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Child Occupant Safety Program: A Study at Selected Kindergartens in Kajang and Putrajaya

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ABSTRACT – *The usage of Child Restraint System (CRS) in vehicles can increase the children's safety in the vehicle if they use it correctly. The study aimed to observe CRS usage, to determine the level of knowledge and behaviour towards CRS, and to evaluate the effectiveness of the intervention program. An intervention program was implemented for parents in 7 participating kindergartens at Kajang and Putrajaya. CRS Observation and survey were done before and after the program. A total of 120 respondents participated in the study. The result shows that all questions related to knowledge about CRS answered by parents showed a positive increase after the program compared to before the program. Furthermore, the mean of all dimensions (attitude, subjective norms, perceived behavioural control, behavioural intention) was increased after the program. The overall use of CRS among children travelling to kindergarten is low at 2.3% after the program. In conclusion, this study showed the effectiveness of educational intervention on knowledge, attitude, subjective norms, perceived behavioural control, and behavioural intention among parents.*

KEYWORDS: Child Restraint System (CRS), child safety, intervention program

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1. INTRODUCTION

It has been reported that children transported in private vehicles are the leading group of casualties among those aged one to nine years old in Malaysia. The Child Restraint System (CRS) was made mandatory on 1st of January 2020, to reduce road fatalities among vulnerable children. The government has enforced regulations related to the use of CRS under the Motor Vehicles (Seat Belts) Rules 2019 (Malaysian Government, 2019; Paiman et al., 2019). However, the study found that the use of CRS is still at an unsatisfactory level, even though the law has been enforced. Although legislation and regulations are important, however, they are not sufficient to maximize CRS use and must be accompanied by sustained education and enforcement (Paiman et al., 2021).

According to Theory Planned Behaviour (TPB) developed by Ajzen (2001), human behaviour is guided by three kinds of consideration: (a) beliefs about the likely consequences of *my behaviour* (Attitude), (b) beliefs what important others think *I should do* (Subjective Norm), and (c) beliefs about *my ability* to carry out the behaviour (Perceived Behavioral Control).

Nelson et al. (2014) stated that the TPB constructs were significantly and independently associated with higher intent for CRS usage. While TPB appears to be a useful tool to identify beliefs related to CRS usage intentions in KSA, the results of the separate behavioural observation indicate that intentions may not be related to the actual usage of CRS.

According to Jeihooni et al. (2022), the results of the study showed the effectiveness of educational intervention based on TPB of traffic safe behaviors in students. A successful educational program should be accompanied by sufficient exercises to make appropriate decisions when crossing. Since traffic issues are not included in Iran's education system, education needs to be systematically and

practically operationalized. Developing educational packages with topics on traffic education is suggested to be incorporated into the textbooks.

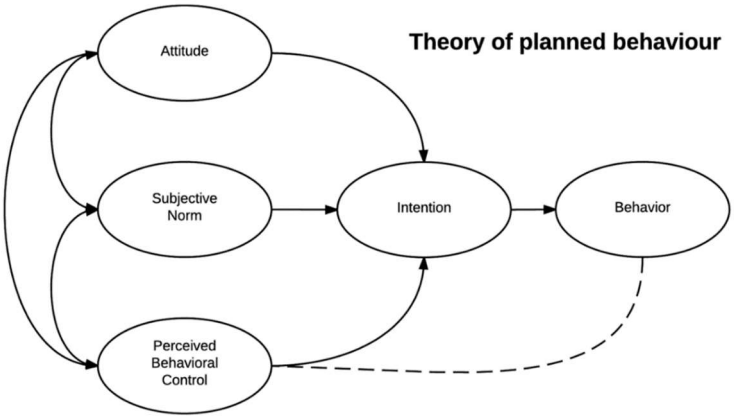

FIGURE 1: Theory of Planned Behaviour (TPB)

In this research, the Theory of Planned Behaviour will be used to predict parents' intention using survey questions, and the CRS education intervention will be implemented for the parents. Three objectives have been identified in carrying out this research. The first objective is to observe CRS usage in kindergarten premises before and after the program. The second objective is to determine the level of knowledge and behaviour towards CRS among parents before and after the program, and the last objective is to evaluate the effectiveness of the intervention program.

2. METHODOLOGY

This intervention program was conducted in collaboration with Unity Kindergarten (Department of National Unity and National Integrity) and *Pusat Pendidikan Awal Kanak-kanak - Integrasi Permata* (Ministry of Education). A total of 40 parent respondents are required to participate in each program. In total, three (3) programs were conducted from July – December 2023. The total number of respondents who participated in this program was 120. There are four phases involved in the program.

