

KNOWLEDGE OF KINTA DISTRICT NURSERY STAFF IN IDENTIFYING AND MANAGING COMMON EMERGENCIES AMONG PRE-SCHOOLERS

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About the authors

This study was conducted as a joint initiative between the Clinical Research Center and a regional Paediatric Department in the administrative area of Perak, Malaysia. The focus of the team was to study current paediatric public health issues in the community.

Public interest statement

What is known about this topic

Nurseries are places where parents leave their children to gain an early education. They entrust the teachers with the safety of their children. There have been similar studies conducted in the United States and other Asian regions, but there was very little information about studies conducted in Malaysia. Most studies around the world report that the knowledge of teachers ranged from poor to moderate.

What this study adds

Nursery teachers are able to successfully diagnose emergency conditions but their first aid skills were poor. The poor skills needs to be addressed and among the effective ways as found in this study was to display algorithms.

Classification & Keywords

Paediatrics, Public Health, Nurseries, Knowledge, Nursery teacher, common emergencies, preschoolers, drowning, choking, head injury, fracture, poisoning, seizure

Funder Information

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Competing Interests

The authors have no competing interest to declare.

Abstract

Introduction and Objective

Common emergencies faced at nurseries are drowning, choking, head injury, fracture, poisoning and seizure. The aim of this study was to assess the knowledge of nursery staff in identifying and managing common emergencies among preschoolers.

Methodology

This study was a cross-sectional study conducted from November - December 2014 intending to sample all Kinta district nurseries looking after children between the ages of 2-4 years- 81 were registered. The researchers had telephoned each nursery to make an appointment to come and conduct a health survey. Upon arrival, the researchers had surveyed the

nurseries for relevant algorithms displayed and the presence of a first aid box. They then conducted an interview with the most senior teacher working in the school who consented and fulfilled the inclusion criteria of being above the age of 18 and working > 6 months at any nursery. The researchers marked the responses of the participants in a standardized validated first check list. The results from the interview were used to evaluate the diagnosis identification and knowledge of nursery staff. Each correct response was given 1 point regardless of the sequence and 0 for not mentioning the step. The nursery's teacher knowledge was then graded according to "good knowledge" (able to get all steps right according to sequence), "average knowledge" (able to get all the steps right but not according to sequence) or "poor knowledge" (unable to provide all steps regardless of sequence). The "poor knowledge" category was further subdivided into 2 subgroups- one that obtained <70% of the steps and the other that obtained more than 70% of the steps- all regardless of the sequence. Data collected was then entered into SPSS version 20 for data analysis.

Results

The number of registered nurseries at Kinta was 81 but only 42 nurseries consented to participate. Most participants (n=40, 95.2%) were able to diagnose poisoning, fractured arm and choking correctly and only 29 (69.00%) diagnosed head injury correctly. Teachers overall scored within the poor knowledge category. The drowning, seizure (1 individual each) and choking (2 individuals) scenarios had answered 70% or more steps correctly. The mean overall score percentage for each scenario in descending order was choking at 42.86% (SD:16.52) followed by drowning at 39.46% (SD:11.29), 38.10% (SD:8.62) head injuries and 38.10% (SD:14.34) for fracture of the arm respectively, poisoning 25.60% (SD:11.70) and seizures with 12.30% (SD:11.82). A chi-square to show the relationship between the availability of algorithms in the nursery and the teacher's knowledge showed significance ($p < 0.05$). There was no significance comparing working experience, previous first aid training and past duration of first aid training with knowledge.

Conclusion

This study has shown that the knowledge of nursery staff in managing common pediatric emergencies was poor. Staff were able to diagnose most emergencies correctly but were not able to institute the necessary urgent steps to support the child under their care. This deficiency in skills needs to be addressed.

Keywords

Knowledge of Nursery teacher, common emergencies, preschoolers

NMRR-14-1325-23089

Introduction

Injuries during childhood are the leading cause of morbidity and mortality in worldwide (F. Li, Sheng, Zhang, Jiang, & Shen, 2014). Common cause of death among children below the age of 14 in Malaysia are caused by injury (Ismail, 2014; MPA, 2005). United States (US) statistics show injuries claim the lives of 25 children every day. Drowning, falls, poisoning, suffocation from choking, and transportation-related injuries are common causes of fatal and non-fatal unintentional childhood (Prevention, 2012). Other than that, injuries in the US occurring to pre-school aged children is responsible for nearly half of all deaths in the pre-school age group. Even in China, injuries among children results in the following mortality rates: 1/3 of deaths among children aged 1 - 4 years of age and 1/2 of all deaths in children between 5 - 9 years of age. About 40.4 % of common accident places are at schools and playgrounds (Feng Li, Jiang, Jin, Qiu, & Shen, 2012).

