



The Characteristics of Reported Child Abuse Cases in a Medical Center Located in a Rural Region

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Objectives: The pattern of child abuse is related to physical and socioeconomic factors. Therefore the characteristics of child abuse are different between rural and urban regions. We aim to describe the pattern and clinical characteristics of suspected child abuse in a Taiwan rural medical center by analyzing the cases reported to government authorities.

Methods: This retrospective cross-sectional study was conducted at E-Da Hospital. Children (aged 0 to 18 years) suspected of being abused in 2017 were enrolled. Clinical characteristics were collected from medical records.

Results: A total of 239 suspected abused cases were reported. Child neglect was the most common type (66.5%), followed by physical abuse (20.9%), sexual abuse (12.1%), and psychological maltreatment (0.4%). The mean age was highest in the sexual abuse group and youngest in the neglect group. Overall, 17.2% of the children required hospitalization, and 6.7% (n = 12) were admitted to the intensive care unit (ICU). Two of the ICU cases were diagnosed as neonatal abstinence syndrome. Four children (1.7%) died under the impression of drowning and milk choking-induced asphyxia, all of whom were in the neglect group.

Conclusions: Child abuse is a significant issue in Taiwan. Neglect was the most common type of abuse, and all of the children who died due to child abuse were in the neglect group. The unique data regarding child abuse in a rural region presented here are very important for regional network of healthcare providers.

Key words: child abuse, neglect, physical abuse, rural area, sexual abuse

Introduction

Child abuse is classified into neglect, physical abuse, sexual abuse, and psychological

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maltreatment. Child abuse affects the child's health, survival, development and dignity.¹ Child abuse consequently affects children's long-term health, and increases behavioral, physical and mental problems.^{1,2} In 2014, the prevalence of child abuse in the United States is 17.24 per 1,000 children compared to 3.02 per 1,000 children in Taiwan.³ The low incidence of child abuse in Taiwan is thought to be mainly due to medical professionals lacking sufficient knowledge on how to recognize and manage child abuse.^{3,4} The Convention on the Rights of the Child (CRC) was announced in 1989 by the United Nations. Based on the spirit of the CRC, Taiwan has accelerated its promotion of the protection of children's rights, and implement The Protection of Children and Youths Welfare and Rights Act in November 2014.⁵ The government has implemented important policies, including strengthening the connection of social safety nets, increasing alertness to child abuse, and emphasizing that there is an obligation to report cases of abuse and intervene as soon as possible. Taiwan has an excellent healthcare system, and every child undergoes seven scheduled health check-ups from birth to seven years old which provide frequent contacts with the child. Therefore, it is especially important to raise the awareness and alertness of medical staff to identify victims of child abuse.

Various factors have been found to contribute to child abuse, including: (1) family factors: parents' education, parents' age, economic status, the number of siblings; (2) physiological factors: gender, low birth weight, health status; and (3) social factors: religion, children's discipline culture, etc.^{1,3,6} Consequently, the characteristics of child abuse cases are likely to differ in different regions.^{7,8} Although the medical and socio-economic resources of urban and rural areas are different in Taiwan, the characteristics of reported child abuse cases have not been well studied in different regions. It is thus very important

to understand the characteristics of child abuse in different regions and to educate the medical staff to increase alertness to suspected child abuse cases specific to the location.⁹⁻¹¹

To understand the characteristics of child abuse cases in a rural area, we conducted this study to investigate the characteristics of suspected child abuse cases in a medical center located in a rural region in southern Taiwan.

Materials and Methods

Study population

This study was conducted at E-Da/I-Shou Hospital, a tertiary care medical center in southern Taiwan. Children suspected of being abused from January 1st to December 31st 2017 were enrolled. All children < 18 years of age who were reported via the emergency department (ED), outpatient department (OPD) and wards were included. The healthcare providers prospectively recorded the characteristics of each event. This study was approved by the Institutional Review Board of E-Da Hospital (IRB EMRP-107-082).

Data collection

This cross-sectional retrospective study was designed to analyze the characteristics of the cases and events from medical records. The children were classified into one of the following types of abuse group: neglect, physical abuse, sexual abuse, and psychological maltreatment. The medical records were reviewed, including gender, age, type of abuse, time of episode, reporting department, hospitalization to a general ward or intensive care unit (ICU), and whether or not the child died.

Statistics

Descriptive statistics were used to analyze gender, age, type of abuse, hospitalization and identifying settings. The chi-square test and Fisher's exact test were used to compare categorical variables between different genders

and abuse types. SPSS for Windows® version 15 was used for all statistical analyses (SPSS Corporation, Chicago).

