

Knowledge and Attitude of the First Aid Among School Teachers in Saudi Arabia: Systematic Review

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KEYWORDS

First-Aid, Injury, PRISMA, School Teacher, Students, Saudi Arabia

ABSTRACT

Aim: Injury poses a serious threat to health as it is the main contributor to early mortality and morbidity as well as the main reasons for the death of adolescents. About one- third time of school children is spent in schools, where they are frequently in danger of accidents and medical issues. First-aid (FA) has been shown to be beneficial in the prevention and management of injuries. Teachers are the bystanders or first responders in case a mishap occurs in schools. It is therefore very crucial for teachers to have sound knowledge of first aid. This systematic review aims to assess the status of knowledge among Saudi Arabia school teachers and for studies to be conducted in future it aims to provide recommendations. **Methods:** The PRISMA guidelines were followed in conducting the systematic review. For the search of relevant studies, the strategy of using text words and MeSH terms was included. The studies included in the review were cross-sectional studies and survey research studies. Studies in government as well as private schools of every level, primary, intermediate, secondary, higher secondary, in any part of Saudi Arabia with more than 100 subjects were included in the systematic review. Studies carried out on populations in school settings apart from teachers, such as sports instructors, helpers, or students were excluded. The risk of bias was assessed using “the Joanna Briggs Institute (JBI) critical appraisal checklist for analytic cross-sectional studies”. **Results:** Twenty-nine studies were incorporated for assessment. Largest number of studies were conducted in Riyadh, the capital of Saudi Arabia. Questionnaires from previous studies were adapted in seventeen studies. Six studies utilized case-based questionnaires. 11 studies showed high risk of bias. **Conclusion:** The studies lacked well-developed, standard questionnaires containing uniformity in questions for similar kind of study. Level of knowledge was found to be low or barely adequate in major proportion of the studies

1. Introduction

First aid (FA) as the name signifies is the first care provided by the inexperienced or untrained person immediately after an illness or injury, before the arrival of professional medical help. FA includes simple medical techniques provided by an individual with or without the use of specialized tools [1,2]. Injury poses a serious threat to health as it is the main contributor to early mortality and morbidity as well as the main reasons for the death of adolescents. FA has been shown to be beneficial in the prevention and management of injuries. When someone is injured, spectators' responses are vital, and prompt FA seems to lessen the seriousness and harshness of injuries [3]. According to statistics, youngsters and the elderly are the groups most at risk for mishaps and injuries. Accidents and injuries rank among the main causes of death for kids globally, and having an accident in childhood can have serious health repercussions. As per their age and developmental stage, children are more susceptible and likely to be more exposed to injuries and accidents. According to estimates, 10- 25% of accidents involving more than 14 million children of age 14 and less, take place in or close to schools each year [4]. In case of an accident or injury in school, the teachers are the bystanders and the first who could help the injured by providing FA. Very serious health effects might result in case the teacher lacks the skills and knowledge of how to provide basic first aid. Teachers who are able to offer effective emergency pre-hospital treatment in the case of an accident can save lives and needless effects. This is made possible by having the fundamental knowledge and abilities of first aid [5]. The need for providing first aid can be due to any of the emergencies concerning injury, epistaxis, epileptic seizures, traumatic dental injury, choking etc. Injury can occur during games, physical activity or accidents. If not taken care of can sometimes lead to death which in fact is the leading cause of death among children [4]. Epistaxis, also known as nosebleed is a very common problem, and about 60% of people experience it at least once in their lifetime. It is very common in children and 3 out of 4 children experience it at least once. If not taken care of this can lead to hypovolemia due to excess bleeding and further serious complications [6]. 1