The *Oxford Dictionary* (p. 227.), defines knowledge as a skill acquired through experience or education. Emergency is defined as a serious, unexpected, and often dangerous situation requiring immediate action ("Oxford English Dictionary," 2007). Therefore, knowledge and skills in dealing with paediatric emergencies are important for nursery staff (Olympia et al., 2010; Olympia, Wan, & Avner, 2005). The response time to an emergency situation is critical, but first aid provided must be performed properly and correctly to prevent further harm to the child and perhaps even potentially save a life (Junkins et al., 2001). In nurseries, the person closest to the child and the first to apply first aid is often the teacher" (F. Li et al., 2014). Hence, knowledge of nursery staff in identifying and managing common emergencies among preschoolers are essential.

Nurseries are defined by the *Oxford Dictionary* (p. 273) as a place where young children and babies are taken care of while their parents are at work ("Oxford English Dictionary," 2007). Nurseries provide care and education to children between ages 2 - 4 years of age. Our consideration for a nursery is where the nursery has a balanced system of providing education and activities (ie playtime) to the students. "Early Childhood Care and Education in Malaysia is broadly divided into two

main groups, which are for the 0-4 year olds and the 4-6 year olds. Various names are given to preschool education in the local language, e.g. the MOE's pra-sekolah, Tabika, Tadika, and private nurseries" (Malaysia, 2007). Resource from the Welfare Department / State Health Department (JKN Perak; 2010) shows there are 42 legally registered Nurseries within the Kinta District that can be used within our sampling frame.

Nowadays, most of working parents send their children to nurseries from as early as 3 months of age for care and education while they pursue their working carriers the whole day (F. Li et al., 2014). Parents tend to take it for granted as they expect the nursery to be a safe place for their child.

There were no published local data known to the researcher. From the previous foreign research, it is found that there are still many nursery staffs do not have a deeper knowledge in identifying and managing common emergencies among preschoolers. In a study done by (Feng Li et al., 2012) on pediatric first aid knowledge and attitudes among staff in the preschools of Shanghai, China involving 1067 subjects, only 39 individuals from a total of 1067(3.7%) achieved passing scores.

Our research question is: Do the senior nursery teachers within Kinta district know how to identify a pediatric emergency and perform adequate first aid treatment? The researchers feel that the Nursery teachers within the Kinta district have little or limited knowledge in identifying pediatric emergencies and providing first aid treatment. To the researcher's knowledge, such a study has not been performed or published in Malaysia. This research will add on to the pre-existing knowledge of public health medicine and suggest improvement to health managers.

Our hypothesis of us study is nursery teachers within the Kinta district have little or limited knowledge in identifying pediatric emergencies and providing first aid treatment. Therefore, we feel it is important to assess knowledge of nursery staff in identifying and managing common emergencies among preschoolers. Subsequently, the researchers will (if found suitable) suggest to health care managers on the importance of providing first aid knowledge to nursery teachers based on the knowledge obtained from this research. With this in mind, it had prompted the researchers to select this topic to be researched on. The reason the Kinta District was chosen is because it was convenient for the researchers to sample nurseries from this region (logistics) and also because Kinta is known to be the 2nd biggest district in the country- findings for this study might be similar to those of other districts around Malaysia.