Results

Demographic characteristics

A total of 239 cases (132 males [55.2%]; 107 females [44.8%]) of child abuse were reported, with a mean age of 6.0 +/- 5.8 years (Table 1). Most of the cases were reported from the ED and direct discharges after hospitalizations to the hospital. The most common type of abuse was neglect (66.5%), followed by physical abuse (20.9%), sexual abuse (12.1%), and psychological maltreatment (0.4%). The peak periods of reported cases were in April and May (Fig. 1). Most reported cases were in those aged 1 – 3 years, followed by 12 – 18 years (Fig. 2). Most episodes occurred during the daytime, and the fewest after midnight. Overall, 6.7% of the cases were admitted to the ICU, and 1.7% of the cases died.

Characteristics based on gender

Comparisons of related factors between the male and female children are shown in Table 2. Boys were predominant in the neglect and physical abuse groups, and girls were predominant in the sexual abuse group ($p < 0.001$). The mean age was higher in the girls than in the boys (7.2 ± 6.2 vs. 5.02 ± 5.28 years, $p < 0.001$). There were more males than females in all age groups except the 12 to 18 years age group ($p < 0.001$).

Characteristics based on type of abuse

Comparisons of related factors among the different types of abuse are shown in Table 3. The mean age was oldest (14.51 ± 2.85 years) in the sexual abuse group and youngest in the neglect group (4.07 ± 4.43 years; $p < 0.001$). Cases admitted to the ICU were more common in the neglect and physical abuse groups. All of the children who died were in the neglect

group. Males were predominant in the neglect group, and girls were predominant in the sexual abuse group ($p < 0.001$). The most common perpetrators of sexual abuse were friends (62.0%) and a family relative (6.9%).

Discussion

In this retrospective cross-sectional study, we investigated 239 suspected cases of child abuse at a single medical center located in a rural region in southern Taiwan. The characteristics and types of abuse of the reported cases were specific and different from other hospitals in Taiwan and other countries. These localized data may help to educate local care workers in the network of child healthcare and enhance their awareness of child abuse, especially in

Table 1. Demographic characteristics of the reported cases of abuse.

	N (239)	%
Gender		
Male	132	55.2
Female	107	44.8
Age (mean ± SD [year])	6.02 ± 5.79	
Types of abuse		
Neglect	159	66.5
Physical abuse	50	20.9
Sexual abuse	29	12.1
Psychological maltreatment	1	0.4
Identifying setting		
OPD	5	2.1
ED	218	91.2
Ward	10	4.1
Department of SW	6	2.5
Time of abuse		
8 am to 5 pm	97	40.6
5 pm to 0 am	91	38.1
0 am to 8 am	19	7.9
Unknown	32	13.4
Admission		
Yes	41	17.2
No	198	82.8
Mean (days ± SD)	8.65 ± 9.11	
ICU	16	6.7
Mortality	4	1.7

ED: emergency department; ICU: intensive care unit; OPD: outpatient department; SD: standard deviation; SW: social work.

rural regions.^{9,10}

In this study, the most common type of child abuse was neglect (66.5%), followed by physical abuse (20.9%), sexual abuse (12.1%), and psychological maltreatment (0.4%). Chang's study conducted in Taoyuan, Taiwan³ reported neglect (77.3%), physical abuse

(15.5%), sexual abuse (7.2%), and no psychological maltreatment, similar to the distribution of Child Maltreatment Report conducted in the USA in 2019: neglect 77.2%, physical abuse 17.5%, sexual abuse 9.3%, and psychological maltreatment 6.1%.¹² The prevalence of physical and sexual abuse were higher in

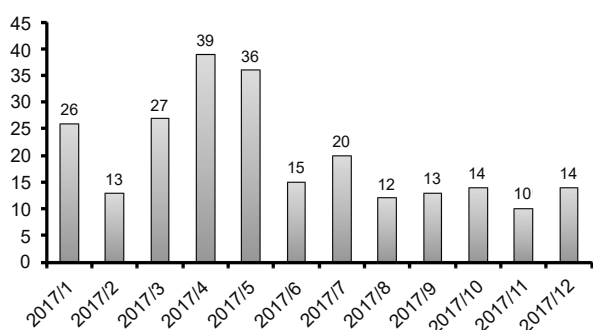


Fig. 1 Number of cases of reported abuse by month.

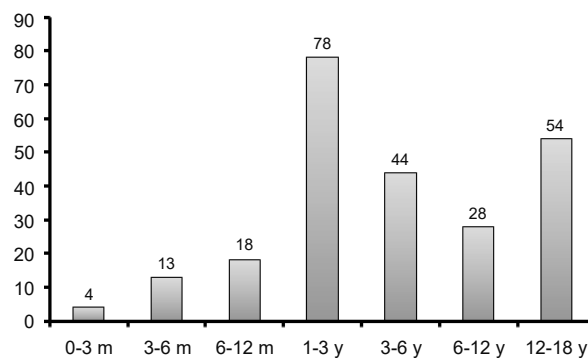


Fig. 2 Number of cases of reported abuse by age group.

