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Are our teachers knowledgeable towards pre hospital emergency care: A study from South India

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ABSTRACT

Background: School children stay a significant hour of the day in their school and are the medium through which information can be carried to their parents and other family members, about basic information regarding Pre-Hospital Care.
Objectives: To determine the awareness about Pre-Hospital care among school teachers in Mangalore and to determine how many teachers have received formal training in Pre-Hospital care.
Methods: A descriptive cross-sectional study conducted among school teachers in 5 schools across Mangalore. Convenience sampling was done. Data was obtained from 118 school teachers across five schools in Mangalore, India using a self-administered questionnaire.
Results: It was observed that 61.9% of teachers knew that personal protective equipment has to be worn while giving first aid to someone. Knowledge of school teachers about choking, allergic reactions, heart attacks and hypoglycemic state was considerably better while 94.9% of school teachers knew how to handle a person in a hypoglycemic state. Most teachers, i.e. 93.2% of teachers knew the signs and symptoms of trauma to the head. However only 49.2% teachers knew how to handle nosebleeds. Only 17.8% teachers knew that an allergic reaction to a bee sting must be washed for at least 30 min. Only 57 participants had received previous training in Pre-hospital care. Out of these, 43.8% received training from nurses and 33.3% from paramedical staff.
Conclusion: The proportion of school teachers who have received pre hospital training in the recent past was low, their knowledge regarding first aid care was found to be adequate.

1. Introduction

Pre-hospital care is the medical care given to an injured patient or diseased patient by a doctor or any other person before the person reaches hospital's emergency department.[1] At present, India is not having the organizational structure to provide guidelines for capacity building and functioning of Emergency Medical Services (EMS). EMS services are scattered and not available in all parts of the country. Injury and other medical emergencies are becoming increasingly common among the general population. Most of the deaths occur outside the hospital, necessitating the development of Pre-Hospital Care. Still most of the people here doesn't know, which number to contact when there is an emergency i.e. 108/102/1298.[2]

Lately, there has been an increase in the number of cases of road traffic accidents, fractures, sudden cardiac arrests, seizures, physical injuries at schools and work places. Such medical emergencies demand immediate action before the patient reaches the hospital. Increasing the baseline knowledge of school teachers and the general public, such unforeseen circumstances can be handled better.[3]

Since school children stay a significant hour of the day in their school and are the medium through which information can be carried to their parents and other family members, a basic information regarding Pre-Hospital Care amongst them is the need of the hour for effective and efficient emergency management. Training school teachers, in this regard will facilitate this learning process. In the recent past American Academy of Paediatrics and American Heart Association have given the guidelines which stressed the need for school teachers to have emergency response measures to tackle life threatening medical emergencies.[4]

By enhancing the knowledge of teachers and thus their students, the

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number of casualties reaching the hospital within the golden hour can be increased. The most important causes leading to death in trauma cases are inadequate travel facilities and lack of basic awareness leading to delay in reaching the hospital.[5]

School teachers form an integral part of our society as they are the ones imparting knowledge to the future generation. Heightened awareness amongst school teachers will in turn enhance the knowledge of the students in prehospital care and they can thus impart the knowledge back home, which will create a ripple effect and increase the awareness about prehospital care in the entire community.

Schools are considered to be a safe and secure environment for children to spread their wings and flourish. However maximum accidents leading to morbidity and mortality today are occurring in schools.[6] One-third of school teachers demonstrate lack of awareness in prehospital care and 87% agree that prehospital care should be included in their program.[7]

Thus, checking the awareness of prehospital care and knowing where the system is lacking will help school teachers to improve their baseline prehospital care knowledge and reduce unforeseen morbidity and mortality.

2. Methods

A descriptive cross-sectional study conducted among school teachers in 5 schools across Mangalore chosen by non-probability sampling. The sample size was calculated based on the previous study, wherein 47% of school teachers received Pre- Hospital Care training.[8] Taking 10% absolute precision and confidence level of 95% the sample size was found to be 100. Adding 10% as nonresponse error, final sample size was calculated to be 110. Semi structured questionnaire was prepared using the American Heart Association guidelines. The questionnaire consists of three parts. Part I - baseline characteristics of study participants, Part II - questionnaire related to Pre-Hospital Care in medical, injury and environmental emergencies, Part III- details regarding previous Pre- Hospital Care training received. The study protocol was submitted to the Institutional Ethics Committee (IEC) of Kasturba Medical College, Mangalore for approval. After getting approval from Ethics Committee, permission was sought from the Head of the school, following which consent was taken from the respective school teachers, after explaining the need of the study in the language understood by them. Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) Version 11.5. Descriptive statistics like mean, proportions and standard deviation was used for expressing the results.

