

# Awareness, attitudes and practices of first aid among school teachers in Mangalore, south India

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## ABSTRACT

**INTRODUCTION:** Circumstances requiring medical attention are common at schools. Teachers are often the first individuals to witness and handle situations requiring first aid and medical emergencies.

**AIM:** To determine awareness, attitudes and practices of school teachers and the facilities available at schools with respect to administration of first aid.

**METHODS:** Data were obtained from 146 teachers in nine schools in Mangalore, India, using a self-administered questionnaire. The schools were also inspected for first aid equipment and facilities.

**RESULTS:** Only 69 (47%) teachers had received first aid training previously. Poor and moderate knowledge of first aid was observed among 19 (13%) and 127 (87%) teachers, respectively. Only eight teachers knew the correct procedure for cardiopulmonary resuscitation. Most teachers 96 (66%) were willing to administer first aid if provided with the required training. A total of 74 teachers reported having practised first aid in response to a situation arising at their school. Wounds (36%) and syncopal attack (23%) were among the commonly encountered situations requiring first aid management at schools. Teachers' confidence level in administering first aid was significantly associated with prior training in first aid ( $p=0.001$ ). First aid kits were available in only five of the nine schools surveyed.

**DISCUSSION:** The current competency level among teachers in Mangalore to administer first aid is inadequate. Measures need to be taken at schools to ensure initiation of first aid training followed by periodic training for teachers in first aid.

**KEYWORDS:** First aid; health knowledge, attitudes, practice; India; schools

## Introduction

School-aged children (7 to 16 years age-group) spend about 30% of their time in schools in many countries.<sup>1</sup> In these settings, they are at a greater risk of injuries and medical emergencies due to the higher level of involvement in sports and extracurricular activities. According to the Centre for Disease Control Prevention, sports and recreation-related injuries are reported for more than 2.6 million schoolchildren worldwide annually.<sup>2</sup>

Timely administration of first aid in response to injuries and medical emergencies will help to reduce complications, the cost of treatment and mortality among children.<sup>3</sup> As schools do not usually have trained health care providers on site, it is essential for teachers to be trained in first aid procedures. They also need to be updated periodically in their knowledge and skills to keep up with current first aid guidelines. Teachers must be willing to assume the responsibility for competently rendering first aid to students whenever the need arises. It is equally important for schools

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to be well equipped with first aid facilities, in order make appropriate interventions possible.

Studies worldwide have noted a varied picture about first aid preparedness at schools and among teachers. In studies done in Europe, for instance, the present culture is that all teachers must first learn first aid themselves and then teach pupils—right from nursery school level—basic first aid that can be applied in classrooms.<sup>4-6</sup> In contrast, several studies done in Asia have reported awareness, perception and practices of first aid among teachers to be poor.<sup>3,7-9</sup>

This study was undertaken to assess the awareness, attitudes and practices of first aid among school teachers and to assess the first aid facilities in schools in Mangalore, a coastal city in south India.

## Methods

### Design and sample size

This cross-sectional study was conducted in schools in Mangalore in March 2013. The sample size of 153 was calculated using 95% confidence intervals, with 15% relative precision and assuming the average knowledge about first aid among school teachers to be 53.8%, based on the findings of a previous regional study.<sup>7</sup> Adding a non-response rate of 10%, the final sample size to be sought was determined as 170.

### Ethics approval

The study protocol was approved by the Kasturba Medical College ethics committee. Permission to conduct the study in the schools was obtained from the principals, with assurances given of the anonymity of the information gathered. Written informed consent for participation was obtained from the school teachers after explaining the nature and purpose of the study.

### Participants

A total of 146 school teachers, with a mean age of 39.3 ±10 years took part in this study. The mean number of teaching years was 12.8 ±9.1 years. Out of the total participants, 120 (82.2%) were women.

## WHAT GAP THIS FILLS

**What we already know:** Situations requiring first aid are common in schools and the pattern of various medical emergencies commonly encountered in schools is known.

**What this study adds:** There is a need for greater preparedness of schools in Mangalore, India to address these situations, both in terms of trained personnel and first aid kits. Appropriate first aid provision, management of medical emergencies, clear referral procedures and arrangements for appropriate referral to health services when needed are important requirements for all schools.