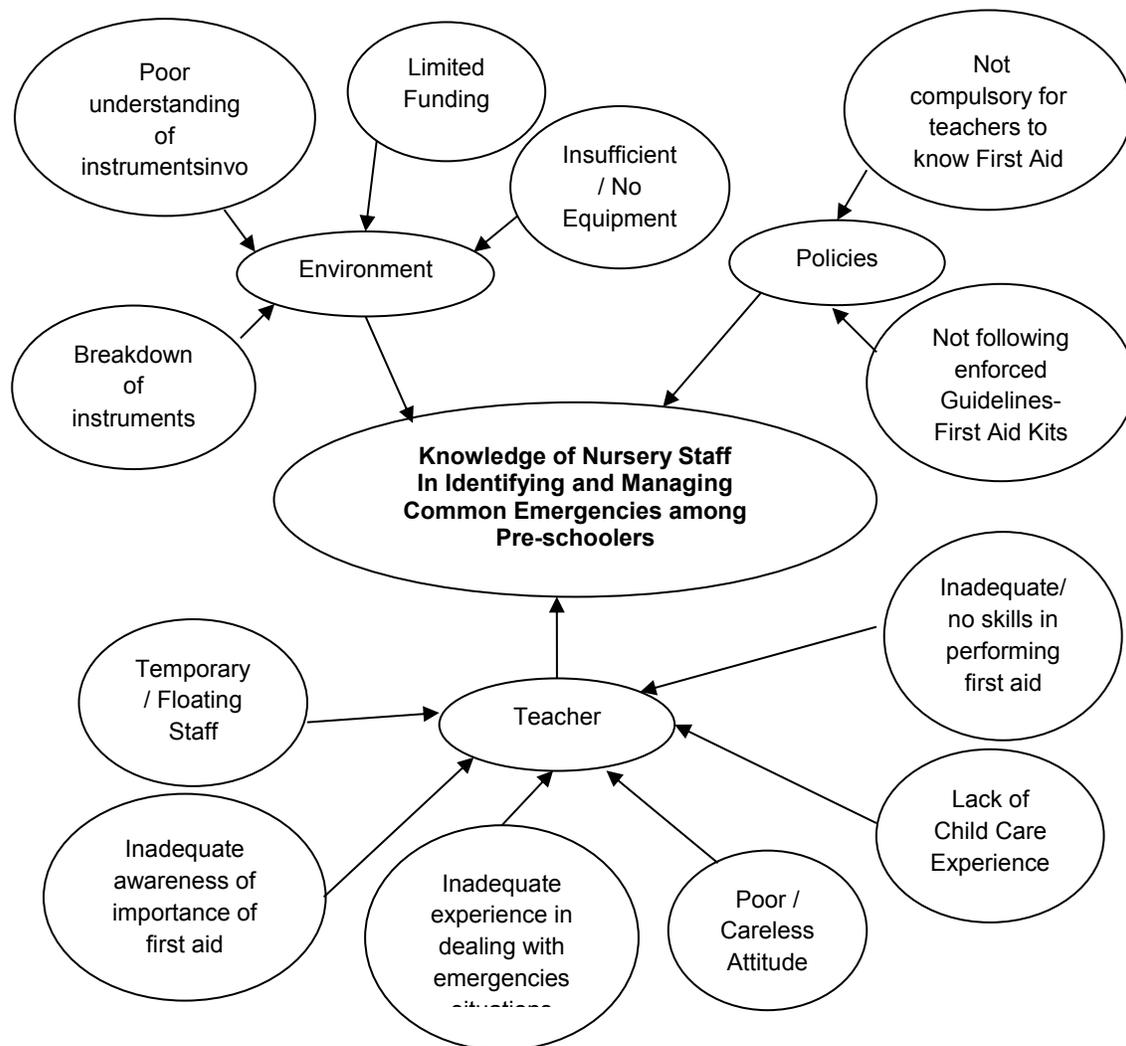


Figure 1: Problem Analysis Chart of the study

Based on our literature search we can summarize that there are 3 factors affecting the knowledge of the nursery teachers: which are environment, nursery and lastly the teachers. Breakdown of teaching instruments, poor understanding of instrument usage, insufficient / no instruments for teaching and limited funding contributed to the environment factor. Not following enforced guidelines (like having first aid kits) and not making it compulsory for nursery teachers to attend first aid courses are among the important policies factors that affects the knowledge of nursery staff. There are multiple factors contributing to the teacher's knowledge. One of the factors contributing to this is temporary or floating job- some teachers may not take interest in their jobs as they eye for another job. Apart from that many of teachers have inadequate awareness of the importance of first aid. The rest are lacking in experience dealing with emergency situations. Some teachers may have a poor and careless attitude towards knowledge in identifying and managing common emergencies among pre schoolers. There are a few teachers with no proper prior child care experience and some with either having no or inadequate first aid skills that lead to poor knowledge.

Objectives

Primary objective:

To evaluate the knowledge of nursery staff in recognizing and managing common emergencies in children.

Secondary objectives:

1. To evaluate nursery staff's knowledge on the recognition and management of common emergencies in children including:
 - a. Choking
 - b. Poisoning
 - c. Seizures
 - d. Trauma- Head trauma and Simple fractures
 - e. Drowning
2. To evaluate prior training of nursery teachers and availability of emergency treatment guidelines at the nursery
3. To make recommendations on health education needs for nursery staff regarding childhood emergencies.

