[6,13] Indeed, only a quarter of people with CPR training will ultimately initiate CPR should they witness a cardiac arrest in private settings.[14] Authors speculate that unknown psychological barriers prevent the initiation of CPR on a family member.[13,14] Despite prior training in CPR, confidence to adequately perform CPR if the need arose has been postulated as a psychological barrier to initiating CPR.[11] This paper confirms that some people who complete a CPR course will not be confident in their skills and be likely to express a fear of failing.

Aim

The aims of this study were to better understand barriers to family initiated CPR and to determine whether sociodemographic variables are associated with confidence to initiate CPR on a family member.

Methods

A cross-sectional descriptive study was conducted using an omnibus survey format administered via telephone interview. The Omnibus survey is a multipurpose survey comprised of a number of groups of questions on a variety of different subjects together with a core of standard questions. Omnibus surveys are designed to produce population-based representative estimates about the opinions of the adult respondent and the household in which they live.[15,16] The Survey was approved by the Central Queensland University (CQU) Human Research Ethics Committee (HREC). The survey is carried out annually by the Population Research Laboratory (PRL) within the Centre for Social Science

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Research (CSSR) at the Central Queensland University for a range of researchers.

Sampling

The study population was randomly selected from Central Queensland (CQ) residents 18 years of age or older (Central Queensland is defined geographically as extending from Mackay in the north to Bundaberg in the south and from the coast to the state border). A simple random sample of phone numbers was drawn from a direct-dialled, land-line telephone database. All duplicate and mobile telephone numbers were removed from the generated list. One person was selected from each household to participate in a 20-minute telephone interview. From October to November 2005, 3090 phone calls were made and 1208 people interviewed.

The questionnaire was pilot tested (n = 181) by trained interviewers. The final survey consisted of three sections; the standardized introduction, a series of specific questions reflecting the research interests of the research groups participating in the Omnibus study and demographic questions. Questions specific to this research were embedded within the survey. Specifically, all respondents were asked:

1. "Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with the following statement? If a family member of mine collapses today, I feel confident to initiate CPR"
2. "Could you finish the following sentence; My greatest concern about performing CPR on a family member is: Performing correctly; b. hurting the person; c. fear of failing; d. contacting disease; or e. no concern at all."

Demographic questions included whether participants had learnt CPR, age, gender, education level, and household income.

The Sample

Six hundred and two males and 606 females were interviewed. The average age was 47 years and most were married. The sample was considered to be representative of the CQ population.

Statistical Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS). A series of χ^2 analyses were initially conducted to assess whether there was an association between self-reported confidence to initiate CPR on a family member, sociodemographic variables, and perceived barriers to initiating CPR. Predictors yielding significant χ^2 were further assessed for their influence in the presence of other variables by fitting binominal logistical regression. Prior to conducting the regression analysis, the five-point Likert-scale responses were collapsed into two discrete categories: agree (agree/strongly agree) or fail to agree (neutral, disagree, or strongly disagree). Associations are presented as an odds ratio (OR) and indicate the increased or decreased likelihood of a subgroup within the population to perform a specific behavior.

RESULTS

Of the 1208 participants in the study, 74% had learnt CPR at some time, 58 % identified that they had learnt CPR through a recognized service provider of First Aid/CPR courses, such as either St. Johns Ambulance or the Queensland Ambulance Service. The remainder had learned through workplace training, from family members, texts, or the internet (Table 1). Men (78.7%) were significantly more likely (p = 0.001) to have learnt CPR than women (69%). People 25–44 years of age were significantly more likely to have learnt CPR than those 65 years or older (p = 0.23). Income was also significantly related to having learnt CPR, with almost all participants (90%) earning $52,000 to $100,000 having learnt CPR compared to 65% of those earning less than $26,000 (p = 0.001).