### Procedures

The participants were enrolled using the convenience sampling method. Teachers were approached by the investigators in the teacher's waiting room in schools.

### Materials

Data were collected using a pre-tested, semi-structured, self-administered questionnaire. Pre-testing of the questionnaire was done among 10 teachers whose responses were not included in the present study. Cronbach's alpha value for the reliability of the questionnaire was 0.81. Data collected included sociodemographic information, details about prior training in first aid, and knowledge, attitude and practices of first aid of the participants.

Questions on management of common first aid emergencies encountered among schoolchildren were included as multiple-choice questions.<sup>10</sup> The correct sequence of steps for rendering cardiopulmonary resuscitation (CPR) was also part of the questionnaire. There were multiple correct answers for each question. For every first aid management response under each question, weighted marks based on the appropriateness of each intervention for the management of that particular condition were awarded. The maximum possible score that could be obtained overall was 82 points and the minimum score possible was zero. Summation of the scores allotted to the most essential first aid management options for each medical emergency formed the basis of categorisation of the overall knowledge of

teachers about first aid. Accumulation of points allotted to 'must know' responses was used for deciding the cut-off score for poor performance. Similarly, the cut-off value for moderate/average performance was based on the cumulative points allotted to 'nice to know' responses deducted from the maximum score of 82. A score from 58 to 82 points was considered good, a score from 19 to 57 moderate and a score below 19 considered to indicate poor knowledge about first aid. Incomplete questionnaires were excluded from the analysis. A total of 146 completed questionnaires were obtained out of the 170 (targeted sample size) distributed questionnaires, yielding a response rate of 85.9%.

The preparedness of schools to deal with medical emergencies and the first aid facilities available were also investigated. Various aspects including the presence of first aid kits, the contents of first aid kits, the availability of first aid and drug dosage charts, liaison with local health care providers, allocation of funds to purchase first aid equipment, and the availability of a sick room to handle medical emergencies was observed and noted on a checklist. Data collected were entered and analysed using SPSS version 11. The Chi-square test and binary logistic regression analysis was used to determine the association of variables with the level of knowledge and practices regarding first aid management, with  $p \leq 0.05$  considered a statistically significant association.

## Results

Most teachers ( $n=127$ ; 87%) had scores showing moderate knowledge about first aid. None of the participants achieved scores showing good knowledge about first aid. The remaining 19 (13%) participants had scores indicating poor knowledge about first aid. Knowledge regarding first aid management approached significance with respect to the educational background of teachers. This knowledge was greater among physical education teachers and science teachers, compared to other participants ( $p=0.05$ ). However, there was no association seen between level of knowledge about first aid and age, gender, years of teaching experience, or level and type of school where the teacher was employed (Table 1).

Knowledge about first aid management approached significance and was greater among teachers previously trained in first aid ( $p=0.05$ ). It was also significantly greater among teachers who had had first aid training within one year ( $p=0.049$ ). There was no association between the number of training sessions and current knowledge about first aid among participants (Table 2).

After making adjustments for the potential confounding effects of various factors including age, gender, educational status, subjects taught, teaching experience, school level and type using the binary logistic regression method, only prior training in first aid ( $p=0.05$ ) was found to be significantly associated with current knowledge about first aid among participants.

Among the 69 teachers who had prior training in first aid, 21 (30%) were trained by government doctors, 16 (23%) by governmental organisations (National Service Scheme, National Cadet Corps), 12 (17%) by non-governmental organisations (such as the Indian Red Cross Society), 8 (12%) each by senior teachers and medico-social workers, and 4 (6%) by nurses.

Reasons for not undergoing training in first aid were reported by 22 of the 77 teachers who had not had previous first aid training. The majority of these teachers 12 (55%) stated a lack of opportunity, seven stated the lack of a statutory requirement for compulsory training, and three stated a lack of time as reasons for not undergoing first aid training.

Out of the 146 participants, 143 (98%) were aware of the purpose of first aid, 77 (53%) were aware of the emergency number to be contacted in situations requiring hospital admission, and 36 (25%) had heard about CPR, but only 8 knew the correct CPR procedure.