3. Results

Majority of the teachers in the present study were in the age group of 31–40 years (n = 44, 37.2%) and 89% (n = 105) were females. Most of the teachers had a teaching experience of more than 5 years (n = 88, 74.7%) and 45 of them (38.3%) had postgraduate qualification as revealed in Table 1.

It was observed that, around 61.9% (n = 73) teacher knew to wear personal protective equipment while giving first aid and 52.5% (n = 62) of teacher knew to cut the call of dispatcher when he only says you can cut the call. Whereas only 37.3% (n = 44) of teachers have knowledge about washing hands for at least 20 s as shown in Table 2.

It is evident from Table 3 that, In situations considered as Medical Emergencies 71.2% (n = 84) teachers knew the procedure of the Heimlich's maneuver to manage choking; Around 80.5% (n = 95) of teacher knew about the signs of heart attack. 87.3% (n = 103) teacher know that a patient will feel uneasy and numbness in the fingertips of hand and legs when he will be having a stroke and troubled breathing and swelling is sign of allergic response (n = 106, 89.8%). Whereas 94.9% (n = 112) teachers knew that a person suffering from hypoglycemia should be given something containing sugar.

Table 1
Baseline characteristics of study participants (n = 118).

Baseline Characteristics	Number	Percentage
Age group (Years)		
20–30	028	23.7
31–40	044	37.2
41–50	035	30.4
> 50	011	09.3
Gender		
Male	013	11.0
Female	105	89.0
Educational status		
Under Graduate	073	61.7
Post Graduate	045	38.3
Category of school		
Primary	051	43.8
Secondary	026	22.5
High school	041	34.7
Teaching Experience (Years)		
< 5	030	25.3
5–10	047	40.2
> 10	041	34.5

In situations considered as injury emergencies; only two third of teachers (n = 76, 64.4%) knew that in case of stab injury, instead of pulling the knife out you should leave it in. Around 93.2% (n = 110) of teachers aware about the signs and symptoms of the head injury. Knowledge regarding application of firm pressure over the bleeding area while dressing was known by 73.7% (n = 87) of school teachers. Whereas only 49.2% (n = 58) of teachers have knowledge to lean forward while nose bleed as depicted in Table 4.

It is obvious from Table 5 that, In Environmental Emergencies only 21 teachers had knowledge to wait for at least 30 min to check for allergic response in the case of insect or bee sting (17.8%). More than two third (n = 92, 78%) knew that animal bite should be washed with water and being confused is the symptom of heat stroke (n = 79, 66.9%) and to wear a mask while giving CPR to poisoned person (n = 82, 69.5%).

Out of 118 study participants, 48% (n = 57) participants had received previous training in Pre-hospital Care. Out of which, 59.6% (n = 34) of the study participants received their most recent training less than 1 year ago. Whereas 8.7% (n = 5) received it more than 5 years ago. 43.8% (n = 25) of the study participants received training from trained nurses whereas 33.3% (n = 19) received training from para medical staff. Out of these 57 participants, only 70.1% (n = 40) participants received both practical and theoretical based pre hospital care training, whereas 15.7% (n = 9) participants received only theoretical and rest received only practical based pre hospital care training.

4. Discussion

A prompt and effective response at the time of emergency is the golden key for saving life is the definition of Pre-Hospital care. Medical personnel can only carry out job when the patient reaches the premises of a health care unit. Hence an efficient and effective chain of management of emergencies can only be bought about by rising awareness among people from various other fields to enhance better approach to the common mass. Teachers are second in line only to parents who take care of children, mainly in the pre-adolescent and adolescent stage and hence it becomes a necessity for them to be aware of such measure so that they can tackle with any life-threatening situation.

The present study conducted among School Teachers in Mangalore, India about Pre-Hospital care tells us that school teacher in Mangalore have less knowledge about Pre-Hospital care. Other studies showed similar results in Turkey[9] Shanghai[10] and Ireland.[11] Among them 74.7% have teaching experience of more than 5 years and 38.3% participants have a post graduate degree. Most wrong answered questions

Table 2
Distribution of study participants based on their First Aid knowledge (n = 118).

Basics of first aid	Correct response	Number (Percentage)
While providing first aid	Wear personal protective equipment	073 (61.9)
When to cut the call while talking to dispatcher:	When dispatcher ask it's okay to cut the call	062 (52.5)
After giving First Aid to anyone:	Should not disclose it until patient is comfortable to discuss it with others	021 (17.8)
For how many seconds you should wash your hands	20 s	044 (37.3)
Should you refill the supplies in first aid box once they are used:	Yes	103 (87.3)

Table 3
Distribution of study participants regarding their knowledge in medical emergencies (n = 118).

