Medical emergency knowledge assessment in a Malaysian special needs agency

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ABSTRACT

Introduction: In any medical emergencies, administration of first aid is crucial in saving lives especially when it comes to people with special needs as the consequences of a crisis to them is drastically amplified. As no credible data was found on the implementation and practice of standardized first aid specifically in agencies of special needs individuals in Malaysia, this has led to further investigation

Objective: To assess the knowledge level of medical emergency procedures among staff and volunteers of an agency catering to the needs of people with intellectual disabilities.

Method: A questionnaire titled "Assessment of Knowledge of Medical Emergency Procedures" was developed to assess the level of knowledge of medical emergency procedures or first aid among the staff and volunteers of Persatuan Kanak-kanak Istimewa Kajang (PKIK). The questionnaire was administered before and after a first aid workshop among 14 participants (n=14). The data obtained were analyzed.

Result: The median score for the total in the pre-questionnaire was 99 (68.8%), while the median score in the post-questionnaire was 123.5 (85.2%). Hence, there was an overall improvement of 24.5 (16.9%) in the median score before and after the first aid workshop. A high standard error (SE=3.870) in the pre-questionnaire showed that knowledge level was not consistent in each staff overall. After conducting the workshop however, the standard error reduced (SE=2.876) which indicate increased standardization in first aid knowledge amongst PKIK staff and volunteers.There was also an increase in the median score for the seizure and asthma subsection by as much as 7.5 (16.9%) and 6 (24%) respectively. Moreover, there was an increase in the mean scores for the unconsciousness 3.36 (14%) and injuries 5.42 (15.5%) subsection. Therefore, it can be concluded that there was an overall increase in knowledge among the participants after the first aid workshop is given as compared to before it.

Conclusion: The existing level of awareness of medical health emergencies among the staff in PKIK was quite high however with large variation in the knowledge level among the participants. The level of awareness increased significantly and the variation in the knowledge was reduced. A consistent level of first aid knowledge in each staff is ideal for adequate emergency care for special needs children in medical emergencies.

Keywords: First-aid workshop, asthma, injuries, special needs agency, emergency procedures

Introduction

In the event of an unforeseen medical circumstance, any first aid that can be administered immediately could be crucial in saving lives. Consequently, it is imperative that people including laypersons are properly equipped with practical first aid knowledge.[1] In emergency conditions, a lack of preparation could be detrimental to victims and may even result in death.[2] Therefore; experts extensively advocate adequate first aid training especially for laypersons, so that the initial reaction in such circumstances can be improved significantly.[3]

The need for proper and standardized training is much more vital in a community based environment such as schools or agencies dealing with people with special needs to deter avoidable mishaps.[4] Such awareness is profoundly implemented within certain schools in Western and certain developed Eastern countries.[5, 6] When a crisis occurs, the consequence to people with special needs could be drastically amplified.[7] This is substantially more crucial in the case of special needs' children.[8,9] 19% of the people in the United States of America, 50 million individuals, have a self-reported infirmity. The statistics from the census propose that, in the event of an emergency, at least one out of every six Americans is at an augmented jeopardy of injury or even fatality by virtue of their disability.[10] As the risk of fatality to people with special needs are greatly augmented, a standardized emergency medical protocol should be implemented in all schools and agencies dealing with people of special needs to reduce any mishaps from taking place. However, there is no proper evidence to show that this is being practiced in Malaysia. Emergency medical procedures are not made a necessity nor are there any form of law governing the implementation of standardized emergency medical protocols in agencies and schools dealing with people with special needs in this country. Therefore, this research is to gauge the level of standardized knowledge of medical emergency procedures using one agency, Persatuan Kanak-kanak Istimewa Kajang (PKIK) as an example.

PKIK is an agency that caters to the needs of people with intellectual disabilities. Its primary aim is to help this special group of people in their overall development and help them towards an independent life. PKIK has 50 special needs' individuals and 15 staff as well as volunteers.[11] Thus, it is of the utmost importance that the staff and volunteers are adequately equipped with practical first aid knowledge. In this research, a questionnaire entitled "Assessment of Knowledge of Medical Emergency Procedures" was developed to assess the level of knowledge of medical emergency procedures among the staff and volunteers of PKIK. According to

Rowland et al. in the Journal of Disability Policy Studies, standardized training for staff is essential to cater to the various needs of disabled people especially during emergency situations.[10]

