

The Incidence of Accidents in Child Care Centers of the Local Government Organizations

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Objective: To study the incidence of accidents and the environment around the building of child care centers of the local government organizations under the Health Promoting Center 6.

Material and Method: This was a descriptive study carried out among 1,871 child care centers of the local government organizations under the Health Promoting Center 6 within eight Northeastern provinces. The self-administered questionnaires were handed out in the process of this study and data were collected between January 1 and February 28, 2011.

Results: One thousand eight hundred seventy one child care centers answered the questionnaires. The ratio of children per caregiver was found to be 17:1. In 2010 the incidence of injury in children was 7.17 per 100 persons. Ratio of injury between boys and girls was 1.9:1. The places mostly reported for the accidents were outside the building, the playground instruments, and inside the classrooms. Most child care centers were located on the street side and had no fence near the water sources (pool, pond) and trees. Only 22.9% had children water closets and those with adult water closet provided no support for holding. Most (93.3%) of the toilets had water containers inside.

Conclusion: Environment around the child care center building may be the cause of many accidents. If the child care centers comply the convention instructions, children will be safe during their stay.

Keywords: Incidence, Accident, Local government organization

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Child care center is a place where the pre-school children are cared. It provides an opportunity for the children to develop their physical, social, intellectual, and mental health. Moreover, it assists the parents who are unable to look after their children during day time. Hence, the children are looked after by a caregivers at least six to eight hours a day. According to the United Nation's treaty on children's rights, which was announced in 1990, it indicated that the fundamental rights for children are as follows: 1) to survival – to basic healthcare, peace and security; 2) to development – to a good education, a loving home and adequate nutrition; 3) to protection – from abuse, neglect, trafficking, child labor and other forms of exploitation; and 4) to participation – to express opinions, be listened to and take part in making any decisions that affect them⁽¹⁾. The Child Protection Act BE 2546 has determined that the children must be taken care of by living in the right place, not posing

hazard, giving their body proper nutrients and gaining from health promotion as well as preventing them from disease and disaster.

Environment around a building of child care center may cause accidents. It should provide safety from harm and injury. The study found that 34,075 cases of injury in child care center caused by playground equipment such as slide, swing, and climbing⁽²⁾. The accidents from the environment around the building of child care center are as follows: 1) natural environment such as rainfall and flooding, accidents from transportation, to present day, Thai government has launched the legal measures to control the helmets wearing among motorcyclists and safety belts for car drivers. These regulations aimed to reduce the rate of accidents among people. 2) physical environment. This includes both internal and external environment such as roads, rivers, canals, ponds, and reservoirs. The accidents that emerged from this environment are drowning and the un-safety playground instruments^(3,4). It has been estimated that 34,074 children would be injured from the playground instruments each year, 44.0% from slides and 33.0% from swing. The rest were from other playground instruments such as

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climbing structures and other social environment⁽²⁾. This includes a child's family members, child mates, and neighbors.

Objective

To study the incidence of accidents and the environment around the building of the child care center of the local government organizations under the Health Promoting Center 6.

Material and Method

This was a descriptive study carried out in 1,871 from 3,371 child care centers of the local government organizations under the Health Promoting Center 6 within eight provinces, Kalasin, Khon Kaen, Loei, Maharakham, RoiEt, Nong Khai, Nongbualamphu, and UdonThani. Self-administered questionnaires were used and data were collected between January 1 and February 28, 2011. Respondents were the head of child care centers or caregivers. The Ethical Committee of Khon Kaen University has approved the research protocol. The approval letter number is HE531378. Questionnaires were sent to 3,371 respondents, three times during a two-months period and some child care centers were visited. Statistical analysis was done with SPSS. Descriptive statistics in term of frequency, percentage with 95% confidence interval (95% CI) were used to summarize the results. Univariate comparisons between injuries and no injuries were carried out using Chi-square test with $p < 0.05$ was set for significant.

Results

One thousand eleven respondents answered the questionnaires the first time. However after sending mail questionnaires repeatedly for the second and third time, the response rate increased to 65.5% but only 1,871 questionnaires were completed. The researchers also visited some child care center that the respondents did not answer these mail questionnaires. We found that these information are sensitive issues. They fear to answer or some of them were too busy to answer the questionnaires.

Fifty-nine point two percent of respondents were the head of child care center, 36.8% were caregivers, and 4.0% were academic study and local administrators. All of them answered about general characteristic of child care centers, the information about childhood accidents, and the environment around their child care centers building. The results showed that total number of children under these child care

centers was 100,666 (50,888 boys, 49,778 girls) and 5,875 caregivers. There were twenty children under one caregiver's responsibility in 79.9% of child care centers. However, in 372 (20.1%) child care centers, one caregiver had to look after more than twenty children.