Methodology

Overview of research design

This study was a cross-sectional study that conducted from November till December 2014. All nurseries within the Kinta district looking after children between the ages of 2-4 years were included within this study. The researchers had contacted the Welfare Department / State Health Department (JKN Perak) to obtain a list of all the registered nurseries looking after 2-4 year olds in Kinta district. They were provided with a list that was produced in 2010 via a website. The number of nurseries registered with the Welfare Department in Kinta district is approximately 37 in 2010. Upon getting more information, it was noted that there were 42. Upon further surveying- the latest number was 81. The participants of interest were the most senior teachers in the respective nurseries who have been teaching for the last 6 months.

The researchers obtained the official telephone contact for each nursery of interest. They called up the nursery to find out if they were still operational and looking after toddlers between the ages of 2-4. The researchers also asked on the operational hours of the nursery to identify the suitable days and hours for them to approach the nurseries- this was done without informing the nurseries that they were about to undergo a first aid knowledge assessment. The researchers also ensured that any nurseries within the radius of 500m of each other were visited on the same day to avoid communication and details transfer between teachers alerting them of our study.

The researchers called up the nurseries of interest and set an appointment for a school visit citing that there will be a short interview with the most senior teacher regarding health issues. The teachers approached by the researchers at their respective nurseries for a one-on-one interview which lasted no more than 30 minutes.

They asked for consent to participate in the study. Those who declined to participate, the next most senior teacher within the school was approached and so long that they fulfilled the inclusion criteria, they were approached. Once the potential participants had been briefed on the study, they were asked to sign the informed consent form. Once signed, the process of data collection from the participant begun. The demographic data was recorded by the researcher with the participant providing only verbal responses. Printed sheets of paper describing the following emergencies were given to the participants:

- I) Drowning
- II) Choking
- III) Trauma- Head trauma and Simple fractures
- IV) Poisoning
- V) Seizures

(All scenarios were based on basic clinical signs and symptoms of the particular diagnosis)

The participants were then asked to provide a possible diagnosis for the 6 different emergency scenarios. Had the participant got the diagnosis wrong, they were informed on the correct answer immediately. The participants were asked to provide the possible first aid management that should have been given to the child in that particular scenario. The participant's verbal responses were marked on a standardized validated First Aid check list (Cross, 2014). The participants were assessed if they performed the basic and important steps and according to sequence. The number of steps equaled to the total score for the scenario. Each correct response was given 1 mark and an incorrect response was given 0 marks. Each scenario had a different total- Drowning: 7, Choking:6, Head Injury:5, Fracture:7, Poisoning:8, and Seizures: 12. The researchers also intended to capture the sequence described by the participants to identify if they are performing the First Aid according to importance. After completing all 6 scenarios, the researcher verbally informed the participant on what is the appropriate first aid approach for each of the situations given.

After the data collection, the researchers also asked the teachers if they had any read-to-read algorithms to follow as a guide during the event of an emergency- one available at the nursery. These were inspected. The researchers were also keen to know if the teachers had ever attended a first aid certification course.

The nursery were then given a standardized picture algorithm for all 6 tested scenarios (the algorithm obtained from (Cross, 2014) as a guide on how to properly and appropriately manage pediatric emergencies in future.

The researchers then grade the teachers accordingly as follows:

- a) Good knowledge – able to get all steps right according to sequence
- b) Average knowledge – able to get all the steps right but not according to sequence
- c) Poor knowledge- unable to provide all steps. This category was further subdivided into 2 groups- one group that got <70% of the steps (regardless of sequence) and one group that obtained more than 70% of the steps (regardless of sequence)

A pre-test was done by the researchers before the conduct of the study. 5 office staff (with no clinical experience/ exposure) were selected for the pre-test and shortcomings with the questionnaire were identified and amendments were made accordingly.

The full flow of data collection and methodological process can be seen in the figure 2 below.

