

KNOWLEDGE OF CAREGIVERS FOR THE PREVENTION OF INJURIES AMONG CHILDREN IN DAY-CARE CENTRES, IN PUTRAJAYA AND SELANGOR, 2016

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ABSTRACT

Injuries among children are one of the leading causes of morbidity and mortality world-wide. The need for out-of-home care for children has increased substantially due to the recent increase of female participation in the work force. All children deserve the right to a safe environment and therefore caregivers given the task of caring for children in day-care centres must be qualified and able to protect them from injury. This study is aimed to identify the knowledge of caregivers that affect safety and injury prevention in licensed day-care centres in Malaysia. A cross-sectional study design was carried out among 399 participants in licensed day-care centres in a total of 12 districts across Putrajaya and Selangor. Stratified random sampling method was used to collect information on socio-demographic, socio-economic factors through the use of validated self-constructed, self-administered questionnaires between September 2015 and May 2016. Only caregivers who were in direct contact with children were eligible to participate in the study. Data was analyzed using, descriptive, bivariate and multivariate data analysis by SPSS™ (version 21). The analysis was carried out using Chi-square test and Multiple Logistic Regression. The study response rate was 89.47%. Caregivers were found to have a mean knowledge score of 66.33 ± 0.57 . Significant predictors of knowledge were caregivers who had an education level of SPM or less (AOR=3.487, 95% CI 2.19 - 5.55), caregivers under the age of 25 (AOR=0.119, 95% CI 1.19 - 4.67), and caregivers who were unmarried (AOR= 2.077, 95% CI 1.126 - 3.828). In conclusion, we can increase awareness of the factors that affect knowledge for the prevention of injury among caregivers in day-care centres. This information can help us hire well-equipped caregivers and build safer day-care centres for children.

Keywords: Knowledge, Children, Injuries, Prevention, Day-Care Centres

Introduction

One of the major causes of morbidity and mortality among children is due to injuries (CPS, 2009). Although in general, there has been a decrease in child mortality due to injuries, childhood injuries remain leading cause of death among children over 1 year of age, while approximately 20 million others report having suffered due to them (Davis, Godfrey & Rankin, 2013). With the growing abundance of working mothers and thus the need for child care (Chen, 2013), injuries among children in child care settings are becoming an increasingly common concern in many countries (Kopjar & Wickizer, 1996).

Both children and adults are susceptible to and affected by injuries. However, children and infants are a higher risk of experiencing injuries due to their age characteristics (Banfai et al, 2015). Injury is one of the leading causes of death and disability among children worldwide (Peden et al, 2008). Prevalence and mortality due to childhood injuries have also caused an increase in the economic burden. In many instances, the consequences of injury lead to severe and long term disability in young children (Watson et al, 2014). Injuries can be classified as unintentional or intentional. However, whether intentional or unintentional, all injuries can be prevented and controlled (Peden et al, 2008).

Unintentional injuries which can be defined as accidental actions that are not purposely intended to cause harm (Oladunjoye, 2013) are the leading cause of death and hospitalization in children worldwide (Brcina et al, 2014). Tens of millions of children are hospitalized every year because of non-fatal injuries, with many of them resulting in a life-long disability (Brcina et al, 2014). In the USA alone, an estimate 9.2 million children has emergency visits to the hospital due to unintentional injury whereas approximately 12,175 suffered fatality (Borse et al, 2008). Understanding the risk factors of injury is one the primary goals in

helping prevent it. Unintentional injuries are highly preventable, and caregivers therefore have a great responsibility to protect children from injury due to accidents (Banfai et al, 2015). The most common types of unintentional injuries that occur in homes or day-care centres include falls, burns, drowning and poisoning (Peden et al, 2008; Banfai et al, 2015).

Intentional injuries however occur due to the result of intended harm, potential for harm or threat to a child (Borse et al, 2008). Intentional injuries include but are not limited to child abuse or neglect, homicide and suicide (Hammig & Weatherly, 2003). The term maltreatment is often used to describe abuse and neglect of children and constitutes failure to provide basic physical, emotional, education needs as well as protecting children from injury (Borse et al, 2008). Maltreatment of children is a major public health concern worldwide (McKenzie et al, 2012).

In the United States alone, there were 686 000 reported cases of child abuse and neglect in the year 2012 and this number further increased to 702 000 in the year 2014, with 1580 of these cases having resulted in death (CDC, 2016). Reports indicated that 78% of these cases were victims of neglect, 18% were victims of physical abuse, 9% of sexual abuse and the remaining 11% were victims of other forms of maltreatment including emotional abuse as well as a lack of supervision (CDC, 2016). 27% were under the age of 3 years with reports stating that younger children under the age of 1 had the highest rate of victimization due to child abuse and neglect. 20% of the reported cases were victims aged between 3 to 5 years (CDC, 2016).