out of 150 children is affected by epilepsy in the first decade of their life. Childhood is a pivotal period for the psychological, physical, and social development of children, so teachers' actions might influence how students behave in later stages of life. Since, such children are sensitive to suffering physical damage during seizures, using the right first-aid techniques could shield them from danger when having seizures. Also, their behaviour can help remove the social stigma that is generally faced by such children [7]. Traumatic dental injuries occur 1-3% of the population. Among the injuries include tooth fractures, soft tissue contusions, bone crushing and/or fractures, as well as lacerations, and abrasions. The most common time for this kind of harm to occur and when its effects can be most severe is during childhood. Competence and good level of the first aid providers knowledge is very important which will result in improved prognosis of the damaged structures. In these circumstances, prompt and accurate management is necessary, due to the likelihood of early or late consequences. An early and effective procedure can preserve the child's tooth in the event of tooth avulsion. In case of accidents affecting the child's temporary dentures, they may still have a negative impact on the child's psychological development due to functional issues, issues with the tooth germs, infections, and aesthetic issues. All this can be prevented only when the teacher is well versed with the first aid protocols related dental injuries [8,9] The safety of students in schools is one of the major priorities of the Ministry of Education in Saudi Arabia. Thus, the concern here arises, are the school teachers well prepared to deal with medical emergencies as first aiders?

The aim of the study was to access and analyze the knowledge status and attitude concerning First aid among teachers in Saudi Arabia schools and subsequently providing recommendations for future research in this particular domain.

2. Martials and Methods

The PRISMA 2020 guidelines were followed in conducting the systematic review. The PubMed, CINAHL, and Scopus-databases were searched from 15th November 2022 to 30th November 2022 without regard to any languages and publication year. Grey literature was searched using Google-Scholar. The list of references of the suitable studies were also checked for identification of furthermore studies. The pattern of finding the desired studies is mentioned in figure 1.

For the search of relevant studies, the strategy of using text words and MeSH terms was included. A comprehensive search was carried out one at a time using the keywords: "Saudi Arab", "First aid", "Epilepsy", "Epileptic seizures", "Epistaxis", "Dental- trauma", "Traumatic dental injuries" and "Tooth injury". Boolean tools AND and OR for partial searches were used in various combinations with the mentioned keywords individually with "Knowledge", "Practice", "Attitude", "Awareness", and "Teachers". The use of MeSH terms for partial searches were (1) Search ("First Aid"[Mesh]) AND "School Teachers"[Mesh]) AND "Saudi Arabia"[Mesh] (2) Search ("School Teachers"[Mesh]) AND "Saudi Arabia"[Mesh]) AND "First Aid"[Mesh], (3) Search ("Saudi Arabia"[Mesh]) AND "School Teachers"[Mesh] first aid (4) Search ("Saudi Arabia"[Mesh]) AND "School Teachers"[Mesh]) AND "Epilepsy"[Mesh] (5) Search ("Saudi Arabia"[Mesh]) AND "Tooth Injuries"[Mesh]) AND "School Teachers"[Mesh] (6) Search (saudi arabia[MeSH Terms]) AND (teachers, school[MeSH Terms]) AND (first aids[MeSH Terms]) OR (epilepsy[MeSH Terms])) OR (traumatic tooth injury[MeSH Terms]). Mendeley reference management software was used for removal of duplicates. First the titles were evaluated for its suitability and then abstracts of each study was evaluated for its inclusion in the systematic review.

The studies included in the review were cross-sectional studies and survey research studies. Studies in government as well as private schools of every level, primary, intermediate, secondary, higher secondary, in any part of Saudi Arabia with more than 100 subjects were included in the systematic review. Studies carried out on populations in school settings apart from teachers, such as sports instructors, helpers, or students were excluded.

The risk of bias was assessed using "the Joanna Briggs Institute (JBI) critical appraisal checklist for analytic cross-sectional studies". The scoring of studies was based on: (i) inclusion criteria, (ii)

subjects of the study and study setting, (iii) reliability and validity of the measured exposure, (iv) if the objective was standard criteria for measuring condition, (v) identification of confounding factors (vi) statement of strategies for dealing with confounding factors (vii) validity and reliability of the outcomes measurement (viii) use of appropriate statistical analysis. The sheet for data extraction had demographics of studies inclusive of author, year, sampling strategy, sample size, place, questionnaire details- type of question (previously used/ self- designed), Validity and reliability of questionnaire.

3. Results and Discussion

The predetermined search scheme displayed a total of 83 records. After the removal of duplicates, titles were recognized for 56 records. Out of them, 45 records were downloaded in full text for evaluating the studies for qualitative synthesis and 29 were used for systematic review as depicted in figure 1.