Confidence to Initiate CPR

The majority of participants (68.4%) agreed or strongly agreed that they were confident to initiate CPR should a relative collapse today. Eighty-one percent of people who had learnt CPR, and 30% of those who had not,

TABLE 1. Participation in CPR Training by Population Characteristics

	% Sample	N*	Learnt CPR	95% CI	
Total	100	1208	Yes (%)		
Gender					
Male	49.8	602	78.7	75.4–82.0	p = 0.001
Female	50.2	606	69	65.7–72.3	
Age group					
18–24 years	7.2	87	68	58.0–77.6	p = 0.23
25–34 years	14.2	172	81	75.6–87.2	
35–44 years	24	290	79	74.6–84.0	
45–54 years	23.1	279	77	72.5–82.3	
55–64 years	18.5	474	72	68.3–76.3	
>65 years	12.9	418	55	49.7–59.3	
Household income					
Nil-$26000	39.7	374	65.8	61.0–70.6	p = 0.001
$26 001-$52 000	32.3	303	76.6	71.8–81.4	
$52 001-$10 0000	20.9	197	89.8	85.6–94.0	
> $100 000	7.2	68	80.9	71.6–90.2	
Witnessed a family member receiving CPR					
No	87.4	1048	67.1	64.3–69.9	p = 0.006
Yes	12.6	151	77.5	70.8–84.2	

* Numbers vary as not all participants answered all questions.

TABLE 2. Association between being Confident to Initiate CPR and Variables

Predictor Variable	Total Sample n (%)	n (%) Confident	Adjusted OR[a]	CI 95%[a]
Not confident	379 (31.6%)			
Confident	820 (68.4%)			
Gender				
Male	597 (49.8%)	448 (75%)	**1.53**	**1.05–2.23**
Female	601 (50.2%)	371 (61.7%)	**1.00**	**Reference**
Learnt CPR				
Not learnt CPR	308 (25.7%)	93 (30.2%)	**1.00**	**Reference**
Learnt CPR	891 (74.3%)	727 (81.6 %)	**11.16**	**7.65–16.28**
Age group				
18–24	87 (7.3%)	52 (59.8%)	1.19	.54–2.63
25–34	172 (14.4%)	130 (75.6%)	**2.24**	**1.09–4.63**
35–44	287 (24%)	209 (72.8%)	**2.08**	**1.08–4.01**
45–54	277 (23.1%)	193 (69.7%)	**1.64**	**1.86–3.12**
55–64	223 (18.6%)	156 (70%)	**2.10**	**1.08–4.08**
65+	152 (12.7%)	79 (52%)	1.00	Reference
Education				
0–10	396 (33.4%)	227 (57.3 %)	1.00	Reference
11–12	295 (24.9%)	205 (69.5 %)	0.89	0.56–1.41
13–14	160 (13.5%)	120 (75 %)	1.08	0.62–1.88
>15	335 (28.2%)	258 (77 %)	1.12	0.70–1.79
Household income				
Nil–$26 000	360 (38.9%)	226 (62.8 %)	1.00	Reference
$26,001–$52,000	302 (32.6%)	209 (69.2 %)	0.84	0.56–1.26
$52,001–$100,000	196 (21.2%)	150 (76.5 %)	0.72	0.43–1.21
$100,000	67 (7.2%)	57 (85.1 %)	2.03	0.86–4.84

OR = odds ratio, CI = confidence intervals calculated by multiple logistic regression. Bold type indicates a p-values of < 0.05.

[a] OR mutually adjusted for all variables in the table. Note: numbers vary as not participants answered all questions.

agreed, or strongly agreed that they were confident to initiate CPR (Table 2). After adjusting for CPR training, years of education, household income, age, and gender, those who had learnt CPR were significantly more confident than those who had not (OR 11.16, 95% CI 7.65–16.28). When asked, "How many times have you been present when a family member has been resuscitated?" almost 13% (n = 151) of participants had been present on one or more occasions. Participants who had been present were slightly (77% versus 67%; p = 006) more confident to initiate CPR on a family member should the need arise (Table 1).