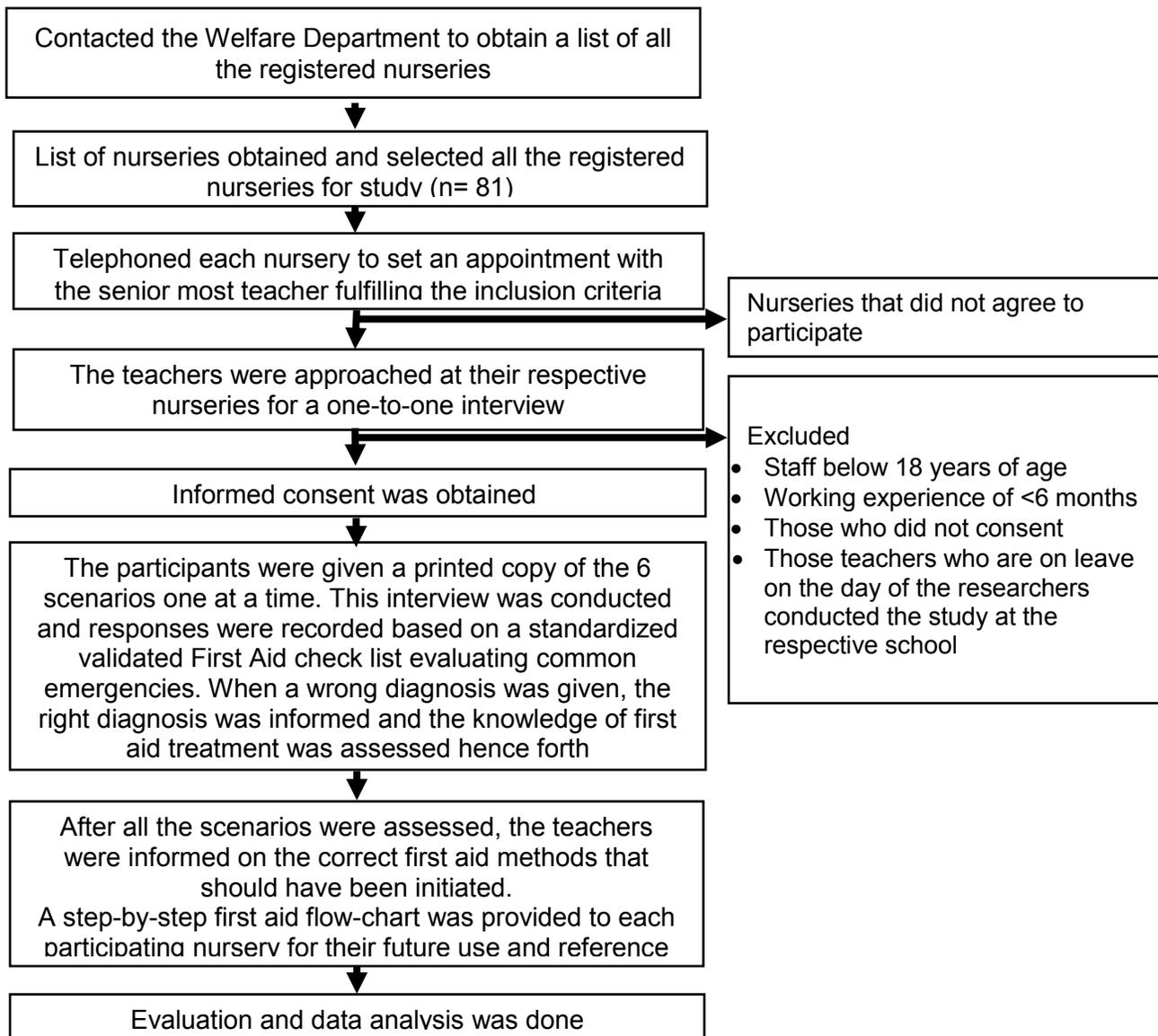


Figure 2: Methodology flow chart of the study design (HSS, Bakar, & Sararaks, 2011)

Ethical Consideration

The researchers applied for ethical approval from the National Medical Research and Ethics Committee (MREC) of the Ministry of Health Malaysia via the National Medical Research Registry (NMRR). All responses were confidential, and no unique identifiers were recorded. Respondents were allowed to refuse participation in this study. Each nursery were given a unique code numbered from 001 – 081, however the codes matched to particular nurseries were only made known to the researchers (recorded on a master list and destroyed after the study). The names of the interviewed nurseries and the respondents will not be disclosed in respect for the participant's confidentiality. Data in the results section and future presentations will not identify individual participants/nurseries.