With respect to the awareness of first aid measures in various conditions, knowledge among the majority was good for the management of burns 118 (81%). It was poor with respect to the management of stomach pain 82 (56%) (Table 3).

Most teachers—138 (95%)—felt that knowledge about first aid was essential to their professional

Table 1. Association between sociodemographic variables and knowledge about first aid among school teachers

Characteristics	Poor knowledge (%)	Moderate knowledge (%)	Total
<b>Age group (years)</b>			
21–30	5 (13.9)	31 (86.1)	36
31–40	6 (14.6)	35 (85.4)	41
41–50	6 (12.5)	42 (87.5)	48
51–60	2 (9.5)	19 (90.5)	21
			$\chi^2=0.357, p=0.949$
<b>Gender</b>			
Male	5 (19.2)	21 (80.8)	26
Female	14 (11.7)	106 (88.3)	120
			$\chi^2=1.08, p=0.299$
<b>Years of teaching experience</b>			
1–10	9 (12.9)	61 (87.1)	70
11–20	7 (14.6)	41 (85.4)	48
21–30	2 (9.5)	19 (90.5)	21
31–40	1 (14.3)	6 (85.7)	7
			$\chi^2=0.342, p=0.952$
<b>Educational background</b>			
Science	2 (4.8)	40 (95.2)	42
Physical education	0 (0)	6 (100.0)	6
Social studies	3 (42.9)	4 (57.1)	7
Arts	11 (15.3)	61 (84.7)	72
Other	3 (15.8)	16 (84.2)	19
			$\chi^2=9.39, p=0.05$
<b>Type of school</b>			
Government	1 (14.3)	6 (85.7)	7
Aided	6 (23.1)	20 (76.9)	26
Private	12 (10.6)	101 (89.4)	113
			$\chi^2=2.908, p=0.234$
<b>School level</b>			
Primary	9 (11.7)	68 (88.3)	77
Secondary	10 (14.5)	59 (85.5)	69
			$\chi^2=0.253, p=0.615$
<b>TOTAL</b>	<b>19</b>	<b>127</b>	<b>146</b>

life. Willingness to enrol in any future first aid training programmes was stated by 96 (66%) participants. Among these participants, 44 (46%) suggested that the most appropriate resource person would be any person trained in first aid; 38 (40%) suggested it should be doctors; 8 (8%) suggested nurses; and 4 (4%) suggested medico-social workers. The remaining 2 (2%) felt that a

school principal might be the most appropriate resource person.

As many as 96 (66%) participants said that if they encountered a situation at school requiring first aid they would administer first aid before seeking medical assistance. However, 24 (16%) reported that they would rather prefer to call a doctor

Table 2. Association between prior training in first aid with current knowledge about first aid practices

Training characteristics	Poor knowledge (%)	Moderate knowledge (%)	Total
<b>Trained in first aid before (n=146)</b>			
Yes	5 (7.2)	64 (92.8)	69
No	14 (18.2)	63 (81.8)	77
			$\chi^2=3.84, p=0.05$
<b>Number of training sessions attended before (n=69)</b>			
One	2 (6.3)	30 (93.7)	32
Two	2 (7.7)	24 (92.3)	26
Three or more	0 (0)	11 (100)	11
			$\chi^2=0.86, p=0.651$
<b>Time gap between most recent training with present (n=69)</b>			
≤1 year	0 (0)	20 (100)	20
1–5 years	1 (3.1)	31 (96.9)	32
>5 years	3 (17.6)	14 (82.4)	17
			$\chi^2=6.02, p=0.049$
<b>Type of training (n=69)</b>			
Practical	3 (6.5)	43 (93.5)	46
Theoretical	0 (0)	16 (100)	16
Both	1 (14.3)	6 (85.7)	7
			$\chi^2= 1.95, p=0.377$

first, and another 8 (6%) that they would prefer calling the parents of the child first. The remaining 18 (12%) teachers were not sure about the decision to be taken in such situations. Willingness to train other colleagues following training in first aid management was expressed by 89 (93%) out of 96 teachers willing to undergo first aid training.