All the studies except one included in the review were published over the past decade. Highest number of the studies (6) was performed in Riyadh [10-15], three in Taif [16-18], two in each of Mecca [19,20], Madinah [21,22], Khamis Mushayt [23,24], Jeddah [25,26], and Tabuk [27,28], one in each of Hail [29] Arar [30], Najran [31], [32], [33], Yanbu [34] and Al-Qassim [33], and for four of them specific place was not mentioned [35-38]. Nine studies were done in primary schools, three in secondary schools, one in intermediate school, fourteen in combination of schools and for three studies the school was not categorized as primary, secondary or intermediate as given in table 1.

There were 29 observational cross- sectional studies, and 1 survey. The sampling technique was defined in all the studies with simple random in 6 [11,14,18,23,36,39] stratified random in 2 [24,26], two-staged cluster random in 2 [12,29], systematic random in 2 [11,40] multistage in 2 [22,38], convenience sampling in 2 [16,19], quota sampling in [13], and snowball sampling in 1 study [25]. Sample size in each study was justified which ranged from 178 [21]- 1520 [11]. Participation of both the genders were not maintained in all the studies as schools in Saudi Arabia are separate for both the genders. These are presented in table 2.

Out of 30 studies, 10 accessed knowledge, attitude and practice regarding epilepsy [12,13,16-18,26-28,30,36], 3 accessed knowledge, attitude and practice regarding first aid [10,22,29], 3 accessed knowledge regarding dental trauma [11,21,31], 3 accessed knowledge and practice regarding epilepsy [19,23,24], 2 accessed knowledge of epilepsy [20,25], 2 accessed knowledge, attitude and practice regarding dental trauma [14,32], 2 accessed knowledge, attitude and practice of epistaxis [15,33], 2 accessed knowledge and attitude regarding epilepsy [34,37], 1 accessed knowledge and practice of first aid [40], and 1 accessed knowledge and practice of dental trauma [38], Arabic was the primary language of questionnaire. The number of questions varied from 6 [25] to 48 [10]. The questions were closed ended objective in nature. This is presented in table 3.

The questions used for the assessment of teachers in the included studies showed huge variance. The category in which they were proposed were questions on general information, self- assessment, knowledge, attitude and practice. KAP Heat map is used to describe the information about the questions, where colour of the cells signifies the awareness as <25%, 25- 50%, 50- 75% and >75%. The questions which were present in 3 or more studies were included in the heat map which is depicted in figure 2.

First aid training was received by 25-50% teachers in 7 studies [10,11,21,23,29,32,40], and less than 25 % in one study [14]. Training on dental trauma specific first aid was received by less than 25% teachers in four studies [11,14,21,32]. Dental trauma was witnessed by 50-75% teachers in 2 studies [11,31]. First aid training on epilepsy was received by less than 25% teachers in 6 studies [19,20,25,34,36,37]. When asked if they heard about first aid 75-100% teachers gave affirmative answers in 3 studies [10,23,29].

When enquired about situations faced that needed first aid, 25-50% teachers gave an affirmative

answer in 2 studies [10,23] while less than 25% gave a positive nod in 2 studies [38,40]. Previous experience of dental trauma was faced by 50-75% teachers in 2 studies [11,31], 25-50% teachers in 2 studies [32,38], and less than 25% teachers in 1 study [14]. Previous cases of epilepsy or seizures were experienced by 50-75% teachers in 4 studies [17,19,24,27], 25-50% teachers in 7 studies [12,16,18,25,26,28,34], and less than 25% teachers in 2 studies [36,37].

For emergency management in case of tooth displacement, 1 study [11] showed 50-75% teachers had knowledge, 1 study [21] showed 25-50% teachers had knowledge, while 1 study [14] showed less than 25% teachers had this knowledge. In case of holding of knocked out tooth 50-75% teachers showed knowledge in 1 study [11], while 25-50% teachers showed knowledge in 2 studies [21,31]. When asked about storage or transportation of avulsed tooth 25-50% teachers had knowledge in 4 studies [11,21,31,32], and less than 25% teachers had knowledge in 1 study [14].