In 2010, the incidence of injury in children was 7.17 per 100 persons (Table 1) with a total of 1,261 injuries. Ratio of injury between boys and girls was 1.9:1. The type injuries were mostly bruise followed by abrasion and wound respectively. The first three causes of injury among children were falling from high places, bumping, and eating or putting odd objects into their noses or mouths (Table 2). In terms of the accident scene, the most reported place for accidents was outside the building, followed by on and around playground equipments and inside the classrooms respectively. Most (48.5%) child care centers reported that they recorded the number of injuries. The study found statistically significant relationship ($p < 0.05$) between injuries, plan for fire drill, and between injuries and exercising defense. Results did not show statistically significant relationship ($p > 0.05$) between injuries and safety policy, injuries and safety training, or injuries and accident prevention. This may be it caused from the lack of continuing practice (Table 3). The study divided environment around the building into two types namely internal and external environment. The external environment consisted of space around the building and playground

Table 1. The incidence of child accidents in child care centers

Children (n = 70,962)	Number	Incidence (per 100)	95% CI
Boy	3,335	4.69	4.54-4.85
Girl	1,756	2.47	2.36-2.59
Total	5,091	7.17	6.98-7.36

Table 2. Causes of accident in child care centers

Causes of the accident (n = 1,261)	Number	Percentage (%)	95% CI
Fall	1,172	92.2	91.4-94.2
Stamped	453	35.9	33.2-38.6
Foreign body	94	7.4	6.0-9.0
Animal bites	76	6.0	4.7-7.4
Attacked	43	3.4	2.4-4.5
Sharp cut	35	2.7	1.9-3.8

while the building, bathrooms and toilets, kitchen, instrument, electrical appliances, and tools were considered as the internal environment. These child care centers were found to be located on the street (68.6%), unfenced (29.3%), near a water source (pool, pond) (24.8%) and with trees on the premise (72.7%) (Table 4). Eighty-five percent of the buildings were single-storeyed, built on the ground, 68.5% had slippery floor, and 64.9% had square pillars with only 11.8% wrapping them with soft and thick materials while 1.2% wrapping them with paper and 1.7% wrapping them with papers containing learning matter printed or pasted on them. A few (32.9%) of them had only one entry. Most (62.6%) of these centers had bathrooms and toilets inside the building with only

36.9% paved with anti-slippery floor tiles. Most (69.4%) of the child care centers had eastern style toilets and 77.1% of all children toilets had locks inside thus making it unable to see the children from outside (Table 5) and (Fig. 1).

In terms of the water closets condition, it was found that 93.3% of the toilets in the centers had water containers inside. A few (4.6%) kept chemical products for cleaning on the floor inside the toilet, however, 95.5% put it in safe places. One thousand thirty six child care center provided meals for their children with 90.9% separating the cooking area from the building. Sixty-six point three percent had fire extinguishers and 88.6% of them reported that they had their check-up done for their fire extinguishers (Table 5).

Table 3. Factors affecting injuries in child care center

Factors	Injuries	No injuries	p-value
Belong to			
Subdistrict municipality	369	150	0.034*
Subdistrict administration organization	892	460	
Safety policy			
Yes	1,101	523	0.576
No	111	136	
Safety training			
Yes	396	169	0.102
No	865	441	
Accident prevention			
Yes	401	175	0.172
No	860	435	
Fire escape drill			
Yes	237	91	0.038*
No	1,017	526	
Practicing defense skill			
Yes	214	80	0.032*
No	1,014	563	

* Significant at the $p < 0.05$ level

Table 4. The environment outside the building of child care center

Environment (n = 1,871)	Present		Not present	
	Number	Percentage (%)	Number	Percentage (%)
Fence	1,322	70.7	549	29.3
Near street	1,284	68.6	587	31.4
Water (pool, pond)	464	24.8	1,407	75.2
Tree	1,360	72.7	511	27.3

Regarding the children's toys, it was found that toys in the centers were both certified and uncertified and 37.0% of the toys were found to be in bad condition. Regarding appliances, it was found that 4.6% of electric plugs were less than 1.5 meters high, 33.2% of the child care centers used extended electric wire, and 53.0% did not have ground line. For the cabinets and shelves, 32.6% of them did not have any holders while 15.7%

of them were in bad condition. Only 9.5% of the child care centers were equipped with safety-alarm system. Most (89.3%) had first aid kits available with 36.1% providing first-aid training. A few (17.7%) reported that they maintained safety rehearsal policy and planning while even fewer (15.8%) agreed to drill the safety rehearsal at least once a year. Less than a half (46.3%) had an emergency instructions available (Table 6).

