

ASSESS THE KNOWLEDGE AND PRACTICE OF TEACHERS AND INSTITUTIONAL PREPAREDNESS REGARDING FIRE SAFETY.

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ABSTRACT

Introduction: The findings will assist the teachers, and educational managers in making policy guidelines on school safety. Design - knowledge and self-reported practices was assessed by a structured questionnaire, institutional preparedness was assessed by a checklist. 10 schools were selected conveniently with 103 teachers. Findings- Teachers had 70% moderate knowledge, 70% moderate self-reported practices and all schools had good preparedness for fire disaster (88%). There was a weak positive correlation between knowledge and self-reported practice and there was no significant association between knowledge, self-reported practices and the selected baseline variables. **Conclusion:** The study will help the children and society to be prevented and prepared for fire disasters.

Key Words: knowledge, self-reported practice, fire safety, teachers, preparedness, disaster.

INTRODUCTION

School fire disabilities and deaths are a public health concern not only because of the increased incidences, but also of the type of disability or death caused, predominantly among the young population. Despite many reported school fires, no audit on fire safety in schools has been done. The Fire department is also working on a legal framework to make violation of fire safety rules punishable by law. It has also called upon school managements to prepare themselves for emergency situations. ESG (Environmental, social and governance) has articulated the need for having at least one mandatory representation from each school in Bangalore to undertake training at the fire department's SAFE (Students Association of Fire Education) program [1].

In Bangalore, the building byelaws already require that buildings be planned, designed and constructed to ensure adequate fire safety to the property and inhabitants. The byelaws state that this shall be carried out in accordance with Fire Protection of the National Building Code of India. While the byelaws are mandatory, there are no specific details for educational institutions. Currently

only high rise buildings need clearance from the Fire Department. All CBSE/ICSE schools which have a pantry, computers, gas connection, and chemistry labs need clearance. But anecdotal evidence indicates that conformance is rare. All state syllabus schools (i.e. non CBSE/ICSE) do not need a clearance from the fire department even though they might be having a pantry (kitchens for the mid-day meal scheme), gas connections, computers, and chemistry labs. This lack of clarity leaves room for educational institutions to bypass the NBC (National Building Code) and hence the poor enforcement [2].

The Karnataka Fire Services Department is responsible for ensuring fire safety in the state, but the department does not have the powers to inspect and enforce fire-safety regulations on any building on its own. Nationwide, there is a deficiency of fire station services. Bangalore for example has 11 fire stations against a recommended 140, by central government norms. The Centre's Standing Fire Advisory Council directs that every town with a population of 50,000 and above should have a



fire station. In SAFE (Students Association of Fire Education) programme anyone can be a part and can undertake training for Fire safety. Ironically it has few takers with only about 100 volunteers, although Bangalore has well over 4000 schools. When regular fire drills and training of teachers and students are considered as an important aspect of fire safety, mishaps can be avoided that turn tragedies to enormous proportion [3].

Schools are entrusted with the responsibility to educate the teachers and students. The teachers educate the students to operate the equipment and handle fire so that they need not wait for an adult in case of a fire. Studies have shown that few teachers think it is the responsibility of the social science and physical education teachers to teach the children and manage the disasters in the school. The management thinks that building the physical structure and providing necessary facilities are far more enough than taking active participation in building up knowledge and practice of the teachers to prepare and prevent disasters in the school. The school teachers are not capable of managing even minor injuries or any other emergencies. It is the panic situation for the management, teachers and parents. For any small incidence or critical situation, the teachers do not have adequate knowledge to act quickly and promptly and not skilled enough to face the situations [4].

In the schools of Bangalore, the health and safety aspects of children due to fire are not considered much. It is important that there is a fundamental link between day-to-day emergency readiness and disaster preparedness. Schools that are well prepared for an individual emergency involving a student or staff member are more likely to be prepared for complex events such as community disasters. Children spend a large part of their time in school, so whether a large-scale crisis occurs during school hours, before or after school, on or off the school campus, the school district plays an important role in the unfolding of events.