Out of 88 teachers who had encountered situations requiring first aid, the majority 34 (39%) reported encountering these situations once in a year, followed by 23 (26%) encountering them once in three months, and 15 (17%) once in six months. The remaining 16 (18%) reported encountering situations requiring first aid 'once in a while'.

Common conditions requiring first aid encountered by teachers were wounds (32; 36%), syncopal attack (20; 23%); sprain and fractures (10 each; 11% each); heat stroke (6; 7%); haemorrhage, epistaxis and seizures (3 each; 3% each); stomach pain (2; 2%); and burns, foreign body in eyes, and choking (1 each; 1% each).

Most teachers (74; 84.%) out of 88, who witnessed these conditions, rendered first aid to the student. However, only 42 (57%) out of the 74 teachers reported feeling confident in administering first aid. Prior training in first aid was found to significantly influence the confidence level of teachers when rendering first aid ( $p=0.001$ ). (Table 4)

Out of the nine schools visited, only five schools had first aid kits. None of the first aid kits were well equipped. Scissors, cotton swabs, gauze pieces/rolls, antiseptic ointments and analgesic tablets were present in the first aid kits of all five schools with kits. Crepe bandages and adhesive tape were present in four schools. However, latex gloves, slings (triangular-shaped bandages) and first aid books were present in only one school each. Three schools had a fund allocated for purchase of educational materials on first aid management and purchase of first aid medicines. Only two schools had first aid information charts and drug dosage charts. None of the schools had liaison with any health care delivery service.

Table 3. Distribution of teachers based on their knowledge in each aspect of first aid management for different conditions

Type of condition	Knowledge about first aid			
	Poor	Moderate	Good	Total
Stomach pain	82 (56.2)	18 (12.3)	46 (31.5)	146
Heat stroke	81 (55.5)	51 (34.9)	14 (9.6)	146
Haemorrhage	60 (41.1)	69 (47.3)	17 (11.6)	146
Epistaxis	58 (39.7)	77 (52.8)	11 (7.5)	146
Choking due to foreign body	55 (37.7)	85 (58.2)	6 (4.1)	146
Seizures	54 (37.0)	85 (58.2)	7 (4.8)	146
Accidental consumption of laboratory chemical	50 (34.2)	75 (51.4)	21 (14.4)	146
Sprain	33 (22.6)	81 (55.5)	32 (21.9)	146
Foreign body in ears	32 (21.9)	113 (77.4)	1 (0.7)	146
Syncopal attack	26 (17.8)	112 (76.7)	8 (5.5)	146
Foreign body in eyes	25 (17.1)	41 (28.1)	80 (54.8)	146
Burns	24 (16.5)	4 (2.7)	118 (80.8)	146
Wound management	14 (9.6)	17 (11.6)	115 (78.8)	146
Overall	19 (13.0)	127(87.0)	0(0)	146

This means that these schools did not have a pre-existing arrangement to provide annual medical examinations or medical care for students in the event of a medical emergency at the school. Only one school had a sick room specifically for the management of medical emergencies.

## Discussion

The knowledge of first aid among teachers in this study was found to be unsatisfactory, in keeping with observations made in other Asian studies. The absence of compulsory first aid training during teacher training in India could be a reason behind this finding.

People with work experience of more than 10 years were found to have significantly better knowledge about first aid in a study done in Mysore, India.<sup>7</sup> However, no association between years of teaching experience and knowledge of first aid was observed in this study and a similar study undertaken in Baghdad, Iraq.<sup>3</sup>

Knowledge regarding first aid management was significantly greater among physical education teachers, probably because of prior training during their education. Science teachers also performed better on the questionnaire, probably because of knowledge of the medical principles underlying appropriate first aid measures. In

Table 4. Association between prior training in first aid with practices in first aid management

