Assessment of the Level of Knowledge of First Aid and Basic Life Support among the Police Workforce in a Coastal Area in Southern India

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Abstract

Background: First aid and basic life support (BLS) are the basic principles that have significant importance in the revival of victims on site. Although the epidemiology of injuries has been well studied in many developed countries, there are a few number of such similar studies among the police workforce in developing countries, such as India. Objective: The objective was to assess the level of understanding about first aid and BLS measures among the police workforce in a coastal city of Southern India. Materials and Methods: This descriptive cross-sectional study was conducted at police stations and traffic police stations in a coastal city of South India with a sample size of 196. A pretested semi-structured questionnaire assessed a plethora of parameters, such as choking and seizures. Data were analyzed using SPSS version 16.0 (IBM SPSS Inc Chicago, SPSS Inc) and results were obtained. Consent from the study participants was obtained before commencement. Results: About 87.3% of the study participants who received training markedly scored <10, which is graded as a poor outcome, whereas 12.7% who have received training scored adequate. Among the untrained personnel, 86.4% scored <10, whereas the remaining 13.6% have adequately scored due to external or general knowledge without undertaking specific prior training. Conclusion: A majority of the police personnel who have received training should undergo frequent training to enhance their skills, which are currently below the baseline. Those who have not received training should also obtain proper training to improve their efficiency in emergency management.

Keywords: Basic life support, community medicine, first aid, knowledge, police, Southern India

INTRODUCTION

First aid and basic life support (BLS) are the rudimentary principles required in a plethora of medical emergencies, which require immediate approach. According to the American Heart Association, first aid is defined as the assessments and interventions that can be performed by a bystander (or by the victim) with minimal or no medical equipment, and a first aid provider is defined as someone with formal training in first aid, emergency care, or medicine who provides first aid.[1] BLS refers to maintaining an airway and supporting breathing and the circulation. It comprises the following elements: initial assessment, airway maintenance, expired air ventilation (rescue breathing; mouth-to-mouth ventilation), and chest compression.[2] The administration of first aid should be immediate, approachable, and medically sound conducted with fundamental precision involving a series of steps to revive the person to a conscious state before subsequent measures are taken. It is pertinent that first aid training should be given to the general public in order to have an understanding of the precautions and measures taken to save one’s life, since many times, the bystanders’ efforts often remain futile and often end with gathering around the scene due to unawareness of the subsequent procedures to do before the ambulatory service arrives. In a country where road traffic accidents, pedestrian mortality, and other such events occur in the eyes of the society, especially the police sector who are contacted the first in case of any accidents and emergencies

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even before the medical help is sought, a basic level of comprehending first aid at the site of emergency is significant in reducing the mortality and morbidity rate. Therefore, regular training and testing of knowledge on emergency medicine is essential primarily among the police workforce and hence the focus of this study. Although the epidemiology of injuries has been well studied in many developed countries, there are a very limited number of studies conducted on determining the level of knowledge of first aid and BLS of the trained police workforce in developing nations, such as India. The purpose of this study is to assess the level of understanding about first aid and BLS among the police workforce in a coastal city of Southern India by utilizing a written questionnaire.

**Materials and Methods**

This descriptive cross-sectional study was conducted at police stations and traffic stations in a coastal city of South India using a convenience sampling strategy. The inclusion criteria included police personnel on duty, focusing primarily on traffic policemen during this study period (50% of traffic policemen or 50% of stationed) and those who consented. Exclusion criteria included those who were not present at the time of distribution of the survey. The sample size was calculated utilizing the equation:

\[
N = \frac{(pq)Z^2 \alpha^2}{\varepsilon^2}
\]

\(p = \text{prevalence}
\)

\(q = 1 - p
\)

\(\varepsilon = \text{level of precision}
\)

\(Z\alpha^2 = 1.96\) with a confidence level of 95%.

The sample size was calculated assuming 50% of police personnel will be aware of measures in first aid and BLS. Taking 15% relative precision and 95% confidence level, the sample size was found to be 178, adding 10% as nonresponse error; the final sample size was calculated to be 190, following which a written questionnaire was formulated with two sections.

Section A assessed the subjective knowledge of the police personnel in the context of their views on first aid. A series of 8 questions have been designed in a tabular format with options in a “yes” or “no” format, to evaluate the study participants’ opinions on the significance of first aid and BLS.

Section B comprised of a set of 19 multiple-choice questions in which various parameters are emphasized and studied accordingly. This section focused on a myriad of parameters, such as choking, poisoning, seizures, fractures, bleeding, burns, stroke, and resuscitation knowledge. We were able to assess their understanding according to the guidelines set by the American Heart Association and the British Red Cross.