Material and Method

The Assessment of Knowledge of Medical Emergency Procedures Questionnaire

Initially, the Assessment of Knowledge of Medical Emergency Procedures Questionnaire was developed. The questionnaire had a total of 42 questions. The first 4 questions were demographic questions and this was followed by 3 general questions to assess if they have ever had first aid training prior to this study. The subsequent 35 questions were further divided into 5 different main subtopics; 10 questions under fits/seizure, 6 under asthma, 6 under unconsciousness/fainting, 10 under physical injuries, and another 3 under the subtopic first aid kit. There were 5 dichotomous questions with a yes or no answer, 5 nominal questions to measure the frequency, and 28 ordinal scaled questions; a scale of 1 to 5, from strongly disagree to strongly agree. 10 reversed scored questions were included to get a more accurate measurement of medical emergency procedure knowledge. The questionnaire was originally created in English and was then translated into Malay and Chinese as well to prevent bias in data collection due to language barriers. The questionnaire was tested for validity and it was shown to have a good validity. The same questionnaires were used twice, as the pre-questionnaire and the post-questionnaire without any changes. Participants were required to answer all the questions and the scores were then calculated. The time approximated for the completion of the questionnaire was 15 minutes.

Data collection

On the first day, pre-questionnaires were given to participants who were staff and volunteers of PKIK. All teachers, administrative staff, supporting staff and volunteers were chosen to participate as they all contribute in handling an emergency as it is a small agency and there is very little manpower. There were initially 15 staff and volunteers but only 14 were selected to participate as there was one participant who fitted the exclusion criteria which was:

- Staff or volunteers who had a commitment of less than 2 months or does infrequent voluntary work of less than once a month on average.

All information regarding the participants was obtained from the management. The participants were first gathered in a room and briefed regarding the purpose of the research. The pre-questionnaire with the explanatory statement and consent form were then given. The explanatory statement and consent form were also provided in Malay and Chinese to aid those who lack proficiency in English. The session took place in a room with three separate sessions for the different groups of staff and volunteers, each lasting about half an hour. The pre-questionnaires were then collected back after each session prior to the first aid workshop, while the post-questionnaire were administered after the workshop was conducted. This research has been ethically approved by the Community Based Practice (CBP) committee of Monash University.

First aid workshop

A workshop was conducted a week from the date of the pre-questionnaire session. The workshop was carried out in two different sessions, two hours each and involved all 14 participants. The workshop focused on first aid procedures in handling seizure, asthma, unconsciousness and injuries that might take place in the context of PKIK. The workshop started with an oral presentation with the aid of power point slides and was followed by a hands-on session. There were 4 stations in the hands-on session, one each for cardiopulmonary resuscitation, choking, transportation and bandaging. Right after each session, the 14 participants were given post-questionnaire to be filled up and the questionnaires were collected back on the same day. This post-questionnaire was exactly the same as the pre-questionnaire. A workshop evaluation form containing 10 questions was also given to each of the 14 participants to evaluate the workshop.

Statistical analysis

The data gathered from the questionnaires were then parsed into SPSS version 18 for statistical analysis. The level of significance was set as $p < 0.05$. First, the mean and standard error of the subjects' total score were calculated. Wilcoxon signed-rank test was then used to compare the level of knowledge of participants prior to and after the workshop to see whether it is statistically significant. Average score was also calculated for each of the 4 subsections; paired T- test was used to calculate the mean score for unconsciousness and injuries while Wilcoxon signed-rank test was used to calculate the mean score for asthma and seizures. To compare mean scores between subgroups of subjects collected, different tests were used. Mann-Whitney test was used to verify if score is dependent on gender. Kruskal-Wallis test was used to verify if score is dependent on age of participant, number of years working in PKIK, and the role they play in PKIK.

Results

Demographics of Participants

Figures 1 and 2 represents the age and the duration of service of staff and volunteers of PKIK involved in this study. Out of the 14 respondents, the median age of the participants is 48 years with average of 53 months working in the agency. The majority of the participants were females (64.3%) and teachers (42.9%).

Frequency of the Main Incidences

Among the 14 respondents, 7 (50%) claimed that there are no incidents of seizure had occurred in a week in PKIK while the other 7 (50%) claimed that the incident occurs 1 to 2 times per week. In relation to asthma, 13 (92.9%) respondents claimed that there are no incidents of asthma in a week and only 1 (7.1%) respondent claimed that there are 1 to 2 incidents per week. This is also true for unconsciousness. On the other hand, 7(50%) respondents claimed that there are no incidents of injury in a week, 6(42.9%) respondents claimed injuries occurs 1 to 2 times

per week and only 1 (7.1%) respondent claims that injuries occurs at the frequency of 3 to 4 times per week. The frequency of incidences are based on the staff and volunteers past experiences during service in PKIK.