As the researcher visited the schools for health education, it was found that the teachers did not know how to use the fire extinguishers and did not know much about the fire safety protocols in the school. When asked about what they know about fire safety in the school, they were not aware of fire safety, fire safety committee, training for fire safety, fire drills etc. The teachers showed interest in learning about fire safety practices, rules and regulations that are required by law in our country. In order to educate the teachers, first it was necessary to assess the present level of knowledge and practice which will motivate them to learn about fire safety in the school. Hence the researcher took initiative to assess the knowledge and practice of teachers and institutional preparedness regarding fire safety [5].

Review of literature

An exploratory study was done to assess the knowledge and self-expressed practices of secondary school teachers regarding disaster management in Pune city. A non-experimental research design was used. Five hundred and forty secondary school teachers were selected by purposive sampling technique. Survey was conducted using a structured interview questionnaire. Findings revealed that mean knowledge score was 15.9 (53%) and mean practice score was 7.05 (47%). There was moderate positive correlation between knowledge score and practice score($r=0.54$). Study concluded that the teachers' knowledge and self-expressed practices were not at satisfactory level. Capacity building among teachers is necessary [6].

A (pre- post) quasi- experimental study was conducted on impact of a disaster educational program on knowledge and practices of teachers among Primary Governmental Schools. The study was conducted at three primary governmental schools one from each educational department. The sample consisted of 50 teachers from three selected schools. Three tools were used in this study: Demographic characteristics for teachers, pre/post knowledge questionnaire sheet and pre/post observational checklist. Half of the teachers were between the age group of 35-55 years. The study showed that before the educational program 42% teachers had unsatisfactory knowledge and 50% had satisfactory knowledge with total knowledge scores of Mean \pm SD of 60.02 ± 8.58 , immediate scores after the post-test was 90.70 ± 30 and 2 months after 88.86 ± 4.69 clearly indicating the effectiveness of the training program in improving the knowledge on disaster. Regarding teacher's practice 90% of the teachers had unsatisfactory practice scores about disaster management before the educational program with Mean \pm SD of 22.62 ± 7.87 while practice score immediately and 2 months after the educational program had Mean and SD of 50.52 ± 2.27 and 46.24 ± 6.46 . The educational program implicated changes in teacher's knowledge, and practices regarding disaster management in primary government schools [7].

A study was conducted to assess the disaster preparedness at selected public schools in Luzon, Philippines. The school profile and data on each school's disaster preparedness were collected through an interview of 37 schools, 35 (95%) schools reported to have formed disaster committees and 2 (5%) schools have not formed disaster committees. However, less than 1/3rd(30%) of the respondent schools had disaster preparedness plans. 35(95%) of the public schools conducted drills once a year. Fire and earthquake drills were the most common type of drill conducted in these schools. 35 (95%) of the public - school key personnel were aware of the national local disaster management programs. This study provided a



glimpse of the efforts that teachers and students prepared in times of emergencies and disasters [8].

The above findings indicates that assessing the knowledge and practice of the teachers regarding fire safety can bring new awareness to the school teachers, management and thus to be better prepared for the emergencies in the school.

Research Methodology

The research approach adopted for this study is quantitative research approach. Keeping the objectives of study in view, the research design selected was descriptive design. The area of Bangalore urban was divided into 5 ranges by the education department, such as Yelahanka, Bengaluru North, Bengaluru East, Bengaluru South and Anekal range. The area conveniently selected for the study were Koramangala, Adugodi and BTM (Byrasandra, Thavarekere and Madiwala) Layout belonging to Bengaluru South. The study was conducted in selected urban primary, middle and high schools (private) with ICSE (Indian Certificate of Secondary Education) syllabus and State Board syllabus. Ten schools were selected conveniently by the researcher from Koramangala, Adugodi and BTM (Byrasandra, Thavarekere and Madiwala) belonging to Bengaluru South.

Based on the formula (Number of teachers in a school ÷ Grand total of school teachers in 10 schools × 100), the researcher took a sample size of 103 teachers. Proportionate random sampling was done to select the teachers from each school register based on inclusion and exclusion criteria.