Table 5. The environment inside the building of child care center

	Number	Percentage (%)	95% CI
Building (n = 1,837)			
Single-storeyed buildings on the ground	1,561	85.0	83.5-86.5
Floor (n = 1,814)			
Slippery floor	1,242	68.5	66.2-70.6
Pole (n = 1,817)			
Square pillar	1,188	64.9	63.1-67.5
Entry (n = 1,800)			
One channel	593	32.9	30.7-35.1
Water Closet (n = 1,835)			
Adult water closet with rails	23	1.3	0.7-1.8
Adult water closet without rails	69	3.8	2.9-4.7
Eastern style toilet with rails	345	18.8	17.0-2.1
Eastern style toilet without rails	1,273	69.4	67.2-71.4
Kid water closet	125	6.8	5.7-8.1
Water container (n = 1,815)	1,694	93.3	92.0-94.4
Toilet floor (n = 1,834)			
Paved with anti-slippery floor tiles	676	36.9	34.6-39.1
Paved with floor tiles	570	31.1	28.9-33.3
Non-paved with floor tiles	588	32.0	29.9-34.2
Toilet door characteristic			
Don't seen and has bolts (n = 1,074)	828	77.1	74.4-79.5
Seen and has bolts	246	22.9	20.4-25.5
Don't seen and has no bolts (n = 715)	345	48.2	44.5-51.9
Seen and has no bolts	370	51.8	48.0-55.4
Keeping cleaning chemical (n = 1,787)			
Floor	82	4.6	3.6-5.6
Shelf	571	32.0	29.8-34.2
Cabinet	1,134	63.4	61.2-65.8
Cooking at child care center (n = 1,842)	1,139	61.8	59.5-64.0
Separate	1,036	90.9	53.9-58.5
Non-separate	103	9.1	4.5-6.7
Fire extinguisher (n = 1,840)	1,219	66.3	64.0-68.4
Fire extinguisher check (n = 1,182)	1,047	88.6	86.6-90.33



Broken playground instrument



Pillar in the middle of the room



Naughty playing



Toilet had lock inside

Fig. 1 Unsafe environment and instrument in child care centers of the local government organizations

Discussion

This study found that the incidence of injury in child care centers was 7.17 per 100 with the ratio 1.9:1 between boys and girls. The increased number of accidents among boys maybe due to playful, bold, and adventurous nature of boys⁽⁴⁻⁷⁾. The most common injuries was bruises, abrasion, and wounds. This finding coincides with the findings of Phumarin Phetmuang⁽³⁾, Environmental child care center, Uttaradit Province. Most of the injuries were found to have occurred outside the building, on the playground, and playground equipment. The study of Robert Eerl et al⁽⁴⁾, found that 28.0% children of child care center in Garz, Austria fell from playground equipments that were placed outside the building.

Environment around the building may cause harm and accident. This study found that some child care centers were located on the road, were fenceless, and had water resource and trees. Bathrooms and toilets were built outside and thus caused difficulty in taking

care of children when they needed to use the toilets. The toilets had adult water closet and had no support for holding, had door bolts thus making it difficult to see the children from outside, and water containers inside. Sunitra Pakinsee et al⁽⁸⁾ found that children between 1 and 4 years had been drowned in water storage containers such as tank, sink, and basin because caregivers were unaware and not guarding. Playground equipments were found to be another reason for causing children injuries⁽²⁻⁴⁾.

Safety measures to be followed by child care centers in accordance to the local organization child includes 1) rehearsal for the prevention of accidents at least once a year, 2) training caregivers on first aid, accident prevention, and illness of children, and 3) keeping emergency telephone numbers such as police station, disaster prevention department and hospital ready so as to use them in times of crisis and harm to children. These child care centers should maintain first aid equipments, health record books,

Table 6. Toys and equipment of child care center

	Number	Percentage (%)	95% CI
Toys standard (n = 1,820)	648	35.6	33.4-37.8
Toys condition (n = 1,740)			
Bad condition	644	37.0	34.7-39.3
Good condition	1,096	63.0	60.6-65.2
Electric plug high (n = 1,833)			
≥ 1.5 meters high	1,636	89.3	87.7-90.6
> 1.5 meters high	112	6.1	5.0-7.3
≤ 1.5 meters high with cover plug	85	4.6	3.7-5.7
Electric wire extended (n = 1,761)	584	33.2	43.7-48.4
No ground line (n = 1,532)	812	53.0	50.4-55.5
Equipment has holder (n = 1,790)	583	32.6	30.4-34.7
Equipment in bad condition (n = 1,761)	276	15.7	14.0-17.4
Safety alarm system (n = 1,851)	176	9.5	8.2-10.9
Medicine cupboard (n = 1,846)	1,648	89.3	87.7-90.6
Fire drills (n = 1,861)	328	17.7	15.9-19.4
Safety rehearsal at least once a year (n = 1,862)	294	15.8	14.1-17.5

and be taken along when visiting a doctor⁽⁸⁾. The study found that some child care center had no emergency plan, did not carry out fire escape drills, first aid training, and emergency telephone numbers.