	First aid administered (%)	Not administered (%)	Total
Trained in first aid before	41 (87.2)	6 (12.8)	47
Not trained	33 (80.5)	8 (19.5)	41
<b>Total</b>	<b>74</b>	<b>14</b>	<b>88</b>
			$\chi^2=0.745, p=0.388$
	Confident in administering (%)	Not confident (%)	Total
Trained in first aid before	30 (73.2)	11 (26.8)	41
Not trained	12 (36.4)	21 (63.6)	33
<b>Total</b>	<b>42</b>	<b>32</b>	<b>74</b>
			$\chi^2=10.1, p=0.001$

contrast to this observation, the study done in Baghdad, Iraq found no significant difference in knowledge of first aid according to the educational background of teachers.<sup>3</sup> In research conducted in Vadodara, India<sup>9</sup> and Mysore, India<sup>7</sup> about 3% and 16% of teachers respectively were trained in first aid, compared to 47% in this study. In studies outside India, between 31% and 62% of teachers were found to be trained in first aid.<sup>8,11,12</sup> Knowledge about first aid was reported as significantly greater among teachers who received prior first aid training in several other studies,<sup>7-9</sup> similar to our findings. Although number of first aid training sessions had no influence on the knowledge of teachers, the timing of the most recent session was found to be significant. This emphasises the need for refresher training at least on an annual basis for all school teachers.

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Despite the absence of teachers with good first aid knowledge, our study showed that most teachers had positive attitudes about the importance of first aid, learning first aid and training other teachers after being trained themselves. An Irish study similarly reported that 93% of school games staff were interested in attending a first aid workshop.<sup>13</sup> In the study by Gagliardi et al.,<sup>14</sup> 87% of teachers agreed that first aid training should be included in teacher training programmes. About half of the teachers in this study felt that any person trained in first aid could be an ideal trainer. This makes arranging a trainer more feasible whenever human resource constraints, such as non-availability of doctors, arises for provision of periodic training. Another solution for this problem could be involving

teachers already trained in first aid to provide training to their colleagues.

Although only about half the teachers were trained in first aid previously, more than 80% of teachers had administered first aid in real-life situations. This meant that teachers were willing to help and had a positive attitude towards first aid, despite not being trained. This willingness to help is essential in circumstances where first aid has to be rendered spontaneously, as in medical emergencies.

About 44.4% of schools in this study had no first aid kit, in comparison to 38% in a study in Chandigarh, India<sup>15</sup> and 75% in a study in Mysore, India.<sup>7</sup> In a 2003 Irish study, equipment to deal with injury was unavailable in 19% to 65% of schools.<sup>13</sup>

The study completed in Chandigarh, India also found that only 11% of the schools surveyed had health funds available for buying medicines,<sup>15</sup> in comparison to 33% of schools in this study. The Chandigarh study also noted that common equipment for health check-ups was lying unused in many schools. School health services need to commit adequate funding to providing and maintaining first aid equipment in order to enable schools to render quality first aid care to children.

It was disappointing to observe that no school had a fully equipped first aid kit in the present study. Similarly, in the Chandigarh study, paracetamol was available in only 16% of schools, antiseptic ointment in only 22% of schools, and first aid kits were found to have a large number of ayurvedic/indigenous drugs because teachers were of the view that these do not have side effects.<sup>15</sup> Use of allopathic drugs was limited due to non-availability and also because of lack of knowledge of the appropriate drug and dosage schedule.<sup>15</sup>

However, the Chandigarh study did also find that 65% of schools had arrangements for referring sick children to government health centres and 16% for referrals to private clinics.<sup>15</sup> Such referral arrangements were notably absent in schools surveyed in the present study.

### Final comments

The majority of school teachers in this study had moderate knowledge about first aid management. The willingness to undergo training and readiness to train others and administer first aid services in real-life situations, as reported by a majority of participants, indicated positive attitudes to first aid provision.

First aid facilities were found to need improvement at schools surveyed, including through provision of fully equipped first aid kits, a separate sick room to handle medical emergencies, posters outlining standard first aid procedures for management of medical emergencies, and videos illustrating first aid practices. These measures will serve to make schools a safer environment for children.

Although medical emergencies are common among schoolchildren, very few studies have been done to date in this area. Assessment of participants' knowledge of first aid through observing their practical application of first aid skills on mannequins, for example, may have provided a more accurate assessment method.

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### COMPETING INTERESTS

None declared.