Knowledge Evaluation of the Participants

Overall the data distribution for the pre-questionnaire is skewed while the data distribution for the post-questionnaire is not skewed. In Table 1, the average difference of the scores from the mean score on the overall is higher in the pre-questionnaire. (Standard error of mean=3.87) than the post-questionnaire (Standard error of the mean=2.87). On the other hand, the median score for the total in the pre-questionnaire is 99 (68.8%), while the median score in the post-questionnaire is 123.5 (85.2%). Hence, there is an overall improvement of 24.5 (16.9%) in the median score between before and after the first aid workshop. In addition, subsection analysis has also been done separately for seizure, asthma, unconsciousness and injuries, which show that there have been increases in the scores generally. The increase in the median score for the seizure and asthma subsection is as much as 7.5 (16.9%) and 6 (24%) respectively. The median scores are compared for the above-mentioned sections due to the skewed data distribution. However, there is an increase in the mean scores for the unconsciousness (3.36(14%)) and injuries (5.42 (15.5%)) subsection. Therefore, it can be concluded that there is an increase in knowledge among the participants after the first aid workshop is given as compared to before.

Overall, the result of the Wilcoxon Signed Rank test shows a significant increase of knowledge in medical emergency procedures among the staff and volunteers in PKIK after the first aid workshop as compared to before the workshop (p-value < 0.05). In addition, the questionnaire has been categorized into 4 subsections and analyzed separately as stated in the methods section, the following results for each category has been discovered and shown in Table 1:

a) Seizure

It shows that the increase in knowledge of medical emergency procedures using the Wilcoxon signed rank test for this subsection from before to after the first aid workshop is insignificant. (p-value =0.05)

b) Asthma

In this subsection, the increase in knowledge of medical emergency procedures is significant from before to after the first aid workshop using the Wilcoxon Signed Rank test (p-value<0.05).

c) Unconsciousness

The analysis of this subsection using the Paired t-test shows that the increase of knowledge in managing an unconscious victim before and after the first aid workshop is significant (p-value< 0.05)

d) Injuries

Paired t test was also used in this subsection for analysis and it shows that the difference in the increment of knowledge in medical emergency procedures dealing with injuries before and after the first aid workshop is significant. (p-value<0.05)

Association between the participants' demographics and median score.

There was no significant association found between gender, role in PKIK, age and duration of service in PKIK and the median score.

Discussion

It is particularly important to be aware of the emergencies that could occur in any institution and be able to respond promptly towards it. Hence, it would require the staff and volunteers to be equipped with correct and accepted fundamental knowledge in handling such medical emergencies. The knowledge tested consists of basic first aid situations, which is normally given to laymen. Hence, the depth of the knowledge tested is at a surface level as they are not expected to treat the victim but only to provide emergency aid until further assistance arrives. Moreover, the knowledge and skills tested is not as advanced as it would be to obtain a license to practice as a paramedic.[12]

According to the results, the staff and volunteers in PKIK have substantial pre-existing knowledge in dealing with common emergencies that occur in that institution. The pre-existing knowledge could be attained from previous experiences dealing with an emergency; knowledge passed informally to the staff and volunteers or acquired knowledge regarding first aid from previous formal training. In addition, the knowledge of first aid tested is very basic and does not require high levels of cognition and skills to answer. However, this knowledge could be improved in order to be well-prepared for a medical emergency. For this purpose, the workshop was conducted to transfer a level of knowledge considered sufficient regarding first aid procedures among the staff and volunteers. A workshop was a preferred method of information transfer as it is an effective way to train a layperson in first aid.[13] Knowledge in first aid among the staff and volunteers increased significantly after the first aid workshop was given proving that they can better prepare themselves in dealing with medical emergencies. According to the workshop evaluation form, overall the first aid workshop itself was well received by PKIK staff and they generally found it helpful and would like it once annually. (Data not included)

In addition, the distribution of the total score obtained by the participants is skewed for the pre-questionnaire due to the difference in the level of knowledge in basic first aid in each participant. For example, a physiotherapist who has been formally trained in first aid had obtained nearly perfect score while the other participants scored much lower. This skews the distribution of the scores on the overall. However, the workshop managed to provide a standard training to every participant in basic first aid, which brought the overall score of each participant much closer to the mean score and made the data distributed normally which is shown in the post-questionnaire.