The participants were provided with the correct and proper management of the emergencies after the interview and the nurseries were given a standardized pictorial guide to approach the emergencies (Cross, 2014) for future use. Algorithms can be downloaded at: <http://www.crc.gov.my/wp-content/uploads/2016/11/algorithms2.pdf> (CRC(Perak), 2016)

Data acquisition

Data was collected by the researchers via using a standardized and validated checklist from the British Red Cross Society (2014) for lay persons. We developed 6 scenarios with our local paediatricians for the following scenarios: Drowning, Choking, Seizures, Head Injuries, Simple Fracture and Poisoning. Data was collected via a one-to-one interview. The researchers first got an informed consent from the participant. Once the participant agreed to participate, their basic demography of age, sex, years of working experience, previous history of first aid training and the availability of a first aid kit within the nursery was enquired. Then the researchers provided each scenario (printed on a piece of paper) to the participant. They were given 2 minutes to read the scenario and they were not allowed to refer to any other materials that might assist them with answers. They were then asked on the diagnosis described in the scenario and then their step-by-step management of the emergency. Their responses were marked by the researcher on the validated checklist. After all 6 scenarios were assessed, the researchers went through the correct steps of each scenario and provided the nursery with 6 diagrammatic first aid algorithms (all scenarios tested on) to guide them during an emergency. The first aid algorithms provided were adapted from the British Red Cross Society manual. SPSS v.20.0 software was used for data analysis.

Outcome measures

Primary Outcome

Our primary outcome is to categorize the respondents' knowledge for each scenario into the following categories:

- 1) Good knowledge- participants are able to diagnose the emergency correctly, mention all first aid steps in sequence
- 2) Average knowledge- participants are able to diagnose the emergency correctly, mention all first aid steps but not in sequence
- 3) Poor knowledge - participants are unable to name all steps required for the first aid emergency in the scenarios regardless of getting the diagnosis right or not in sequence. This category is further divided into 2
 - A. Those who got $\geq 70\%$ of the steps right
 - B. Those who got $<$ than 70% of steps right

Ethical considerations

An ethical approval from the National Medical Research Registry (NMRR) and the Medical Research Ethical Committee (MREC) was obtained before the start of this study. No nurseries or teachers that participated in this study were identified in any way. All participants were asked for an informed consent before they were recruited into the study- they had an option to reject participation into this study. The participants were provided with the correct and proper management of the emergencies after the interview and the nurseries were given a standardized pictorial guide to approach the emergencies (Cross, 2014) for future use.

Results

Sample recruitment & Response rate

From the 81 nurseries, only 42 (51.9%) agreed to participate in this study. Among all the nurseries that participated, most of the originated from Ipoh and Ulu Kinta and those who did not consent were mostly from the Ipoh area.

Socio-Demographic Information on Nurseries

All nurseries interviewed were privately owned and governed. From the 42, only 1 nursery had no equipped first aid kit. One school from the 42 had all the scenarios algorithms displayed at their nursery. Most nurseries had no emergency first aid algorithms displayed at their nurseries. Only 3 (7.10%) of the nurseries had either drowning, head injury or seizures algorithms and 4(9.50%) had the choking and fracture algorithms.

Table 1: Characteristics of nurseries

Characteristics		Number n = 42(%)
Type of nursery ownership	Private	42 (100.00)
	Government	0 (0.00)
Does the nursery have an equipped first aid kit	No	1 (2.40)
	Yes	41 (97.60)
Does the nursery display an algorithm for drowning	No	39 (92.90)
	Yes	3 (7.10)
Does the nursery display an algorithm for choking	No	38 (90.50)
	Yes	4 (9.50)
Does the nursery display an algorithm for head injury	No	39 (92.90)
	Yes	3 (7.10)
Does the nursery display an algorithm for fracture	No	38(90.50)
	Yes	4 (9.50)
Does the nursery display an algorithm for seizure	No	39(92.90)
	Yes	3(7.10)

Socio-Demographic Information on Respondents

All participants that participated in this study were Malaysian citizens with a mean age of 36.74 (SD: 10.544). Of the 42-16 (38.10%) of them aged 41 and above, 13 (31.00%) aged between 18-30 and 13 (31.00%) aged between 31- 40. Majority of participants were from the Malay ethnicity 27 (64.30%). 22 (52.40%) of the teachers had completed Secondary school, 19 (45.20%) had completed Tertiary education and 1 (2.40%) had completed Primary school. Most of the participants (14, 33.30%) had already been in service from 1-4 years and 5-9 years category from the 42 participants, 29 (69.00%) had prior first aid training before the conduct of this study. 13 (31.00%) of the participants had no prior first aid training and 16 (38.10%) had training between 2-5 years ago. Detailed results are tabulated in table 1.