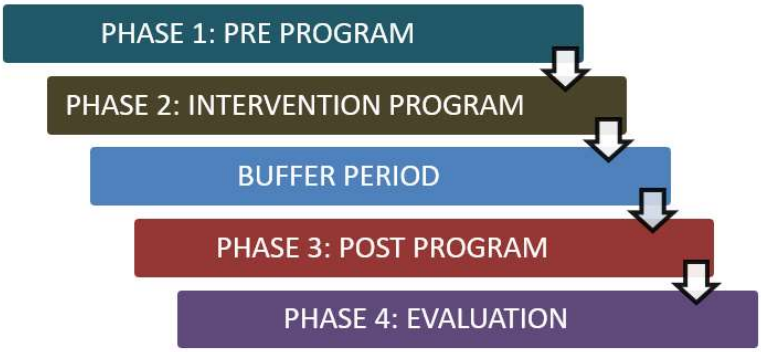

FIGURE 2: Phases involved in the program

At phase 1, observation of the CRS usage was carried out at the kindergarten premises, and the observation was carried out at 7 selected kindergartens in Kajang and Putrajaya. The sample targeted all occupants of light-duty vehicles, which included cars, multipurpose vehicles (MPV), sports utility vehicles (SUV), and Four-Wheel Drive (4WD) which stopped sending their children to the kindergarten involved. Two trained officers were stationed at the observation point using a blank form that had been prepared by the researcher. The information that has been obtained is the type of vehicle, number of passengers, CRS usage, seatbelt usage, identification of exits for rear passengers, and the position of the child in the vehicle.

In the second phase, three intervention programs were conducted in July, August, and September 2023 involving parents, teachers, and children of the selected kindergarten. In this program, anonymous, self-administered questionnaires were distributed to all parents. The questionnaire used for data collection was developed in the Malay language based on the study requirements. The Malay language was used in the Google form survey as it is the national language of Malaysia. The questionnaire was divided into three sections, namely Section A (Respondent Demography); Section B (Knowledge about CRS), and Section C (Parents' Behaviour Towards CRS). It was pilot tested for face validity and understanding among 10 samples before the survey questions were finalized. A pilot test for survey questions was very important as it can provide valuable feedback from the sample, and the researchers can revise and improve their survey questions so that the question is easily understood by the public before distributing them to the public. It can also identify the weaknesses of the questions that need to be answered and can prevent expressing unnecessary questions.

Apart from the questionnaire, there are also other activities involved, including CRS talks, CRS installation demo, a safety-themed coloring competition for children, and a child safety pledge.

3. RESULTS AND DISCUSSION

Results are discussed in terms of: (i) Child Restraint System (CRS) Knowledge, (ii) Parents' Behaviour towards CRS, and (iii) CRS Observation. A total of 120 respondents answered the survey in this study. Data were entered into a database using the software IBM SPSS Statistics 21 by a trained officer. Frequencies were calculated to analyze the data.

TABLE 1: Respondents' socio-demographic

		Pre	Post
Male		34 (28.3%)	34 (32.4%)
Female		86 (71.7%)	71 (67.6%)
	Total	**120**	**105**
Malay		113 (94.2%)	100 (95.2%)
Chinese		1 (0.8%)	0 (0.0%)
Indian		4 (3.3%)	3 (2.9%)
Others		2 (1.7%)	2 (1.9%)
	Total	**120**	**105**
Married		114 (95.0%)	100 (95.2%)
Single		2 (1.7%)	2 (1.9%)
Single Mother/Father		4 (3.3%)	3 (2.9%)
	Total	**120**	**105**
Above RM 5,000		21 (17.8%)	12 (11.9%)
Below RM 5,000		97 (82.2%)	89 (88.1%)
	Total	**118**	**101**

Total of 120 respondents were participated in the study, most of the respondents were female (pre: 71.7%; post: 67.6%), Malay (pre: 94.2%; post: 95.2%), married (pre: 95.0%; post: 95.2%) and monthly income below RM5,000 (pre: 82.2%; post: 88.1%).

3.1 Child Restraint System (CRS) Knowledge

It's essential for parents to have a good understanding of Child Restraint Systems (CRS) to ensure the safety of their children while traveling. A set of questions were constructed to determine the knowledge level before (pre) and after (post) the intervention program.