Seventy-five percent of males and 62% of females stated they were confident to initiate CPR on a family member. When adjusting for CPR education, years of education, household income, and age, males were significantly more likely to be confident to initiate CPR than females (Table 2). Most (76%) participants in the 25–64 age group were confident to initiate CPR compared to only 52% and 60% for the 65+ and 18–24 age groups, respectively.

Years of education and confidence were positively correlated. People with more than 11 years of education were as much as two and a half times more confident to initiate CPR than those with less education. As the annual household income increased, so did confidence (60–85%). Those with an annual household income greater than $100,000 were more confident than those with less than $26,000.

Barriers to Initiating CPR on a Family Member Today

For the group as a whole, the greatest concerns were fear of failing (35%) and anxiety about performing CPR correctly (34%) (Figure 1). The difference between the confident and not confident groups was significant (p = 0.001). Participants who were confident either to initiate CPR were most likely to express concerns about fear of failing (37%) or to have no concerns about initiating CPR (30%). In contrast, performing CPR correctly was the greatest concern for over half (55.4%) of participants who were not confident.

DISCUSSION

The results of this study suggest the penetration of CPR training (74%) and confidence to initiate CPR on a family member (68%) is relatively high when compared to previous studies.[2,11,17,18] In general, middle-aged men who have learnt CPR were the most confident. This may reflect the fact that CPR courses generally attract young healthy adults[1,2,19] and, typically, it is this group that receive regular CPR training and information updates through their workplace.[5,19] Given that people with prior training in CPR are more willing to perform CPR,[1,2,6] it was of no surprise that participants with CPR training were significantly more confident to initiate CPR on a relative. Indeed, the more recent the training, the more willing the individual is to initiate CPR.[6,14] However, the group most likely to be called upon to initiate CPR on a family member, the 65-plus age group, were also the group least likely to have learnt CPR and least confident to initiate CPR. This association between age and lack of CPR training is well established[1,2,5,19] and has been attributed to not knowing where to obtain training, being too busy, inaccessibility of course, physical limitations, or lack of interest,[7,10,11,20,21] Financial constraint has also been identified as barrier to learning CPR.[11]

The current study suggests that there is correlation between attending a CPR course and the household income. Exploration of attendance at CPR courses and people with lower income requires further investigation. Page (2006) cautions that, with the political and professional drive toward CPR for all, commercial opportunities to provide such courses emerge and, subsequently, the boundaries between public service and commercial enterprise become blurred.[22] Potentially, the cost of commercial CPR courses may limit access by the very groups who most need to attend. However, many people with no CPR training were confident to initiate CPR. This may reflect exposure to CPR