Tool preparation: - Section I: Baseline data of the teachers e.g. age, sex, educational qualification, total years of teaching experience, level of teaching and details pertaining to disaster like previous experience of witnessing a fire, teaching fire safety in classroom and previous training on fire safety. Section II: Structured Knowledge Questionnaire with 10 questions. Section III: Structured Self-reported Practice Questionnaire with 20 questions. Section IV: An observational checklist to assess the school preparedness for fire safety with 25 items. Scoring – score 1 was given for correct answer and score 0 was given for wrong answer.

Validity and Reliability – Tool was validated by 17 experts from the same field. Reliability of the questionnaire was established by using Split half method and the r value was calculated by Spearman's formula. The tool was administered to 10 teachers under ICSE syllabus high school in Anekal range and the value of r found was 0.90. Data collection was done after written consent from participants. Analysis and interpretation were done using descriptive and inferential statistics.

RESULTS

Section A: Total of 103 teachers from 10 schools were included in the study. The study showed that 43(41.75%) teachers were above the age group of 45 years and 100 teachers (97.09%) were females. About 61(59.2%) teachers were graduates and 41(39.8%) had teaching experience of ten to twenty years. There were 39(37.86%) teachers who were teaching in high school. About 91(88.3%) teachers had no previous experience of witnessing a disaster and 56(54.4%) teachers did not teach disaster preparedness in the classroom since the curriculum on disaster preparedness starts from high school onwards. Also 57(55.3%) teachers did not have previous training on fire safety and 62(60.2%) teachers did not know about the emergency plan.

Section B

Section C

Section D

Section E: Correlation between knowledge and practice among school teachers regarding fire safety

The present study showed that the knowledge range score was between 1-9, mean knowledge score was 5.92 with SD ±1.55. The self-reported practice range score was 5-18, with mean of 12.69 and SD ±2.39. There was a weak positive correlation between knowledge and self-reported practice of school teachers on school fire safety.

Section F: Association between knowledge of school teachers and selected demographic variables.

There was no significant association between knowledge and the baseline variables like age, educational status, years of teaching experience, level of teaching, previous experience of witnessing a disaster etc.

Discussion

In the present study, the sample size was 103. 57(55.3%) teachers did not have previous training on fire safety and 62(60.2%) teachers did not know about the emergency plan. The reason could be that management of the school did not consider the importance to teach or train the teachers on disaster management as there is no much occurrence of any disasters, also the teachers' curriculum did not include this topic in their training period. The teachers never felt the need to take individual responsibility to learn and know about the disaster management and emergency plan in the school.

About 93(90.29%) teachers told there is no fire safety committee in the school and hence there was no regular meeting by the fire safety committee as stated by 98(95.15%) teachers. Among 103 teachers one reported to be a member of safety committee.

Safety of the school children is the basic right of children. Teachers play a vital role in education of school children and mitigation of the hazards and disasters in



schools. The success of education depends on the competitive knowledge of the teachers. The present study shows that 72 teachers (69.90%) had moderately adequate knowledge with the mean of 5.922 and standard deviation of ± 1.551 . This could be because about 27(26.21%) were below 35 years, 100(97.09%) were females and 42(40.8%) were post graduates. The reason could be that females are more concerned about the safety of the children than men and post graduates possess some amount of knowledge on fire safety. Also 37.86% are high school teachers, 11.7% of the teachers had experience of witnessing a disaster and 45.6% of them taught disaster preparedness in the class and 44.7% underwent training on fire safety and 39.8% knew about the emergency plan. Hence these exposures would have made them get a better knowledge and understanding about fire safety.

There were 16(15.53%) teachers who had inadequate knowledge. In the present study almost 91(88.3%) teachers reported that they have no experience of witnessing a disaster, 56(54.4%) of them did not teach disaster preparedness in class, 57(55.3%) of them had no training on fire safety and 62(60.2%) did not know about emergency plan in the school. Therefore they did not have the opportunities or training to learn about fire safety in the school. Another reason for lack of knowledge could be majority of them 43(41.75%) belonged to above 45 years of age, 36(34.95%) of them taught primary schools and 16(15.53%) of them middle schools. The teachers may not be keen on updating their knowledge according to the changes to the present society, rules and policies of the Government. Every educational institution's primary focus is to show the best performance of the students and emphasizes that the teachers should finish the academic requirements and hence do not bother about the all-round development of the children which moulds them to face life's challenges.