Day-care centres are institutions that provide supervision and care for infants, toddlers, pre-schoolers and young children that presently do not attend full-time school (Britannica, 2016). A good, well-maintained day-care centre is the perfect solution for working parents (Afreen, 2011). The most basic definition of a good day-care centre is one that can ensure proper child care and has a child friendly environment (Afreen, 2011). Good day-care centres are those which follow established ground rules and policies, have qualified caring staff members, safe and clean facilities and a stimulating and structured environment (Afreen, 2011). A well-maintained, good day-care centre impacts not only children and parents but also a country's economy (Warner and Gradus, 2009).

Caregivers are individuals who take on the responsibility of caring for children in the absence of their parents or guardians. Correct caregiver supervision has been identified as the most effective method of injury prevention (Morrongiello, 2005). However, to appropriately supervise, caregivers must be able, ready, and willing to perform. This ability, willingness and readiness is dependent upon several factors, including knowledge. When a caregiver is unwilling and unable to appropriately prevent injuries, the safety of young, dependent children is compromised and could lead to severe consequences. Therefore caregiver cognitions including knowledge, beliefs, attitudes, and perceptions have been a recent focus of examination within the injury literature. Cognitions guide behaviors by providing an underlying framework for how caregivers view, perceive and therefore practice caring for children (Morrongiello, 2005).

However, very often caregivers seem to have little knowledge about the overwhelming epidemic of injury morbidity and mortality rates and, in turn, do not believe they are responsible for preventing such injury (Morrongiello, 2005). Either that or caregivers seem to have difficulty determining when and how to implement their supervisory practices, as injury often occurs when caregivers are reportedly supervising children.

Finding effective ways to provide guidance and information helps to improve caregivers' knowledge, may contribute to primary prevention of injuries. However the first step to address this problem is to identify educational needs of caregivers by collecting baseline data regarding injury prevention or safety promotion for preschool children among Malaysians. Additionally, licensing standards for childcare have traditionally been rather low globally (Fukkink and Lont, 2007) but are now under scrutiny to be implemented correctly. This problem is currently being faced by day-care centres in Malaysia, whereby licensing standards do not strictly implement rules, have little requirements to qualify for the job, and therefore leaving the role of training of caregivers unclear. Fukkink and Lont (2007) describes this scenario as leaving caregivers "largely ill-prepared" and "randomly trained".

Currently, there have been many surveys globally that test caregivers knowledge on injury and prevention (Banfai et al, 2015). However, currently in Malaysia, data on injuries as well as caregivers is alarmingly limited. Aside from poor implementation of rules and standards, a high turn-over rate of staff members, and limited requirements for qualification, the lack of epidemiological data regarding injuries or day-care centre attributes makes it highly difficult to further study or improve the system. Developed countries in which systematic injury prevention and safety promotion programs are implemented have a lower burden of disease related to injuries than those that do not.

It is therefore essential to understand further explore this area to enable us to identify gaps in knowledge and harmful practices for future intervention (Ramdzan, Liew & Khoo, 2014). This will help to standardize and maintain day-care centres and provide a safe environment for children. Additionally, having access to this information can help with implementing educational intervention in the future, a technique which has been proven to be effective in reducing injury and in improving safety practice. Additionally, reduced risk of injuries will in turn reduce the suffering of children, as well as reduce rates of morbidity and mortality and loss of productivity by parents or guardians who also suffer when their child is injured. Safer day-care centres will therefore be beneficial to members of the Malaysian community who can avoid unnecessary suffering, burden, stress and costs. Therefore the objective of this study is to identify the level of knowledge and its association to socio-demographic and socio-economic factors of caregivers working in day-care centres in Putrajaya and Selangor.

Methodology

A cross-sectional study design with a sample size of 399 caregivers was carried out in selected licensed day-care centres across the Federal Territory of Putrajaya and the State of Selangor in Malaysia. Putrajaya and Selangor were chosen due to convenient

accessibility based on the time frame of the study. Stratified random sampling was used to select participating day-care centres in the study. A standardized, pre-tested questionnaire was the main instrument for data collection. Data was analyzed using IBM-SPSS (International Business Machine Statistical Package for the Social Science) software version 21. Data was analyzed using a chi square test to determine the association between independent variables and dependent variable. Multivariate logistic regression was computed to indicate predicting factors that significantly contribute towards DV (knowledge scores) and estimate the odds ratio and 95% confidence intervals. A P value of <0.05 was considered significant.