In assessing awareness of frequency of incidences throughout the staff's attachment within the agency, there have been uncertainties in the awareness of incidences of seizure in PKIK with half

of the population of staff and volunteers reported that there are no incidences when there have been a number of cases of seizure in the premises of PKIK as reported by several staff, teachers mainly. This could be due to the geographical isolation of the premises in PKIK into 4 separated buildings, which could play a role in the staff's and volunteers' lack of awareness in the frequency of incidences. The lack of awareness is also due to incidences of medical emergencies having not been recorded in PKIK. This is unfortunate as there are guidelines that advocate day care centers to record the date, time, the person affected, symptoms and their response in an emergency incident that occurred.[14] Even so, the staff and volunteers have a good pre-existing knowledge in the emergency management of seizure attacks. The first aid workshop has not produced any significant effects in terms of seizure management. The good pre-existing knowledge is due to the efforts of the PKIK management to educate the staff and volunteers regarding seizure attacks with the usage of guidelines pasted on the walls of most of its premises. The effort was made due to the awareness of frequent seizure attacks among disabled individuals in PKIK.

On the other hand, a high frequency of injuries was expected among mentally challenged people. This is supported by several studies that prove people with special needs are more prone to injuries compared to the non-disabled.[15-17] However, there are uncertainties of awareness in the frequency of occurrence in injuries among the staff and volunteers. This could be attributed to the variable perception of individuals regarding severity of injuries and this may influence their judgment of reporting it as an injury. For example, certain individuals could disregard a minor cut as an injury. There is pre-existing knowledge of injury management which could be made better with the help of a first aid workshop. This is because the incidences of injuries in PKIK are mainly minor injuries such as bruises or cuts and there is a gap in knowledge in handling major injuries or other forms of uncommon injury such as burns and fractures.

Pre-existing knowledge regarding asthma management is present, despite asthmatic attacks being infrequent among special needs people in PKIK, as claimed by participants. This could be due to the disease being very common in the world including Malaysia with increasing prevalence worldwide. [18—21] Hence, efforts have been made by professional bodies such as Asthma Council Malaysia to educate the public regarding the disease.[22] This could explain the pre-existing knowledge in asthma management among PKIK staff and volunteers.

On the other hand, knowledge of unconsciousness management is lower than the other 3 areas analyzed most probably due to the very low frequency of occurrences as claimed by the respondents.

Association between Participant's Demographic and Score

Prior to conducting the questionnaire, it was expected that staff and volunteers that were either older, served longer in PKIK, or carried out a role with more direct contact with occupants such as teachers would score better in the questionnaire prior to the workshop. However, age, occupational role and duration of service in PKIK all did not show associations with scores obtained.

Limitations of the Study

One of the main limitations of this survey was the small sample size. A larger sample size should be obtained by including other special needs' centers into the research. However, due to time and resource constraints, the sample size in this research could not be expanded. Moreover, the entire population of staff and volunteers were included in this project with the exception of one participant who met the exclusion criteria.

Another limitation was the existence of a language barrier during the workshop that was conducted. In view of this, a translator should be present during workshops to translate the information into various other languages to meet the needs of such participants.

Conclusion

The results obtained from this research showed that there was a significant increase in the level of awareness of medical emergency procedures among the staff and volunteers in PKIK after the workshop. Moreover, there was a standardized similar knowledge in dealing with medical emergencies among the staff and volunteers. As such, this research which was done in this small agency can be further developed and implemented in other similar agencies of Malaysia as part of improving the Occupational Safety and Health.

Conflict of Interest: None declared.