The present study showed that 72(69.90%) teachers had average practice with the mean of 12.689 and SD of ± 2.388 . About 21(20.39%) teachers had good practice because 47(45.6%) taught disaster preparedness in the class, also 46(44.7) had previous training on fire safety. 41(39.8%) knew about emergency plan. The reason may be the information that they get from mass media. Also by nature the females are more concerned about the safety of the children and are good at practical knowledge. Around 10(9.71%) had poor practice, the reason could be 27(26.21%) were 24-35years and 61(59.2%) were graduates. There were 40(38.8%) of them with less than 10 years' experience, 36(34.95%) were primary and 16(15.53%) taught middle school. Most of them 91(88.3%) did not witness a disaster, about 56(54.4%) of them had not taught disaster preparedness in the class and 57(55.3) of them did not have any previous training on fire safety.

The present study showed that all the ten schools selected were private schools consisting of primary, middle school and high schools. The result showed that all schools have the same score 10(100%) meaning they are at low risk for fire. The reason could be the education department of the country and state are strict and made mandatory to follow the guidelines of the school disaster management planning. So the school has the infrastructure and the necessary articles that are compulsory to be kept in the schools, and it is operated by only few personnel who are trained. Sometimes the schools make contract with the companies to check the fire extinguishers and refill the extinguishers. The schools were all situated in the city with concrete building and within the reach of fire departments.

The schools reported minimum or no fire accidents in the past years. Around 93(90.29%) teachers reported that the school did not have fire safety committee, 98(95.15%) reported that there was no regular meeting of fire safety committee and 102(99.03) teachers were not members of fire safety committee. The study indicated that the schools had well framed infrastructure that are needed by the law and educational departments in order to run the schools smoothly. But there was no presence of fire safety committee, no meeting of the committee which reflects that the importance of safety and the felt need is not noticed by the management of the school and the teachers. When the management and the teachers neglect the safety practices in the school, it is clear that the students also will not learn and understand the importance of it.

The present study showed that the knowledge range score was between 1-9, mean knowledge score was 5.92 with SD ± 1.55 . The self-reported practice range score was 5-18, with mean of 12.69 and SD ± 2.39 . There was a weak positive correlation $r=0.144$, $p=0.146$ between knowledge and self-reported practice of school teachers on school fire safety. As knowledge increases, practice also increases.