TABLE 2: CRS knowledge of parents before and after the program

Questions related to CRS Knowledge	Pre	Post
The use of CRS was made mandatory on January 1, 2020.	91 (75.8%)	98 (81.6%)
CRS that meets standards in Malaysia must have an E-Mark label (Orange Label)	86 (71.6%)	105 (87.5%)
The maximum height limit for the use of CRS on children is 136 cm.	60 (50.0%)	101 (84.2%)
The maximum weight limit for using CRS on children is 36kg.	71 (59.2%)	102 (85.0%)
Parents ready if CRS enforcement is seriously carried out by the enforcement authorities and agree with the government's actions to enforce the CRS usage law.	191 (79.5%)	196 (81.7%)
A properly installed CRS does not move more than an inch in any direction	92 (76.7%)	102 (85.0%)
Parents can determine if my child's CRS is right for my child by reading the height and weight requirements on the CRS label.	103 (85.8%)	104 (86.7%)

Overall results shows that all questions related to knowledge about CRS answered by parents showed a positive increase after the program compared to before the program. According to Abd Rahman et al. 97.1% of the respondents are aware of the enforcement on 1 January 2020 and the challenges in complying with the use of CRS are household income, lack of awareness program and knowledge on the importance of CRS.

3.2 Parents' Behavior towards CRS

The initial scale was specifically developed for this study according to the study's needs and modified appropriately. It consists of 12 items designed to measure four dimensions: attitude (three items), subjective norms (three items), perceived behavioural control (three items), and behavioural intention (three items). All items were standardized on a seven-point Likert scale, ranging from 1 to 7. The mean value of each subscale was determined by dividing the total number of points on subscale items by the total number of subscale items. Therefore, the mean scores of the TPB model variables ranged from one to seven. A higher score indicated a greater level of each dimension. Findings from Table 3 show that the mean of all dimensions increased after the program. This is shown by the mean values before and after the program.

TABLE 3: Parents' behavior towards CRS using four dimensions in TPB

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Dimensions	Sample Question	Mean (Pre)	Mean (Post)
Attitude	I believe that using CRS for children is safer.	6.72	6.93
Subjective Norms	People close to me feel that using CRS for children can reduce the risk of injury/death.	6.53	6.86
Perceived Behavioural Control	I can afford to use CRS for my children.	6.28	6.82
Behavioural Intention	I intend to use CRS for my child.	6.35	6.87

3.3 CRS Observation

Observation of the use of CRS was carried out in two phases, namely pre (before the program) and post (three months after the program). The data obtained has been displayed in the table below. The total of 90 vehicles were observed in pre-observation, and 88 vehicles were observed in post-observation.

Table 4 summarizes the observations of CRS usage at kindergarten premises before and after the program. The overall use of CRS among children travelling to kindergarten is low at 13.3% before (pre) and reduced to 2.3% after the program (post). This reduction may be due to different vehicle samples taken during the observation process. Compared to a study conducted by Ariffin et al. (2014), the use of CRS recorded a percentage of 9.5%. While the study conducted by Abd Rahman et al. (2021) in Parit Raja, Johor Bharu, the use of CRS recorded a relatively high percentage of 48.2%. A study conducted by Hummel et al. (1997) found that one of the reasons given by parents for not restraining their children was that the journey only involved a short distance. Their perception was that crashes are unlikely to occur at low-speed zones and short travel distances. Observations were done at day care centres, which were mostly located in residential areas.

TABLE 4: Summary of CRS observation at kindergarten premises

Variables	Pre		Post		OR[a] (95% CI)
	N	%	N	%	
Use CRS	12	(13.3%)	2	(2.3%)	**6.615***
No CRS	78	(86.7%)	86	(97.7%)	(1.435,30.490)
Children seating (Front)	73	(81.1%)	40	(45.5%)	**0.194***
Children seating (Rear)	17	(18.9%)	48	(54.5%)	(0.099,0.533)

[a]*Odd Ratio Analyses 2 x 2 Table*
**Significant*

The findings show that positive results in children's seating position, where 54.5% children were located at the rear seat after the program (post) compared to 18.9% before the program. The results also show a significant 0.194 (0.099,0.533), indicating a significant association between seating position and program phase. According to The Royal Society for the Prevention of Accidents (RoSPA, n.d.), the safest location for children in the car were at the rear seat because it is far away from the airbag that can cause injury to children and can reduce injuries or fatalities caused by an accident that usually starts at the front of the vehicle. According to Paiman et al. (2018), 34.8% were seated in the front passenger seat while the rest were in second row seats, mostly behind the front passenger seat, possibly to facilitate the driver to check on them.

4. CONCLUSION

In conclusion, this study showed the effectiveness of educational intervention on knowledge, attitude, subjective norms, perceived behavioural control, and behavioural intention among parents. Implementing a child seat program in kindergarten is a vital step toward ensuring the safety and well-being of young children during transportation. By providing proper, age-appropriate car seats and educating both caregivers and staff on their correct use, the program helps to minimize the risk of injury in the event of an accident. It also fosters a culture of responsibility, where children and adults alike understand the importance of CRS from an early age. As part of a broader commitment to child protection, such programs not only enhance the physical safety of children but also promote long-term awareness and habits that contribute to their overall security both inside and outside the classroom.

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