Clearance was obtained by our Institutional Ethics Committee (IEC) at Kasturba Medical College, Mangalore, a constituent of Manipal Academy of Higher Education on March 10, 2015. Consent was obtained from every study participant and was ensured that confidentiality about the data will be maintained before distribution; consent was also provided in the local Kannada language for proper understanding. An assessment on the knowledge level of participants was performed based on a scoring system of 19 points, where 0–10 was “poor,” 10–14 was “good,” and 15–19 was “excellent.” The questionnaire was also translated in the local Kannada language for ease of comprehension. In addition, the study was approved by the Commissioner of Police of Mangalore, Karnataka, India. Permission was sought from the police commissioner of Mangalore, Dakshina Kannada district. The permission letter was then submitted to the IEC at Kasturba Medical College, Mangalore, who then granted permission to conduct the study.

**Results**

In general, the study demographically depicts exclusively male study participants, all at the level of constable rankings, with the mean age of 35.70 years ± 6.7 years.

The perception of police personnel toward the significance of first aid and BLS measures in which the results showed 94.9% agreed that first aid is important, 91.8% agreed for frequent conduction of training and renewal courses, and 93.9% of the personnel believed that first aid can help save lives during road traffic accidents [Table 1].

Knowledge regarding first aid training among the police personnel in which 85% answered correctly to the site of accurate pulse detection, 79.1% answered accurately regarding immobilization of injured limb, 71.4% acknowledged the definition of first aid and 69.9% could state the best procedure to treat a known poisonous snakebite, and only 31.1% knew how to manage a case of epistaxis. Although a majority did provide positive outcomes in this aspect, they were unaware of the significance behind the techniques. This stratification demonstrates techniques of attending to basic injuries and treatments through life-saving responses [Table 2].

Knowledge regarding BLS measures among police personnel, out of which only 8.2% knew the proper technique of performing cardiopulmonary resuscitation (CPR), 30.1% acknowledged the cessation of CPR, and 18.9% knew the best

**Table 1: Perception of police personnel regarding first aid and basic life support measures (n=196)**

<table>
<thead>
<tr>
<th>Statements</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for traffic police to know about first aid and BLS</td>
<td>186 (94.9)</td>
</tr>
<tr>
<td>First aid and BLS training should be conducted more frequently for updating of skills</td>
<td>180 (91.8)</td>
</tr>
<tr>
<td>It is important for the general public to be educated about first aid and BLS</td>
<td>180 (91.8)</td>
</tr>
<tr>
<td>Learning first aid can help people during road traffic accidents</td>
<td>184 (93.9)</td>
</tr>
<tr>
<td>BLS: Basic life support</td>
<td></td>
</tr>
</tbody>
</table>
position to place the victim of a cardiac arrest while waiting for paramedics [Table 3].

Finally, the scoring comparison of first aid and BLS knowledge among police personnel versus receipt of training was formulated. A score of 1 was given for each correct answer. Out of 196 participants, 71 had received previous training, of which 87.3% had a score <10 indicative of lack of renewal of training. About 86.4% who did not receive training had a poor outcome indicating no prior knowledge of first aid and BLS. This difference in the knowledge score is not found to be statistically significant [Table 4].

**Discussion**

This study was done to analyze the awareness and knowledge of first aid and BLS among the police workforce in Southern India as police personnel often directly confront victims of trauma, such as road traffic accidents, head injuries, and syncopal attacks.

In this study, majority of the population (94.9%) believed that first aid training is important and 91.8% believed that first aid training should be provided more frequently, similarly to 92.2% of the respondents in a study performed in Ethiopia,⁶⁶ reflecting a positive attitude of the police sector in Southern India to undergo first aid and BLS training. Other similar studies performed in China⁷⁷ and London¹³ gave likewise results with the use of different questionnaires but depicting the same concepts and positive perceptions toward the importance of training.

In our study, 87.3% of the total participants received training, out of which only 12.7% scored well (score >10), and among the participants who did not receive previous training, merely 13.6% of the participants scored well above the limit, thus demonstrating that training received is not sufficient and that training should be provided more frequently to renew their knowledge and enhance their performance. Other similar studies carried out in Canada⁷⁷, Spain¹³, Norway⁷⁷ and Sweden¹² showed that participants which were given training could perform better and that performance deteriorated with time, therefore updated training is required.

With regard to specific parameters of first aid, a majority of the participants were quite uncertain regarding the handling of certain emergency situations, such as treatment of hypoglycemia (61.7% correctly answered administration of sweet/high carb drinks) and management of venemous bite (69.9% provided correct response), which is still below the percentage of that of the similar studies in Ethiopia.¹⁰ In terms of the event of bleeding, only 31.1% of the respondents correctly answered the effective way to control epistaxis or other bleeds and in terms of treatment of fracture at the accident sites, majority (79.1%) of the police personnel correctly answered immobilization of the fracture site with splintage, which is less than the result percentages in the study conducted in Ethiopia⁶ and Sudan¹⁰ but more than the study in Zambia.¹¹ This allows us to infer the relatively lesser knowledge of police personnel in Southern India compared to that of Ethiopia, thus placing emphasis on spreading awareness of the appropriate handling of accident victims.