Table 2: Characteristics of participants

Characteristics		Number n = 42 (%)
Citizenship	<i>Malaysian</i>	42 (100.00)
Age category	<i>18-30</i>	13 (31.00)
	<i>31-40</i>	13 (31.00)
	<i>41 and above</i>	16 (38.10)
Race of respondent	<i>Malay</i>	27 (64.30)
	<i>Chinese</i>	9 (21.40)
	<i>Indian</i>	5 (11.90)
	<i>Others</i>	1 (2.40)
Highest education achieved	<i>Primary</i>	1 (2.40)
	<i>Secondary</i>	22 (52.40)

	<i>Tertiary</i>	19 (45.20)
<i>Service duration</i>	<i>< 1 year</i>	2 (4.80)
	<i>1 - 4 years</i>	14 (33.30)
	<i>5- 9 years</i>	14 (33.30)
	<i>10 and above</i>	12 (28.60)
<i>Had prior First Aid training</i>	<i>Yes</i>	29 (69.00)
	<i>No</i>	13 (31.00)
<i>Months ago having First Aid training</i>	<i>No First Aid training</i>	13 (31.00)
	<i>1 month - 1 year</i>	4 (9.50)
	<i>2 - 5 years</i>	16 (38.10)
	<i>6 – 10 years</i>	7 (16.70)
	<i>More than 10 years</i>	2 (4.80)

Results section 2

Table 2: Scenario diagnosis and overall mean scoring.

Scenario	Gave right diagnosis		Total possible score <i>n</i>	Mean Overall score for scenario management <i>Mean (SD)</i>	Mean % of Overall score* <i>Mean (SD)</i>	Knowledge assessment (Poor knowledge)	
	<i>No n (%)</i>	<i>Yes n (%)</i>				<i>≥70% n(%)</i>	<i>< 70 n(%)</i>
Drowning	5 (11.90)	37 (88.10)	7	2.76 (0.79)	39.46 (11.29)	1 (2.40)	41 (97.60)
Choking	2(4.80)	40(95.20)	6	2.57 (0.99)	42.86 (16.52)	2 (4.80)	40 (95.20)
Head Injury	13(31.00)	29(69.00)	5	1.90 (0.43)	38.10 (8.62)	0 (0.00)	42 (100.00)
Fractured arm	2(4.80)	40(95.20)	7	2.67 (1.00)	38.10 (14.34)	0 (0.00)	42 (100.00)
Poisoning	2(4.80)	40(95.20)	8	2.04 (0.93)	25.60 (11.70)	0(0.00)	42 (100.00)
Seizure	4(9.50)	38(90.50)	12	1.41 (1.41)	12.30 (11.82)	1 (2.40)	41 (97.60)

*The mean percentage overall score was calculated using SPSS by taking the percentage of the total score of a participant and dividing it by the number of participants. The mean overall percentage was calculated by dividing the mean overall score with the total possible score. The knowledge category was only limited to the poor knowledge subgroups as no participant scored into the good or average knowledge categories.

Overall assessment of the correct diagnosis and management of all emergency situations

All 42 of respondents were unable to provide the correct diagnosis for each emergency scenario. 40 (95.20%) participants were able to correctly diagnose choking, fractured arm and poisoning. The response for a wrong diagnosis was 13 (31.00%) for the head injury. The best mean overall score percentage for each scenario was choking at 42.83% followed by drowning at 39.43%. The worst mean percentage for the overall scoring for scenarios was for seizures at 12.25%. All results concerning knowledge on diagnosis, mean overall scoring are tabulated in Table 2.

A comparison of knowledge in emergency scenarios according to categories was compared to the availability of first aid algorithms at the nursery. The knowledge category had only 2 categories as everyone fell into the 2 subgroups of poor knowledge. The chi-square test showed significance for the following scenarios:

- i. Drowning ($p < 0.001$)
- ii. Choking ($p = 0.046$)
- iii. Seizures ($p < 0.001$)

Comparing the knowledge of the educators within relevant participant demographic groups such as working experience, previous first aid training and number of years ago training in first aid was done. The only category compared in the knowledge group was the poor knowledge group ($\geq 70\%$ and $< 70\%$ subgroups)- no one had scored good knowledge and average knowledge. A chi-square comparing the categorical groups were done and the outcome was

- i. Working experience had no significance on the outcome of knowledge of the participants
- ii. Previous first aid training had no significance on the knowledge of the participants
- iii. The number of years ago the first aid training was done had significance of the knowledge of participants but the outcome was rejected as it suggested that first aid education received way back had more impact on giving the correct steps ($p = 0.033$ but sample was only 2)

