INTRODUCTION

Sudden cardiac arrest is the most prevalent and preventable cause of death worldwide, occurring due to ventricular fibrillation or pulseless tachycardia. The most important determinant of survival among these patients is prompt and effective delivery of basic life support by the first bystander.1-3

Basic life support (BLS) includes, recognition of signs of sudden cardiac arrest (SCA), heart attack, stroke and foreign body airway obstruction; cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator (AED).4-6 For every minute without CPR, survival decreases 7-10% in patients of SCA due to ventricular fibrillation.7 When bystander CPR is provided, the decrease in survival is gradual and averages 3-4% for every minute delay in CPR.8 Therefore, survival from out-of-hospital cardiac arrest increases with early provision of CPR.6

It has been observed that first-responder training programs may increase survival among victims of SCA. Efforts to increase CPR education should focus on people accompanying the patients of cardiac disease and their spouses, recognizing the fact that most cardiac arrests occur at home in this population.9,10 One-day CPR courses are accepted by family members of cardiac arrest victims, who are usually more motivated than others.11 A local study showed that, in-hospital cardiopulmonary resuscitation was associated with better clinical outcome as compared to out-side the hospital.12 The author recommended public education and training programs to improve clinical outcome in patients who need CPR outside the hospital.12

ABSTRACT

Objective: To assess the knowledge of basic cardiac life support (BCLS) before and after the institution of training among first degree relatives and spouses of patients with coronary disease.

Study Design: Quasi-experimental study.

Place and Duration of Study: National Institute of Cardiovascular Diseases, Karachi, from April 2007 to May 2008.

Methodology: A total of 300 relatives of patients with coronary heart disease undertook a one day CPR course. Questionnaire assessing knowledge of CPR was administered before and after the course. Patients were studied in groups of 10-20 at a time. Proportion of correct knowledge was compared using chi-square test with significance at p < 0.05.

Results: Mean age of participants was 31.08±10.53 years. Two hundred and twenty (73.34%) were males. On the average for all 31 questions, 37.09% of participants had correct responses before the training and 68.16% after the training of BCLS (p < 0.001). There was statistically significant improvement across all age groups, gender and educational levels (p < 0.01).

Conclusion: There was significant improvement in relatives' knowledge of BCLS after training. Different age groups, both genders and all educational groups showed equal learning abilities.

Key words: Basic life support. Training. Relatives. Spouse. Basic cardiac life support. Education. Coronary disease.
degree relatives of patient with CHD followed by training and reassessment of knowledge about basic life support.

METHODOLOGY
This quasi-experimental study was performed at National Institute of Cardiovascular Diseases, Karachi, from April 2007 to May 2008. A total of 300 participants comprising spouses and first degree relatives, between 18-60 years-of-age, of admitted coronary heart disease patients diagnosed by coronary angiography, were enrolled in the study during hospital stay. Patient's relatives who were disabled or who had previously attended the workshop (doctors or medical staff) were excluded. The purpose and procedure of the study were explained and informed consent was taken. There were no ethical issues to address. A 31-item questionnaire was administered in Urdu or English with the principal investigator present for assistance if required. This was followed by standard BLS course based on standard AHA recommended guidelines.4 The same questionnaire was re-administered to see the improvement in response after the training. All services were provided to the participants free of cost using mannequins, Ambu bag, biphasic defibrillator, charts and videos to teach BLS skills to the participants. Participants were divided in four age groups shown in Table I.

Table I: Baseline characteristics of the participants (n=300).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percentage (numbers)</th>
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<tbody>
<tr>
<td>Age (mean±SD)</td>
<td>31.089±10.53 years</td>
</tr>
<tr>
<td>Group-1 (18-30 years)</td>
<td>54% (162)</td>
</tr>
<tr>
<td>Group-2 (31-40 years)</td>
<td>27 % (81)</td>
</tr>
<tr>
<td>Group-3 (41-50 years)</td>
<td>11.3% (34)</td>
</tr>
<tr>
<td>Group-4 (51-60 years)</td>
<td>7.7 % (23)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>73.3% (220)</td>
</tr>
<tr>
<td>Female</td>
<td>26.7% (80)</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
</tr>
<tr>
<td>Below matriculate</td>
<td>31.0% (93)</td>
</tr>
<tr>
<td>Matriculate</td>
<td>37.3% (112)</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>09.3% (28)</td>
</tr>
<tr>
<td>Graduates</td>
<td>22.3% (67)</td>
</tr>
</tbody>
</table>

Data was analyzed on statistical package for social sciences (SPSS) version 10. Relevant descriptive statistics, frequency and percentages were computed for qualitative variables. Mean and standard deviation were computed for age of the participants. Male to female ratio of relatives were presented for gender distribution. Chi-square test was applied to test the knowledge before and after training. P-value of < 0.05 was considered to have statistical significance. Knowledge was compared between participants according to gender, age and level of education. Variable frequencies and percentages were presented for the responses of questionnaire regarding BLS knowledge and skills after training.