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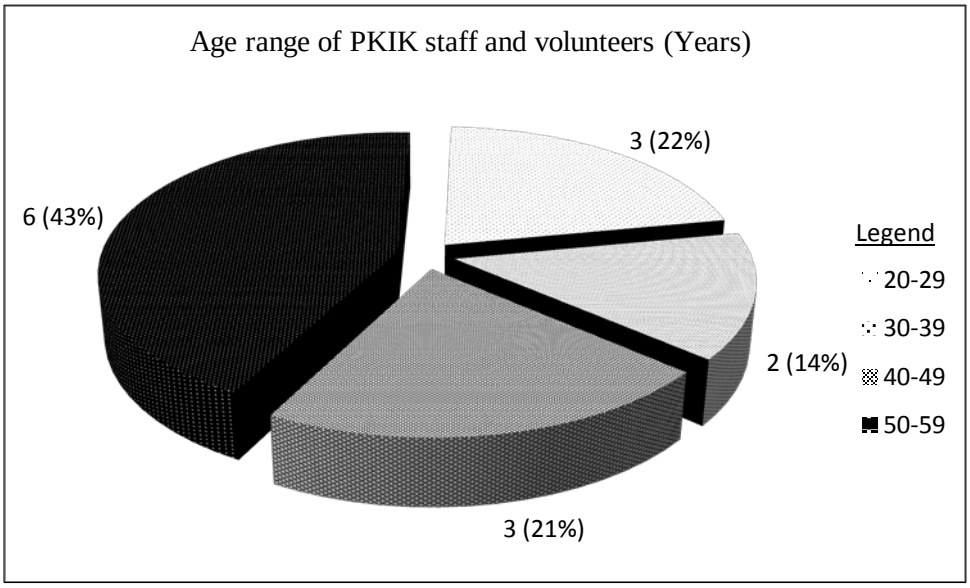

Figure 1: Age range of PKIK staff and volunteers in years

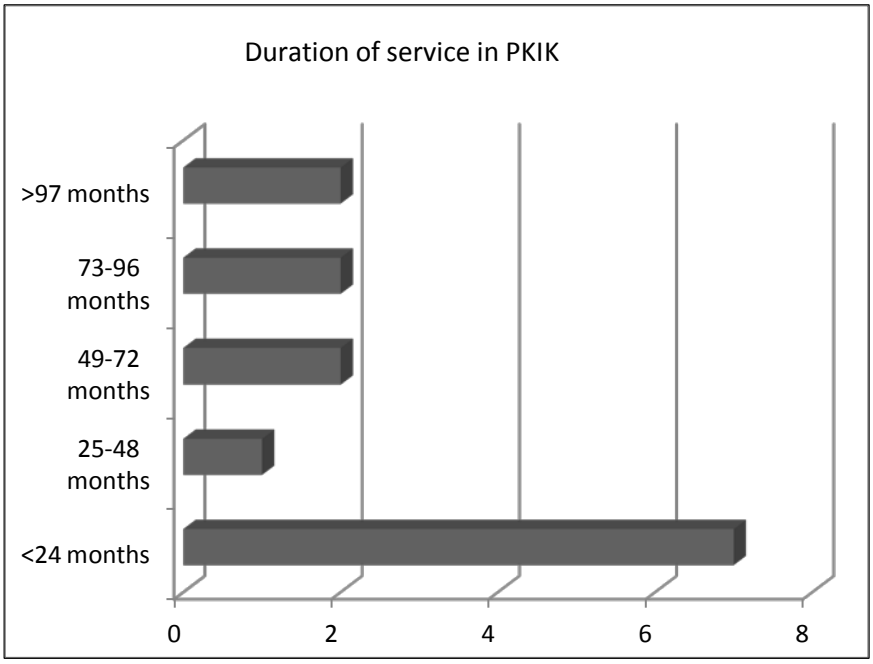

Figure 2: Duration of service of staff and volunteers in PKIK in months

Table 1: Statistical Analysis for the pre and post questionnaire for the Total, Seizure, Asthma, Unconsciousness and Injuries

Subtopic	Total Score (T)	Questionnaire	Mean Score (A)	Std Error of Mean	Std Deviation	Median Score (B)	Difference in mean score (Post A-Pre A)	Difference in median score (Post B-Pre B)	P-value Sig. (2 tailed)
Seizure	45	Pre	36.79	1.331	4.980	35.50	3.71 (8.25%)	7.50 (16.9%)	0.050
		Post	40.50	1.417	5.302	43.00			
Asthma	25	Pre	17.57	1.175	4.398	17.50	4.86 (19.4%)	6.00 (24.0%)	0.003
		Post	22.43	0.739	2.766	23.50			
Unconsciousness	24	Pre	14.71	0.766	2.867	14.50	3.36 (14.0%)	2.50 (10.4%)	0.002
		Post	18.07	0.963	3.605	17.00			
Injuries	35	Pre	24.79	1.372	5.132	24.50	5.42 (15.5%)	6.50 (18.6%)	0.005
		Post	30.21	0.956	3.577	31.00			
Total	145	Pre	103.21	3.870	14.482	99.00	19.86 (13.5%)	24.50 (16.9%)	0.001
		Post	123.07	2.876	10.759	123.50			