With respect to BLS measures inculcating CPR, our study has shown that only 8.2% of the policemen in various stations in the city have poor knowledge regarding CPR techniques, which is again far less compared to studies done in the Nigeria¹¹¹,

<table>
<thead>
<tr>
<th>Table 2: Knowledge regarding first aid measures among the police personnel (n=196)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
</tr>
<tr>
<td>Definition of first aid</td>
</tr>
<tr>
<td>Easiest site for detection of pulse</td>
</tr>
<tr>
<td>Ideal method to immobilize a broken limb</td>
</tr>
<tr>
<td>Ideal method to ensure an open airway in an unconscious person</td>
</tr>
<tr>
<td>Initial management in a victim of venomous snake bite</td>
</tr>
<tr>
<td>Reduction of swelling from head injury</td>
</tr>
<tr>
<td>Initial management of a nose bleed</td>
</tr>
<tr>
<td>Initial management of a victim of hypoglycemic episode</td>
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</tbody>
</table>

<table>
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<tr>
<th>Table 3: Knowledge regarding basic life support among the police personnel (n=196)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
</tr>
<tr>
<td>Correct technique of adult CPR</td>
</tr>
<tr>
<td>Number of CPR compressions given to a child aged 1-8 years</td>
</tr>
<tr>
<td>Cessation of CPR</td>
</tr>
<tr>
<td>Initial position person has to be placed during cardiac arrest</td>
</tr>
<tr>
<td>While choking, nothing to be done as long as...</td>
</tr>
<tr>
<td>Initial measure to be done during syncope</td>
</tr>
</tbody>
</table>

CPR: Cardiopulmonary resuscitation.
Mumbai [14], Pakistan [18] This also implies that more training is required so the police sector can use their skills when necessitated.

In another study, according to Salunkhe and Dias [16] majority of the policemen, that is, 90% of the study population scored average, 8% were in the poor range, and only 2% had good knowledge regarding CPR before the demonstration of CPR. In contrast to the present study, 86.4% have demonstrated poor knowledge, which largely encompasses that of the study population in Mumbai policemen.

In a likewise study by Kumara et al. [17] our findings of increased necessity for first aid and BLS training was enforced in a selected police station in Mangalore, where a planned effective teaching program was established for cardiopulmonary resuscitation—a similar initiative we believe that should be reiterated throughout all the police stations. Additionally, this has been demonstrated in other studies by Singer et al. [18] and Abbas A. et al. [19] in which numerous inadequate lifesaving skills were portrayed by parents of schoolchildren, and, untrained medical students during medical crises, respectively; this is conclusively due to lack of repetitive training standards

Another study which focused on assessing knowledge of nonmedical personnel also showed similar results. According to Czyzewski et al. [20] the study demonstrated a significant difference in the knowledge of medical students and the nonmedical student population. Overall, knowledge was lacking in the field of nonmedical students with the majority. In contrast to our study, a majority of the policemen who received training scored poorly (87.3%) and those who did not receive training also scored in the poor range (86.4%), with a total of 86.7% of the entire policemen scoring below average. In contrast, those who received training (12.7%) scored good and those who did not obtain training (13.6%) with a total of 13.2% of the study participants in our study showing positive results overall. Hence, this is representative of the fact that similar to the nonmedical population, [20] a majority of the policemen lacked adequate knowledge of first aid and BLS measures, hence proving that those who did receive training still scored poorly further highlighting the importance of repeated training as well as improvement in the demonstration of teaching first aid. Both studies, thus, demonstrate unsatisfactory knowledge of the nonmedical population and inadequate understanding of guidelines of first aid and CPR in the nonmedical population.

**Conclusion**

Considering the impact of this study, the study concluded insufficient knowledge of the police sector who contributes to the frontlines in emergent situations. Fortunately, a majority of the workforce agreed that public sectors should be trained in BLS and first aid and to reiterate their knowledge by the frequent renewal of certification. We recommend that police personnel receive regular training and reassessments in BLS and first aid. Such changes will increase the awareness and increase the knowledge in obtaining valuable life-saving skills.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**

16. Salunkhe PA, Dias RA. Effectiveness of demonstration regarding

<table>
<thead>
<tr>
<th>Training received</th>
<th>Level of knowledge</th>
<th>Total</th>
<th>( \chi^2, P )</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Good score ≥10 (n=26), n (%)</td>
<td>Poor score &lt;10 (n=170), n (%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9 (12.7)</td>
<td>62 (87.3)</td>
<td>71</td>
</tr>
<tr>
<td>No</td>
<td>17 (13.6)</td>
<td>108 (86.4)</td>
<td>125</td>
</tr>
</tbody>
</table>

Table 4: Association between the level of knowledge regarding first aid and basic life support and receipt of training among police personnel (n=196)