RESULTS
Mean age of the participants was 31.089±10.53 years. Two hundred and twenty (73.34%) of them were male. Most (54%) of the participants were under 30 years. Sixty eight percent of the participants were matriculate or below. See Table I for baseline characteristics.

On the average for all 31 questions, 37.09% of participants gave correct responses before the training and 68.16%, after the training session. The difference was statistically significant (p < 0.01). There was no difference in the percentage of participants giving correct responses among different age groups.

Of participants with lower level of education, 33% showed correct responses on an average for all 31 questions before the training session and 66% after the training. The difference was statistically significant. Matric student, college student and graduates showed statistically similar results.

For all 31 questions, 41% of male participants had correct responses before the training and 72%, after the training while female participant had 27% and 51% score before and after the training respectively. Both participants had significant improvement in the posttest score (p-value < 0.01). However, percentage of female participants who gave the correct responses was lower both before and after the training and a statistically significant difference in the posttest score i.e. 51% for females vs. 72% for males was noted (p < 0.01). Table II provides detail of knowledge tested, to different questions and percentages of participants giving correct responses before and after the training.

DISCUSSION
Majority of our participants were male and matriculate or under. Studies from abroad have shown overall lack of interest of family members of cardiac patients to learn CPR.21,22 Conversely, no difficulty was encountered in recruiting family members to learn CPR. Counseling was performed to groups of participants before enrolment in the study. Due to this fact, the family members realized the importance of BLS training for saving the life of their relatives with coronary atherosclerotic disease. Most of the participants in this study were young males between 18 to 40 years of age who were more interested, energetic and enthusiastic in learning BLS training. This finding indicates that younger population should be targeted preferentially for BLS training.

Since 1970s the initiation of community CPR training programs in U.S.A. has shown, that family members and spouses should be targeted for CPR training.23,24 These studies have also shown increased survival benefit after such training programs. Though this study did not measure the outcome in terms of impact of training on
survival, it should be considered an initial step to achieve improved survival in sudden cardiac arrest victims. A local study also showed better clinical outcome from in-hospital cardiac arrest as compared to out-of-hospital cardiac arrest and the author suggested to create awareness and arrange public education programs about BLS. Studies have shown that only a minority of CPR trained bystanders perform CPR. Participants with lower level of education that is matriculation or below matriculation are predominated in this study. Overall, 37.09% of participants had correct responses before the training and 68.16% after the training session. The results clearly showed a significant impact of training on learning the skills of BLS on the participants. It also signifies that BLS skills are easily learned by layman; by providing them training programs of appropriate standard. As shown by different studies that, such training programs have significant impact on survival of sudden cardiac arrest victims. It has been shown that CPR training in an unselected population of laypersons is expensive as compared to selected training of laypersons who are more likely to witness a cardiac arrest i.e. laypersons living in home with survivors of cardiac arrest after myocardial infarction. This study also favours our concept of training of first degree relatives and spouses of patients with CHD who have the highest chances of being present if sudden cardiac arrest develops at home.

Participants in all age groups showed statistically significant improvement in average number of correct responses. There was no significant difference among the various age groups. Overall, participants in different age groups did not differ in their learning abilities and advancing age was not found as limiting factor in learning BLS. In this study, women had lower correct pretest responses compared to men. However, the number of correct responses improved significantly after the training. This finding indicates that gender does not affect the learning abilities of an individual.

This study need to be validated by mass training programs, by recruiting family members and spouses and by carrying out a study to assess the actual impact.
of this training in a setting of out-of-hospital cardiac arrest. Based on present findings, we recommend that all relatives of patients with CHD should be offered CPR training. CPR skills can be learnt across all educational, gender and age groups.

CONCLUSION

There was significant improvement in relatives’ knowledge of BLS, after training. Different age groups, both genders and all educational groups showed equal learning abilities. It is possible to train and improve knowledge and skills of patient’s relatives, to initiate effective CPR on patients with out-of-hospital sudden cardiac arrest.

REFERENCES


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