When enquired about epilepsy 75-100% teachers answered it is neurological problem in 6 studies [18-20,25,28,30], 25-75% teachers believed the same in 1 study [24]. In 2 studies [27,37] 50-75% teachers have the knowledge that epilepsy is a genetic problem, 25-50% teachers believed in the same notion in 6 studies [13,17,23,24,28,40], and less than 25% teachers had this knowledge in 2 studies [16,18]. The belief that epilepsy is psychological condition, or it might lead to mental retardation was shown by 50-75% teachers in 3 studies [12,17,27], 25-50% teachers believed the same in 3 studies [23,37,40], while less than 25% teachers believed in psychological reason behind epilepsy in 7 studies [16,18-20,24,25,34]. The spiritual reason behind epilepsy was believed by 25-50% teachers in 2 studies [26,30], less than 25% in 9 studies [13,16,18-20,25,28,37,40]. The notion that epilepsy is contagious or infectious disease was supported by 75-100% teachers in 1 study [23], 25-50% teachers in 1 study [30], and less than 25% teachers in 6 studies [16,17,27,28,34,37].

The knowledge about availability of treatment for epilepsy was shown by 75-100% teachers in 5 studies [17-19,25,27], 50-75% teachers in 2 studies [20,37], 25-50% teachers in 1 study [30], and less than 25% teachers in 1 study [26]. 25-50% teachers in 3 studies believed that dependency on medication can occur in case of epilepsy treatment [19,20,25]. When enquired about the believe that students with epilepsy should not be active in sports 25-50% teachers agreed in 4 studies [17,23,24,27], while less than 25% teachers agreed in 1 study [33]. In context of whether it is important to open mouth during seizures, 75- 100% teachers agreed in 1 study [23], 50-75% teachers agreed in 3 studies [13,20,26], 25-50% teachers agreed in 4 studies [16,19,25,28], and less than 25% teachers agreed in 1 study [18]. The question whether some foods can lead to epilepsy 50-75% teachers agreed in 2 studies [23,30]. The belief that children with epilepsy have learning problem 25-50% teachers agreed in 1 study [23], and less than 25% teachers agreed in 3 studies [24,26,37]. The practice of giving water during epileptic fits was agreed upon by 50- 75% teachers in 2 studies [20,23], and less than 25% teachers in 3 studies [19,25,30]. The appropriate knowledge of when to transfer the patient to hospital was shown by 75- 100% teachers in 3 studies [20,28,40], 25-50% teachers in 2 studies [19,25], and less than 25% teachers in 2 studies [13,36].

The question for whether they would allow their children to play with a child with epilepsy 75-100% teachers agreed in 3 studies [16,21,37], 50-75% teachers agreed in 1 study [27], and 25-50% teachers agreed in 1 study [17]. The belief that children with epilepsy lacks normal life in terms of work and study was shown by 50-75% teachers in 2 studies [17,27], 25-50% teachers in 1 study 26 and less than 25% teachers in 3 studies [16,24,37]. Fear of having children with epilepsy in class was shown by 50-75% teachers in 2 studies [16,18], 25- 50% teachers in 3 studies [12,26,37], and less than 25% in 1 study [13].

Regarding epistaxis, teachers that had previous experience with epistaxis case were 50-75% in 2 studies [15,33]. The question asking if epistaxis can be dealt with putting pressure on the nose 75-100% teachers agree in 2 studies [15,33], and 25-50% teachers agreed in 2 studies [23,29]. The knowledge about correct head position in case of nosebleed was found in 25-50% teachers in 1 study [23], and 50- 75% teachers in 3 studies [15,29,3]. Knowledge about correct duration of

pressure holding to stop nosebleed was found in less than 25% teachers in 2 studies [15,33] and 50-75% teachers had the knowledge when to go to hospital in emergency in 1 study [15], and 25-50% teachers in 2 study [33]. The source of information was mass or social media for 50-75% teachers in 2 studies [23,40], 25-50% teachers in 5 studies [13,16,30,36,37], and less than 25% teachers in 3 studies [10,18,24]. Physicians were source of information for less than 25% teachers in 7 studies [16,23,24,31,36,37,40]. Nurses were source of information for less than 10% teachers in 2 studies [23,40]. School trainings and books were source of information for less than 25% teachers in 7 studies [23,24,30,31,36,37,40].