Results

Knowledge scores were categorized into poor and good scores based on previous studies (Ramdzan, Liew & Khoo, 2014). Scores of less than 70% were categorized as “poor”, while scores of 70% or higher were categorized as “good”. Majority of the participants had a poor knowledge score (61.4%).

Table 1. Distribution of knowledge scores (n=399)

Subscale	n	Prevalence (%)
Knowledge		
Poor knowledge	245	61.4
Good knowledge	154	38.6

Socio-demographic factors

Table 2 and Table 3 shows the distribution of participants by their socio-demographic and socio-economic characteristics. The results reveal that the majority of students, 392 (98.2 %) were females of ages 18 to 56 years

Table 2. Distribution of participants by socio-demographic characteristics (N=399)

Socio-demographic/ characteristics	Mean ±SD	N (%)
Gender		
Female		392 (98.2)
Male		7 (1.8)
Age (years)	25.8 ±5.549	
Ethnicity		
Malay		142 (35.6)
Chinese		112 (28.1)
Others		92 (23.1)
Indian		53 (13.3)
Religion		
Islam		194 (48.6)
Christianity		98 (24.6)
Buddhism		57 (14.3)
Hindu		45 (11.3)
Others		5 (1.3)
Marital Status		
Single		205 (51.4)
Married		187 (46.9)
Divorce		6 (1.5)
Widowed		1 (1.3)
Separated		71 (10.5)
No. of Children		
None		283 (70.9)
At-least 1		116 (29.1)

Table 4 and Table 5 show the association between socio-demographic and socio-economic factors with knowledge scores of caregivers. Findings reveal a significant association between age, marital status, number of children, level of income, education, completion of mandatory courses, years of experience and job position of the caregiver and knowledge scores

Table 4. Association between socio-demographic factors and knowledge scores of caregivers (n=399)

Variables	Poor Knowledge	Good Knowledge	χ^2 (df)	p-value
	n (%)	n (%)		
Age				
18 - 24	183 (87.6)	26 (12.4)	126.7 (1)	0.001*
25 >	62 (32.6)	128 (67.4)		
Marital Status				
Single	170 (82.9)	35 (17.1)	82.414 (1)	0.001*
Married/Divorced/Widowed	75 (38.7)	119 (61.3)		
No. of children				
None	207 (73.1)	76 (26.9)	56.624 (1)	0.001*
1 >	38 (32.8)	78 (67.2)		
Religion				
Muslim	121 (62.4)	73 (37.6)	0.149 (1)	0.699
Non-Muslim	124 (60.5)	81 (39.5)		
Ethnicity				
Malay	84 (59.2)	58 (40.8)	0.470 (1)	0.493
Non-Malay	161 (62.6)	96 (37.4)		
Gender				
Male	3 (42.9)	4 (57.1)	1.034 (1)	0.309
Female	242 (61.7)	150 (38.3)		

Pearson Chi-Square, Note (*) significant level at <0.05

Table 5. Association between socio-economic factors knowledge scores of caregivers (n=399)

Variables	Poor Knowledge	Good Knowledge	χ^2 (df)	p-value
	n (%)	n (%)		
Income				
minimum wage <	225(64.3)	125 (35.7)	9.990 (1)	0.002*
minimum wage >	20 (40.8)	29 (59.2)		
Education				
None/SPM	164 (75.2)	54 (24.8)	38.761 (1)	0.001*
College/University	81 (44.8)	100 (55.2)		
Years of Experience				
3 years >	196 (70.0)	84 (30.0)	29.274 (1)	0.001*
3 years <	49 (41.2)	70 (58.8)		
Job position				
Help/Staff/assistant/ Teacher/Educator/Trainer	167 (69.3)	74 (30.7)	15.991 (1)	0.001*
	78 (49.4)	80 (50.6)		
Previous work				
Yes	196 (68.1)	92 (31.9)	19.329 (1)	0.001*
None	49 (44.1)	62 (55.9)		
Hours/week				
60 <	146 (57.0)	110 (43.0)	5.762 (1)	0.016*
60 >	99 (69.2)	44 (30.8)		
Courses				
Mandatory	132 (61.4)	83 (38.6)	0.000 (1)	0.997
Others/None	113 (61.4)	71 (38.6)		
Hours/day				
10 >	27 (65.9)	14 (34.1)	0.382 (1)	0.537
10 <	218 (60.9)	140 (39.1)		
Job Status				
Full-time	236 (61.0)	151 (39.0)	0.965 (1)	0.326
Part-time	9 (75.0)	3 (25.0)		

2

Pearson Chi-Square. Note (*) significant level at <0.05

Table 6 and Table 7 show predictors of knowledge. Respondents in the age range of 18 to 24 years were found to have a increased likelihood of poor knowledge scores by 0.1 times compared to those in the age ranges of 25 years and above (AOR= 0.119, 95% CI 1.19 – 4.67, $p < 0.001$). Furthermore, the likelihood of poor knowledge scores was found to increase by 2.1 times among caregivers who were single, (AOR= 2.077, 95% CI 1.13 – 3.83, $p < 0.019$).