Conclusion

Environment around the building of child care centers carries the risk for accident. If the child care centers follow the standard of caring the children, children will be safer during their stay in the center.

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Potential conflicts of interest

None.

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อุบัติเหตุการเกิดอุบัติเหตุในเด็กของศูนย์พัฒนาเด็กเล็ก องค์การปกครองส่วนท้องถิ่น เขตพื้นที่รับผิดชอบ ศูนย์อนามัยที่ 6

จรรยา อินทรศรีณี, อมรรัตน์ รัตนสิริ, มานพ คณะโต

ภูมิหลัง: ศูนย์พัฒนาเด็กเล็ก เป็นสถานที่สำหรับเด็กก่อนวัยเรียน โดยมีวัตถุประสงค์การดำเนินงานเพื่อเพิ่มโอกาสให้เด็กได้รับการเตรียมความพร้อม และเด็กมีพัฒนาการทางด้านร่างกาย จิตใจ อารมณ์ สังคม และสติปัญญาอย่างเหมาะสม องค์การสหประชาชาติได้ประกาศใช้อนุสัญญาว่าด้วยสิทธิเด็ก (Convention on the Rights of the Child) ในปี พ.ศ. 2533 ระบุว่าเด็กทุกคนมีสิทธิพื้นฐาน 4 ประการคือ 1) สิทธิในการอยู่รอด 2) สิทธิในการได้รับการพัฒนา 3) สิทธิที่จะได้รับความคุ้มครอง และ 4) สิทธิในการมีส่วนร่วม

วัตถุประสงค์: เพื่อศึกษาอุบัติเหตุการเกิดอุบัติเหตุในเด็กและสภาพสิ่งแวดล้อมของศูนย์พัฒนาเด็กเล็ก องค์การปกครองส่วนท้องถิ่น เขตพื้นที่รับผิดชอบของศูนย์อนามัยที่ 6

วัสดุและวิธีการ: เป็นการศึกษาเชิงพรรณนาเพื่อศึกษาอุบัติเหตุการเกิดอุบัติเหตุในเด็กและสภาพสิ่งแวดล้อมโดยรอบของศูนย์พัฒนาเด็กเล็ก องค์การปกครองส่วนท้องถิ่น เขตพื้นที่รับผิดชอบของศูนย์อนามัยที่ 6 จำนวนทั้งสิ้น 3,371 แห่ง ซึ่งประกอบด้วยจังหวัดกาฬสินธุ์ ขอนแก่น เลย มหาสารคาม ร้อยเอ็ด หนองคาย หนองบัวลำภู และอุดรธานี โดยใช้แบบสอบถามชนิดตอบเองส่งทางไปรษณีย์ระหว่างวันที่ 1 มกราคม ถึง 28 กุมภาพันธ์ พ.ศ. 2554

ผลการศึกษา: พบว่าศูนย์พัฒนาเด็กเล็กตอบแบบสอบถามกลับ 1,871 แห่งอัตราส่วนระหว่างเด็กต่อผู้ดูแลเด็ก 17:1 ในปี พ.ศ. 2553 ที่ผ่านมาอุบัติเหตุการเกิดอุบัติเหตุ 7.17 ต่อ 100 คน โดยมีอัตราส่วนเด็กชายต่อเด็กหญิง 1.9:1 และสถานที่เกิดอุบัติเหตุพบมากภายนอกอาคารคือสนามเด็กเล่น ส่วนภายในอาคารนั้นบางแห่งพบในห้องเรียน นอกจากนี้สถานที่ตั้งของศูนย์พัฒนาเด็กเล็กบางแห่งอยู่ติดถนน ไม่มีรั้วกั้น และมีแหล่งน้ำ ตลอดจนมีต้นไม้ นอกจากนี้ไอสุกข์ภัณฑ์ส่วนใหญ่เป็นสุกข์ภัณฑ์เหมาะสำหรับผู้ใหญ่ และไม่มีราวจับ มีเพียง 22.9% ที่เป็นไอสุกข์ภัณฑ์สำหรับเด็ก และ 93.3% ของศูนย์พัฒนาเด็กเล็กมีภาชนะบรรจุน้ำและกักเก็บไว้ในห้องสุขา

สรุป: สภาพสิ่งแวดล้อมที่ได้สำรวจสอบถามจากศูนย์พัฒนาเด็กเล็กที่ศึกษาพบว่าศูนย์พัฒนาเด็กเล็กส่วนใหญ่ มีความเสี่ยงที่จะเกิดอุบัติเหตุในเด็กเล็ก ดังนั้นศูนย์พัฒนาเด็กเล็กจึงควรมีการปฏิบัติตามมาตรฐานสากลเพื่อทำให้เด็กเกิดความปลอดภัยขณะอยู่ในศูนย์พัฒนาเด็กเล็ก