Discussion

Principal findings

From this research, the researchers have concluded that the overall performance of the nursery teachers were of poor knowledge. Only for the drowning, choking and seizure scenarios had some participants answering 70% or more steps correctly. The other scenarios of fracture of the arm, head injury and poisoning all had poor knowledge with less than 70% of the steps being given. All teachers only manage to achieve the category of poor knowledge. There were no significance among those with more than 5 years working experience and those with previous first aid training. The number of years with prior first aid training to the knowledge had significance ($p = 0.033$) Although t statistically significant, logically it did not make sense that those who have had training much longer ago performed well compared to those who had recently undergone the training. The only statistical significance was seen for the comparison between the knowledge of the nursery staff compared to those with algorithms. Those with algorithms generally tend to fair better in the knowledge group compared to those teachers from nurseries without readily available algorithms. The worst managed pediatric emergency was seizures with the mean percentage of 12.30% and the best score was from the choking scenario with the mean percentage of 42.86%. The researchers were concerned with the fact that teachers scored 25.60% and 12.30% for common emergencies such as poisoning and seizures respectively. It is ideal for teachers to perform well for common emergency situations such as choking, poisoning and seizures as prompt first aid treatment can save a life.

Strengths & Limitation

Strength

To the researchers' knowledge, there has been no such study that had been conducted within Malaysia. The researchers had looked at knowledge of the teachers at nurseries that were registered only. The researchers had shared relevant materials (algorithm) with the participants on the scenarios to serve as a guide/reference in case an emergency occurs.

Limitations

The researchers had only managed to acquire responses from 42 nurseries from a possible 81 from the Kinta district. This was probably due to the fact that this research was conducted during the time of school holidays- thus there were many schools that were closed and a number of teachers were on leave. Only one teacher per school was interviewed for this study. The researchers had only collected the teacher's knowledge on first aid but their skills or performances during an emergency situation were not assessed. There was no attempt to get data from unregistered nurseries/home day care centers. The researchers had no opportunity to interview any teachers from the government run nurseries.

Comparison with other studies

This study differs from many of the other studies as the scenarios assessed were not similar. *Li, et al.* (Feng Li et al., 2012; F. Li et al., 2014) had published studies assessing preschool teachers in Shanghai, China that showed an assessment of first aid scenarios for choking, seizures, poisoning and fractures. The teachers from that study scored the highest in the poisoning scenario (100%) followed by fractures (88.50%), then seizures (81.10%) and the least for the choking emergency scenario (28.60%). In comparison to our study, the teachers from the Kinta district obtain the best score for the choking scenario (42.83%), fractures (38.14%), poisoning (25.50) and seizures (12.25%) and the least for seizures. The researchers did not come across any papers that assessed nursery teachers on specific situations of drowning and having head injuries. In this particular study, the researchers had found that teachers had scored 39.43% for drowning and 38.00% for head injuries.

(Avina & O'Connell, 2006) concluded that the importance of having nursery teachers prepared for first aid training is important to prevent worsening of an emergency situation. In a study by (SA Ali, 2010) had done a research that compared scores of before and after teaching first aid to nursery teachers. The scenarios for fractures, seizures and poisoning all improved (scores above 90%) and thus they had suggested the implementation of First Aid teaching in Egypt be made compulsory to help teachers identify and correctly treat first aid emergencies.

Unanswered questions for future research

Future research should look at assessing the knowledge and also skills of teachers during a simulated first aid emergency situation. A larger number of teachers from different nurseries should be included to obtain a more accurate picture of the knowledge of teachers. A posttest after the evaluation should be done to see the efficacy of informing of the correct diagnosis and treatment for each scenario.

Implications for policymakers

The results from this research is a good benchmark for an inter-collaboration between the Ministry of Health and the Ministry of Women, Family and Childcare to consider making First Aid training compulsory for all nursery teachers. Currently only having a first aid box is compulsory for each school in case of an emergency.

Conclusions and recommendations

Conclusion

This study has shown that the knowledge of nursery staff in managing common pediatric emergencies was poor. Staff were able to diagnose most emergencies correctly but were not able to institute the necessary urgent steps to support the child under their care. This deficiency in skills needs to be addressed. The management of common emergencies like seizures and choking is a source of concern as timely intervention might be able to save a child's life.

Recommendation

1. It may be valuable to display standard algorithms for managing common first aid emergencies in pediatric age groups should be on the wall of all nurseries.
2. Managing first aid emergencies in pediatric age groups should be part of the routine curriculum for nursery teacher training.

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