Additionally the likelihood of poor knowledge scores was found to increase by 3.5 times among caregivers who had an education of SPM or less as compared to those who were college or university graduates (AOR= 3.487, 95% CI 2.19 – 5.55, $p < 0.001$).

Those who had no prior experience or worked in a different field were 1.7 times more likely to demonstrate poor knowledge scores compared to those who had always been working in the same field of work (AOR= 1.678, 95% CI 1.02 – 2.77, $p < 0.044$). Those who had less than 3 years of experience were 3.4 times more likely to demonstrate poor knowledge scores compared to those who had more than greater than 3 years of experience work (AOR= 3.397, 95% CI 2.09 – 5.52, $p < 0.001$). Lastly, those who worked less than 60 hours per week had reduced likelihood of 0.5 times of demonstrating poor knowledge scores as compared to those who worked more than 60 hours per week (AOR= 0.518, 95% CI 0.32 – 0.83, $p < 0.007$).

Table 6. Simple and multiple logistic regression of independent (socio-demographic) variables of knowledge

Variables	SLR					MLR				
	B	S.E	Crude OR	95% CI	P	B	S.E	AOR	95% CI	P
Age										
18- 24	2.676	0.261	14.531	8.72 – 24.21	0.001*	2.219	0.318	0.119	1.19 – 4.67	0.001*
25 >	1									
Marital Status										
Single	2.042	0.237	7.707	4.84 – 12.26	0.001*	0.731	0.312	2.077	1.13 – 3.83	0.019*
Married/Divorced/Widowed	1					1				
No. of Children										
None	1.721	0.239	5.591	3.50 – 8.93	0.001*					
1 >	1									
Religion										
Muslim	0.079	0.206	1.083	0.72 – 1.62	0.699					
Non-Muslim	1									
Ethnicity										
Malay	-0.147	0.214	0.864	0.57 - 1.31	0.493					
Non-Malay										
Gender										
Male	-0.766	0.771	0.465	0.10 - 2.11	0.320					
Female	1									

Note (**) significant at <0.25, (*) significant at <0.05 level, OR, odds ratio; CI, confidence interval. AOR, adjusted odds ratio.

Table 7. Simple and multiple logistic regression of independent (socio-economic) variables of knowledge

Variables	SLR					MLR				
	B	S.E	Crude OR	95% CI	P	B	S.E	AOR	95% CI	P
Income										
Minimum wage < Minimum Wage >	0.959	0.311	2.610	1.42 – 4.80	0.002*					
	1									
Education										
SPM < College/ University	1.322	0.217	3.749	2.45 – 5.73	0.001*	1.249	0.238	3.487	2.19 – 5.55	0.001*
	1					1				
Previous Work										
None/Others Same field	0.992	0.229	2.2696	1.72 - 4.24	0.001*	0.517	0.256	1.678	1.02 – 2.77	0.044*
	1					1				
Years of Experience										
3 < 3 >	1.204	0.227	3.333	2.14 – 5.21	0.001*	1.223	0.248	3.397	2.09 – 5.52	0.001*
						1				
Job Position										
Help/Assistant/Staff Teacher/Educator/Trainer	0.839	0.212	2.315	1.53 – 3.51	0.001*					
Hours/week										
60 < 60 >	-0.528	0.221	0.590	0.38 - .91	0.017*	-0.659	0.243	0.518	0.32 – 0.83	0.007*
						1				
Courses										
Mandatory None/Others	-0.001	0.206	0.999	0.67 – 1.50	0.997					
Hours/day										
10 < 10 >	0.214	0.347	1.239	.63 – 2.44	.537					
Job Status										
Full-time Part-time	-0.652	0.675	.521	0.14 – 1.96	.334					

Note (**) significant at <0.25, (*) significant at <0.05 level, OR, odds ratio; CI, confidence interval. AOR, adjusted odds ratio.