Medical Emergencies	Correct response	Number (Percentage)
What to do when a person is choking	Put the thumb side of your fist slightly above her navel and well below the breast bone	084 (71.2)
Troubled breathing and swelling are the signs of allergic reaction	True	106 (89.8)
Person is alert and active but has chest pain	Heart Attack	095 (80.5)
Feeling of numbness in arm and legs and also in the side of the body	Stroke	103 (87.3)
Person with low blood sugar and weakness must be given something sweet to eat or drink	True	112 (94.9)

Table 4
Distribution of study participants regarding their knowledge in injury emergencies (n = 118).

Injury emergencies	Correct response	Number (Percentage)
Pressure must be applied to an active bleeding site	True	087 (73.7)
What to do in stab injury (like knife or stick stabbed into person body)	Leave it in and get help	076 (64.4)
Person with a head injury may be sleepy, confused and have vomiting	True	110 (93.2)
A heating pad must be applied to the injured site for a twist in the ankle	False	083 (70.3)
What to do in case of burn injury	Cold water	094 (79.7)
A person with a nose bleed should lean:	Forward	058 (49.2)

Table 5
Distribution of study participants regarding their knowledge in environmental emergencies (n = 118).

Environmental emergencies	Correct response	Number (Percentage)
An allergic response to a bee sting should be watched for at least	30 min	21 (17.8)
In animal bite, bite area should be washed with a lot of soap and water	Yes	92 (78.0)
Heat stroke is a serious condition	Yes	96 (81.4)
A person can be confused when he is having a heat stroke	Yes	79 (66.9)
CPR to poisoned person, wear a mask	Yes	82 (69.5)

was related to insect bites (wrong rate: 82.2%), nose bleeding (50.8%) and knowledge regarding first aid (74.6). Only 49.2% teacher knew that in case of Nose bleed patient should lean forward, which is similar to a study done in Shanghai 40.9%.[10] In the cases of environmental emergencies only 17.8% teacher knew that patient should be observed for 20 min for any allergic response in case of insect bite. But in Shanghai[10] more than half of the teacher knew how to respond to insect bite or sting. In the situation of animal bites, 78% teacher knew to wash it with soap and water, but the results were very low among the Turkey teachers.[9]

Response of participants was very good regarding their knowledge in medical emergencies. More than two third teachers knew the procedure of the Heimlich's manoeuvre to manage choking. Results are very similar to study done in Saudi Arabia that is 65.1%.[12] It was observed from our study that 94.9% teachers knew that a person suffering from hypoglycemia should be given something containing sugar. But in Poland around 42.3% don't know what to do in case of hypoglycemic child.[13] Also, study conducted in Bahrain and Saudi showed lack of knowledge for hypoglycemic condition.[14,15]

Teacher showed lack of knowledge for basic first aid knowledge. Two third of the teachers didn't know that hands should be washed for at least 20 s. Moreover, all the school of Mangalore have a first aid kit in their school and 97% teacher use the first aid kit in the school and around 87% know that they should change the supplies of first aid kit once they use it, in contrast to previous local study in Chandigarh showed that there is lack of first aid kit in schools.[16] Teachers showed a good knowledge regarding the injury emergencies that is 93% teacher know about the signs and symptoms of the head injury and to apply firm pressure over the bleeding area while dressing the wound. Only two third of teachers knew that in case of stab injury, instead of pulling the knife out you should leave it in, because removing knife will cause more bleeding may lead to more damage. In case of burns almost four fifth of teachers were aware that they should apply Coldwater, similar result was obtained from the study done in Turkey.[9] The knowledge about first aid was directly related to their level of education as evident from the study done in Vadodara city of Mumbai, India.[17]

Out of 118 school teachers, nearly half have already received training in Pre-Hospital care. Similar results were obtained in Shanghai (30%) and Saudi Arabia (37.1%).[10,12] Out of these 70% teachers received both practical and theoretical based knowledge. Similar results were obtained in study on Saudi Arabia teachers that is 73.1%.[12] Whereas all the teachers in Shanghai received practical based knowledge.[10] More than two third of teachers were taught by Para medical staff and trained nurses.

Since teachers are the main caregivers of the students since students spends a considerable amount of time in school, their role is secondary

to that of parents. They should be first to respond in cases of disasters or emergencies. That is why they should have appropriate knowledge about the Pre-Hospital care for the students who are in need at the time of emergency. This can be done by providing knowledge and equipment's to the teacher to tackle the emergency at the time of need in the future.[12]

5. Conclusion

Although the proportion of school teachers who have received pre hospital training in the recent past was low, their knowledge regarding first aid care was found to be optimal.

There should be regular and well-organized workshops at the school premises to teach the teachers about the Pre-Hospital care in both practical as well as theoretical level. Every teacher should attend the workshop and should be self-competent to be able to give basic first aid and deal with medical, environmental and injury emergencies in the school to the children or their co-workers. As the care provided to the patient before reaching the hospital in case of emergency strongly determine the person survival and complication after such incidents.

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Declaration of competing interest

None to declare.

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