Upon asking if they wished to receive first aid training, or information about first aid, 75-100% teachers gave a positive answer in 5 studies [11,22,31,32,40], and 25- 50% teachers desired so in 1 study [38]. The assessment of risk of bias has been provided in detail in table 4. Eighteen studies showed low to moderate risk of bias and eleven studies had high risk of bias. The association of demographics and the knowledge is shown in table 5. In 3 of 11 studies, it was found that level of knowledge had a significant connection with the gender being male [27,33,38], while for 2 studies female was found to have significant correlation with increased knowledge about first aid [23,30], while for 6 studies this correlation was found to be non-significant [13,15,17,21,25,26]. In regard to correlation with age and level of knowledge, 7 out of 15 studies found that age has a significant correlation with high level of knowledge [10–13,21,23,30], 3 studies showed age has a significant correlation with decreased knowledge [17,18,33], while five studies found this correlation to be non-significant [15,22,25,26,36]. The relationship between educational qualification and level of knowledge was also determined and in 6 of 13 studies a significant correlation was found [13,18,25–27,30], as the qualification of teachers increased the level of knowledge also increased. While it was found in 1 of the studies that a significant correlation between increased educational qualification and decreased knowledge about first aid [23]. However, in 6 of the studies this was found to be non-significant [10–12,19,20,36]. Five of fourteen studies showed that the experience of teaching (in years) has a significant correlation with increased level of knowledge [11,13,18,23,32], 1 study showed significant correlation with decreased knowledge [20], while eight studies found this correlation non-significant [10,19,21,25,26,36–38].

Discussion

About one- third time of school children is spent in schools, where they are frequently in danger of accidents and medical issues. Incidents such as fights, playground injuries during practice or events, slips on stairs or hallways, and bicycle accidents can happen inside or close to school grounds. Also, the incident of epistaxis and epilepsy is common among children until they are in schools, children are under the guardianship of teachers. Therefore, teachers should have sufficient understanding of first aid procedures. Hence, it is crucial for instructors to receive first aid training and maintain their knowledge and expertise in guidelines on first aid [41–44].

There are various studies reporting the knowledge, attitude, awareness, and practice of school teachers, and a qualitative assessment of them in terms of demography, characteristics of questionnaire, and various reported elements will provide crucial information. In addition, the aim was to spotlight crucial points for studies in future [45]. There is high degree of variability among the questionnaire used for the studies and therefore, it is complicated to carry out a systematic review of KAP studies. Therefore review protocol was designed following PRISMA 2020 guidelines and earlier works of similar nature [46–48].

Highest number of studies were performed in Riyadh, followed by Taif, Mecca, Madinah, Jeddah, Khamis Mushayt, Tabuk, Hail, Arar, Najran, Dammam, Asser, Yanbu, and Al-Qassim. More studies need to be done in various other cities across Saudi Arabia to have an appropriate understanding about the KAP of teachers about first aid related to different medical situations. A vital aim of the systematic review was to explicate the peculiarities of questionnaires which had been used in studies earlier. Seventeen of the studies utilised knowledge, Attitude, and practice questionnaires [10,12–

18,22,26–30,32,33,36], five used knowledge questionnaires [11,20,21,25,31], five used knowledge-practice questionnaires [19,23,24,38,40], and 2 used knowledge and attitude questionnaire [34,37]. The components of knowledge, attitude, and practice must all be included in a well-designed awareness questionnaire. Some of the surveys lacked this. Six studies used case-based questions. It is better to use case based closed ended questions with objective type answers. Visual depiction using images and suitable number of questions can be used in questionnaires. Seventeen of the questionnaires were developed by adopting one or more studies [10,12,14,16,17,19,21,22,24,25,27,29,30,32–34,38], one was based on international guidelines [15], and four were developed by researchers [11,20,23,40]. Three out of twenty-nine questions were not validated [13,26,28], and fourteen of these studies were mentioned to be reliable [11,12,15,17,20,27,29,30,33,34,36–38,40]. The validity and reliability in the cases should have been mentioned. This should be covered in the future. The validity of the surveys in their respective languages and contexts was not mentioned by the authors, who cited one or more studies as their source. The development of knowledge, attitude and practice awareness of first aid resources for school teachers will benefit from a well-designed questionnaire employing qualitative research methodologies. After local validation, these tools may be used globally with or without modifications. The risk of bias analysis of knowledge, attitude, and practice research was conducted in the past using the Joanna Briggs Institute critical appraisal score. This review assessed, twenty-six studies had moderate to high risk for biasedness. The studies to be conducted in future should focus on reducing these biases.