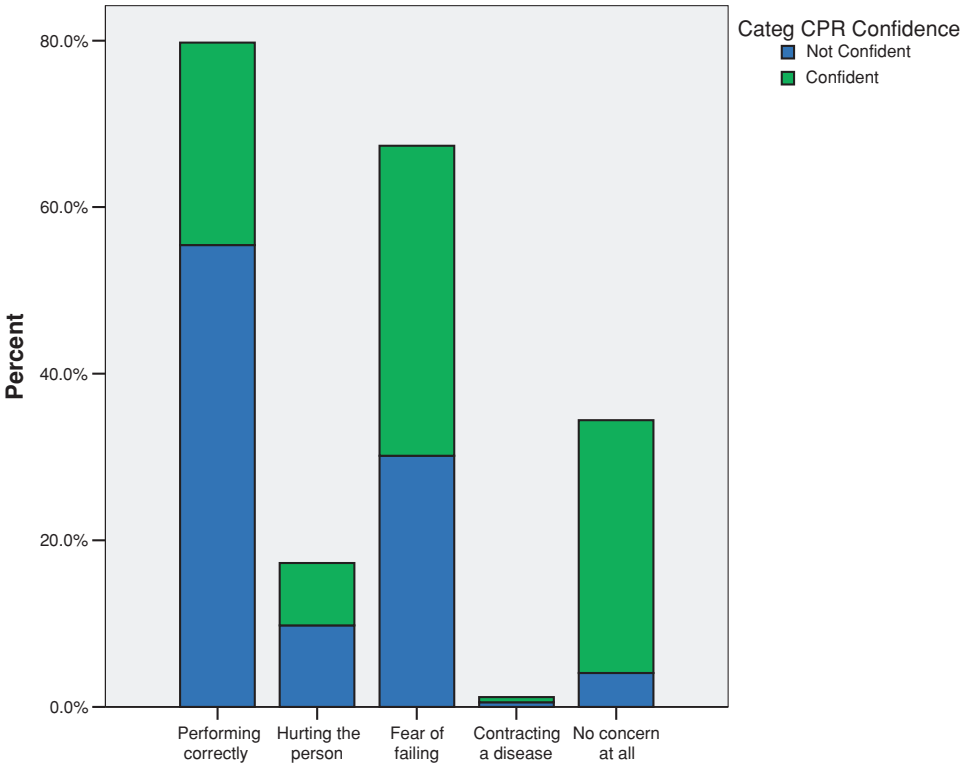

FIGURE 1. Participant's greatest concern about initiating CPR on a family member.

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through the media portrayal of cardiac arrests or accessing information from the internet. These modes of tacit learning may be contributing to public confidence to initiate CPR where individuals have not participated in a formal course. Moreover, media-based courses that are freely accessible have been demonstrated to be effective model of delivery.[6,14]

As with previous studies, fear of failing and fear of incorrectly performing CPR were barriers to initiating CPR.[2,6,8,11,21,23] In the current study, participants who were not confident were more likely to express concerns about correctly performing CPR. Indeed, the complexity of learning CPR is a barrier to acquiring and retaining CPR skill.[24,25] Traditionally, CPR and resuscitation has been in the domain of medicine and hospitals. Within these life-and-death environments, professional accountability and the potential threat of litigation are real.[22] Consequently, the delivery of CPR has been restricted to specially trained personnel, who were required to successfully complete accredited CPR courses, where the emphasis was on perfection and adherence to a strict sequence of steps.[25] This rigidity has influenced how we teach CPR and, consequently, learner perception of how CPR should be performed. In recognition of this, the International Liaison Committee on Resuscitation (ILCOR) has simplified CPR/BLS guidelines, and reduced the number of steps in the hope of increasing confidence in the initiation of CPR.

Participants who were confident to initiate CPR identified fear of failing as the factor most likely to reduce their confidence. The media depiction of CPR and resuscitation may explain this fear. On television, resuscitation is portrayed as a traumatic, life-saving event that occurs with a backdrop of lots of equipment and highly trained personnel. Typically, the outcome is a happy ending where people usually survive. It is not surprising that, when undertaking such "life-saving" intervention, where a family member's life is at stake, the public feel pressured to "get it right," and that this pressure may translate into a reluctance to try. Content of CPR courses should, therefore, address these psychological barriers that arise when confronted with resuscitation of a family member. Exploring attitudes and reiterating that that they cannot make the situation worse by trying would be particularly beneficial. By attempting CPR, people are offering the person a chance to survive, without which the person's chances of survival are substantially reduced. Psychological barriers to performing CPR could be easily overcome by emphasising during CPR courses that one cannot do harm, and that any attempt is better than no attempt.[26]

The limitations of this study should be noted and the interpretations of these results considered accordingly. In this study, participants self-nominated where they had learnt CPR, and the study did not elicit the length of of time since the completion of CPR course. Length of time since completion of course has been associated

with confidence to initiate CPR but could not be measured in this study.

CONCLUSION

Although the percentages of people in the current study who have learnt CPR is higher than reported elsewhere in the literature, not all participants were confident to initiate CPR on a family member. As with previous Australian studies,[11] CPR training is failing to reach those most likely to witness a collapse, particularly women and older people, and it is these very same people that are least confident to initiate CPR. Community CPR programmes in Australia should continue to target not only these groups and those in the lower income bracket, but also address the confidence of individuals to initiate CPR.

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