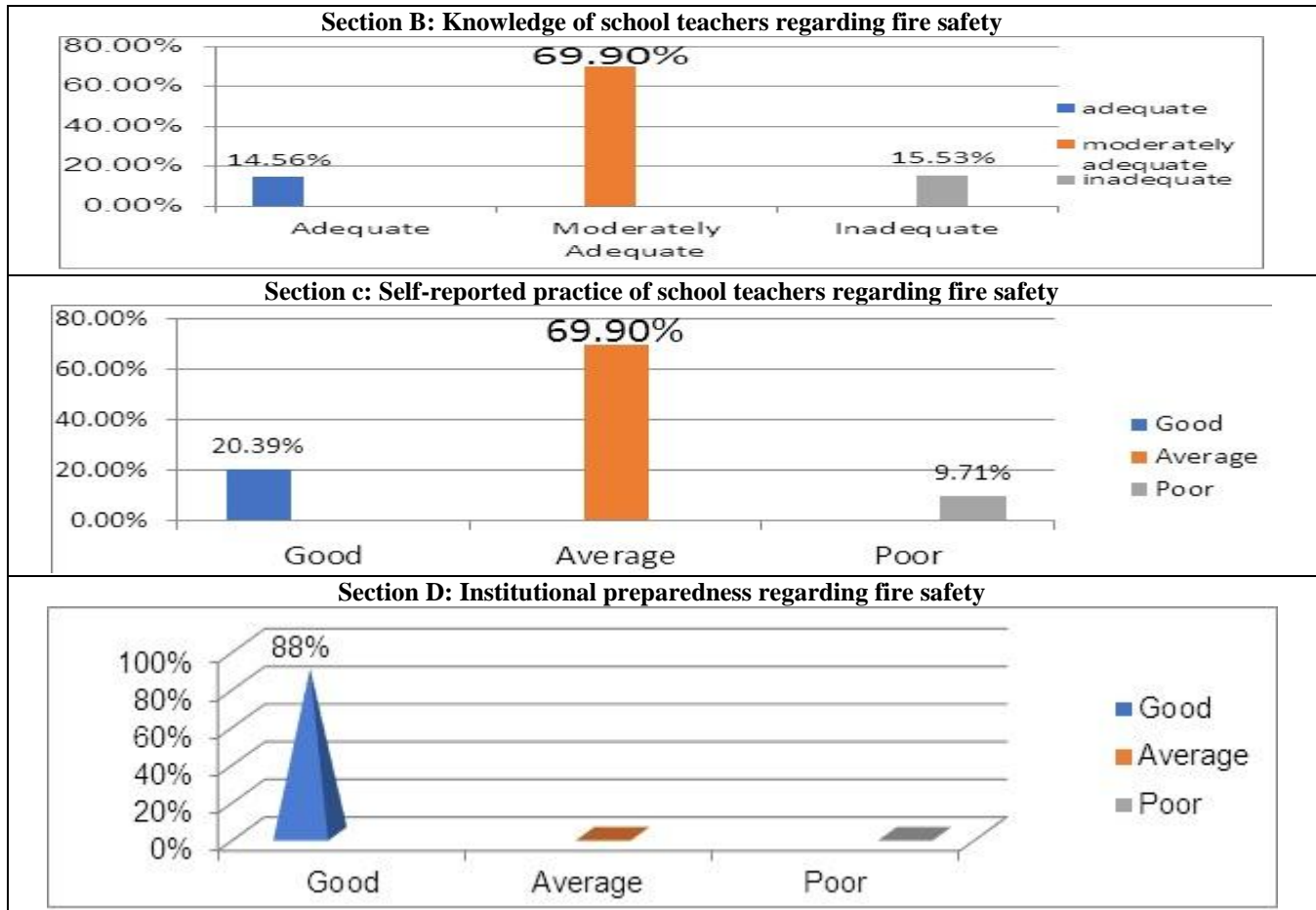
There is no association between age of the teachers and knowledge ($p=0.76$) and other baseline variables because teachers are not giving importance to update their knowledge on fire safety. Though there is no association between age of the teachers and knowledge, the mean value of the young teachers is higher 6.18 than the other teachers mean score of 5.81 which shows that the young teachers are more knowledgeable. As age grows the knowledge score is low. The young teachers are more active and update their knowledge and in line with the rules and regulations with the disaster management plan and being aware of the current scenario of the society and its changes.

There is no association between self-reported practice and the baseline variables like age, educational status, years of teaching experience, level of teaching, previous experience of witnessing a disaster etc. Though statistically not significant, the young teachers self-reported



practice mean (13.15) is higher than the older teachers mean (12.67). It shows that the knowledge increases the practice also. The teachers did not witness any disasters in the past since all are living in the city which has all the facilities available and they worked in the private schools which had the entire infrastructure and well maintained equipment and other facilities. The school management doesn't prioritize the necessity of the teachers to teach about the practical

aspect of life to the students. If the school management plans to have the disaster management plan of their own in each school, the practice of the teachers will improve. The management should understand the importance of fire safety committee and educate the teachers and students in order to create a society which will able to plan, prepare and prevent from disasters in the future.



CONCLUSION

School safety is very important concern. Every school and community must take it seriously and strive continually to achieve highest safety in schools. Every school is unique by virtue of its teachers, students, location and culture. Teacher's role is very important in mitigating the hazards and disasters in schools. The teacher who is aware of fire disasters and its management can improve the practices successfully. The management needs to be aware

of various laws and rules pertaining to the fire disaster management team and the National Building Code protocols. Sensitizing the teachers and students through fire drills every academic year and following the protocols of the Disaster Management Plan, having a safety committee in the school and encouraging the committee members to take active participation will bring down the occurrence of fires in the school and in turn it will help the students to safe guard themselves from the disasters.

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