Discussion

Published literature suggests that supervision provided by caregivers is a significantly effective method to prevent injuries in day-care centres (Davis, Godfrey & Rankin 2013; Morrongiello, 2005). Correct and appropriate supervision however requires caregivers to be both able and willing to perform their duties and this ability and willingness is dependent on different essential factors such as knowledge (Bishai et al, 2003). The need for day-care centres has increased substantially due to the increase in numbers of working mothers (Mani, Aziz, John, & Ismail, 2010). Parents who leave their children in day-care centres during work hours trust that they are leaving their children in the hands of caregivers who are equipped with sufficient knowledge and follow standardized procedures when looking after their children (Mani, Aziz, John, & Ismail, 2010).

The majority of caregivers working in licensed day-care centres in Putrajaya and Selangor were single, Malay, Muslim females who work full-time at day-care centres for minimum wage.

Sufficient knowledge is crucial to ensure injury prevention but very few people are aware of the many factors that play a role in causing injuries. Results from this study showed that majority of the caregivers had poor knowledge (61.4%). These findings are compatible to a study carried out by Crnica et al (2013) which indicates that even though majority of the respondents were aware of the fatal consequences injuries can lead to, only 10% were aware of basic causes of injuries, such as the potential risk factors that could lead to poisoning or safe sleeping positions

Results showed that marital status was a significant predictor of knowledge indicating that women who were single more likely to possess poor knowledge as compared to women who were married or had once been married. There is unfortunately limited data applicable to the marital status of caregivers working in day-care centres. However, previous literature shows that the risk of injuries is significantly related to the marital status of their parent or guardian. Fleming and Charlton (1998) and Richardson et al (2005) found that the marital status was significantly associated to risk of injury where children were more prone to injury if they belonged to households with single parents or stepparents. One reason for this association could relate back to the age of the caregivers. Most caregivers were likely to be older if married. In general, being married comes with certain responsibilities and it possible that caregivers who are married are more mature and tend to take their responsibilities more seriously.

Findings from this study mirror previous literature regarding education of caregivers. Results indicated that education level is a significant predictor of knowledge scores and higher education levels led to higher knowledge scores. Earlier findings by Crnica et al (2013) also suggest education affects knowledge and practice on injury prevention. Additionally literature found by Fukkink and Lont (2007) and Thein, Lee and Bun (2005) states that caregivers higher educational levels provide better personal care and have more knowledge of appropriate practice than caregivers with lower educational levels and that those caregivers who participated in training provided better quality care than those who participated occasionally or not at all. Similarly, Kamel, Emam, Mohammed (2014) and Hossein (2009) also found that caregivers' education care and knowledge of cut/wounds, fall/fracture and burn had a statistically significant difference those with a higher the education level.

Conclusion

In conclusion it was found that majority of participants working in licensed day-care centres across Putrajaya and Selangor had poor knowledge regarding the prevention of injuries among children. Unfortunately this affects the quality of care being provided to children, and puts them at a risk for injury. These injuries can range in severity, from minor to major and even fatal. However, regardless of the severity, it should be a caregiver's utmost priority to prevent injuries of any sort from occurring. Injuries among children have lasting impacts, which affects their physical and mental well-being, puts them at a risk of disability and a reduced quality of life. Parents and guardians are also deeply affected by injuries to their children, not only in terms of psychological stress but financial stress as well. Injuries to children therefore have adverse effects on victims, parents or guardians and the society as a whole. Findings Understanding and being aware of factors that affect the knowledge of caregivers will help communities to build day-cares with better equipped staff who can help prevent injuries among children.

However, findings of this study are only limited to caregivers working in Putrajaya and Selangor which may not be fully representative of caregivers all over Malaysia or in other regions due to the limitations of the sample population. Additionally, the use of self-report means of assessing symptoms of knowledge, attitude and practice was used because it is cost effective, practical and convenient and in line with previous studies employing similar methods. Many day-care centre owners were uncomfortable subjecting their employees to the questionnaires, and many day-care centres would not allow the researchers to even enter the premises. Other limitations included a lack of research done specific to children injuries and caregiver factors, especially in Malaysia was a setback for literature review and interpreting results. Lastly, with the questionnaire as the tool of data collection, there is a tendency of reporting bias as participants are expected to be as honest as possible when answering questionnaires. It is possible that many participants when answering the attitude and practice questionnaire may answer questions falsely due to a desire to report socially desirable behaviours. This is unfortunate as it prevents the researcher from being able to evaluate true attitudes and practices and areas that need help and focus. Future recommendations

Include more thorough monitoring of day-care centres. Future intervention studies that include educating and training caregivers can also be an effective way to further explore this area and help to make day-care centres safer for children.

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