The studies included in the systematic review was conducted with varied questionnaires having diversified questions, therefore these were grouped as general information, self- belief, knowledge, attitude and practice. They were then sub-categorized into question stems. These varied data was represented graphically by using KAP Heat map. Six out of 23 studies reported that less than 50% of the teachers have faced cases requiring first aid [11,17,19,24,27,31]. More than 50% participants desired to have first aid training or to be informed about dental injury [11,22,31,32,40]. Out of 8 studies all showed that less than 50% teachers had training on first aid [10,11,14,21,23,29,32,40]. All of four studies showed that less than 25% teachers had dental trauma specific training or information [11,14,21,32]. And all of 6 of the studies showed that less than 25% teachers had seizure specific training [19,20,25,34,36,37]. Only one out of three studies show that more than 50% teachers can manage emergency of tooth displacement [11]. These data shows that it is very essential to held programs on first aid training for various medical emergencies for teachers.

An essential component of dental trauma first aid is managing dental avulsion. Consequently, several research have attempted to evaluate the expertise of school teachers in this area. Only one out of three studies showed that more than 50% of the teachers have correct knowledge about how to hold a tooth if knocked out [32]. And only one out of five studies showed more than 25% teachers have the knowledge that the tooth could be stored in the student's saliva or cold milk [32].

Many of the teachers had false belief of practice during cases needing first aid. Less than 25% of teachers in two studies know that in case of epistaxis, pressure on nose should be applied for about 10 min only [15,33]. And more than 50% of teachers believed it is right practice to block nose with tissue, cotton or gauze [15,33]. In case of epilepsy in four out of nine studies more than 50% of teachers believed that it is important to open moth during seizures [13,20,23,26], while the truth is that patient should only be checked that they are not suffocating, opening mouth and putting cloth or any other material is strictly discouraged. In two out of five studies more than 50% teachers believed that student should be given water during epileptic fits [20,23]. In 3 out of seven studies more than 75% teachers had the knowledge that patient should be transferred to hospital if seizure occurs for more than 5 minutes and if recurrent seizures are there and patient is not waking up [20,28,40]. These data reveal the lack of knowledge and accurate practice regarding first aid of epistaxis and epilepsy, and that it is very essential to include these as part of first aid training programme.

Attitude forms an important part of KAP questionnaire. However, about the attitude of teachers in case of an emergency requiring first aid, not much data is available for cases of general trauma or dental trauma. But, few of the studies collected the response related to attitude of teachers towards students with epilepsy. It shows that in only two out of five studies more than 50% of teachers are afraid of having a student with epilepsy in their class. And three out of five studies show that more than 75% of the teachers are willing to let their children play with a student with epilepsy [16,21,37]. These shows that teachers have empathy for their students with epilepsy. However, need is there to have much positive data about teacher's attitude towards such students. Teacher's behaviour plays a great role in molding the psychology of students. A good behaviour will assure children that there is nothing shameful about having epilepsy.

Regarding the source of information, 7 out of 11 studies showed that school books or training was the information source about first aid. However in all these seven studies less than 25% of the teachers received information from school books or training [23,24,30,31,36,37,40]. However mass media or social media was the greatest source of information regarding first aid, which was a major source of information in 10 out of 11 studies reporting this [10,13,16,18,23,24,30,36,37,40]. This can be due to the fact that people are very much engaged in social media and less active in reading. However, it is need of the hour to implement mandatory training programs for teachers in schools which would help make the school a better and safer place.

4. Conclusion

There is lack of a well-structured uniform or standard questionnaire to be used for such studies. There is a need to have participants from both the sexes when conducting such kind of studies. There is need to justify the sample size selection in majority of the studies. There is need to add more case-based questions in questionnaires. Teacher's attitude was positive towards incorporation of first aid training as part of training programs. Overall, the knowledge about first aid is not adequate in teachers and interventional studies are needed to be done, which would further enhance the knowledge, attitude and practice of teachers.

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