Table 2. Comparisons of related factors in the reported cases of abuse based on gender.

	Male		Female		p value
	n	%	n	%	
Total (239)	132	55.2	107	44.8	
Types of abuse					< 0.001
Neglect	105	79.5	54	50.5	
Physical abuse	26	19.7	24	22.4	
Sexual abuse	0	0	29	27.1	
Psychological maltreatment	1	0.8	0	0	
Age					0.025
< 12 m	21	15.9	14	13.1	
1 y to < 6 y	74	56.1	48	44.9	
6 y to < 12 y	17	12.9	11	10.3	
12 y to 18 y	20	15.2	34	31.8	
Mean ± SD, y	5.02 ± 5.28		7.24 ± 6.17		
Identifying setting					0.356
OPD	2	1.5	3	2.8	
ED	118	89.4	100	93.5	
Ward	7	5.3	3	2.8	
Department of SW	5	3.8	1	0.9	
Time of abuse					0.112
8 am to 5 pm	57	43.2	40	37.4	
5 pm to 0 am	52	39.4	39	36.4	
0 am to 8 am	13	9.8	6	5.6	
Unknown	10	7.6	22	20.6	
Admission					1.000
Yes	23	82.6	18	16.8	
No	109	17.4	89	83.2	
Mean (days ± SD)	8.91 ± 8.67		8.33 ± 9.87		
ICU	8	7.5	8	6.1	0.796
Mortality	2	1.5	2	1.9	1.000

ED: emergency department; ICU: intensive care unit; OPD: outpatient department; SD: standard deviation; SW: social work.

Table 3. Comparisons of related factors in the reported cases of abuse based on the type of abuse.

	Neglect		Physical abuse		Sexual abuse		p value
	n	%	n	%	n	%	
Total	159		50		29		
Gender							< 0.001
Male	105	66.0	26	52.0	0	0.0	
Female	54	34.0	24	48.0	29	100.0	
Age							< 0.001
< 12 m	24	15.1	11	22.0	0	0.0	
1 y to < 6 y	107	67.3	14	28.0	1	3.4	
6 y to < 12 y	12	7.5	14	28.0	2	6.9	
12 y to 18 y	16	10.1	11	22.0	26	89.7	
Mean \pm SD, y	4.07 \pm 4.43		7.13 \pm 6.13		14.51 \pm 2.85		
Identifying setting							< 0.001
OPD	0	0.0	3	6.0	2	6.9	
ED	153	96.2	39	78.0	26	89.7	
Ward	2	1.3	6	12.0	1	3.4	
Department of SW	4	2.5	2	4.0	0	0.0	
Time of abuse							< 0.001
8 am to 5 pm	78	49.1	14	28.0	5	17.2	
5 pm to 0 am	65	40.9	18	36.0	7	24.1	
0 am to 8 am	12	7.5	7	14.0	0	0.0	
Unknown	4	2.5	11	22.0	17	58.6	
Admission							0.316
Yes	28	17.6	10	20.0	2	6.9	
No	131	82.4	40	80.0	27	93.1	
Mean (days \pm SD)	6.70 \pm 5.06		15.00 \pm 14.86		2.50 \pm 0.71		
ICU	10	6.3	6	12.0	0	0.0	0.107
Mortality	4	2.5	0	0.0	0	0.0	0.748

ED: emergency department; ICU: intensive care unit; OPD: outpatient department; SD: standard deviation; SW: social work.

our study. Such difference may be related to regional effect, but further study and more detailed data may be needed to confirm the reasons. Besides, the prevalence of psychological maltreatment was significantly lower in our study and Chang's study. A possible explanation for this is that relatively apparent types of child abuse are more commonly reported to government authorities in Taiwan compared to the USA. In addition, 15.5% of cases of abuse in the USA are reported as involving multiple types of abuse.^{12,13} In our study, when the victim was suspected of suffering from both physical abuse and psychological maltreatment, the child was usually reported as a physical abuse case rather than psychological maltreatment, since the former type is easy to identify and the latter is more difficult to define even by healthcare providers.¹⁴ In our

hospital, child psychiatrists and child psychologists have heavy workloads and limited time to be involved with child protection. However, it is very important for psychological teams to engage in the network of child protection to identify cases of psychological maltreatment.¹⁴ In this study, 91.2% of the cases were reported at the ED since the most common etiologies were physical abuse and neglect. We believe that our local data are very important to help identify victims in rural regions though enhanced professional ability and alertness to child abuse cases, particularly in ED physicians and nurses.¹¹

Among the reported cases in this study, 55.2% were male and 44.8% were female, and there were significantly more males than females in the neglect group (79.5% vs. 50.5%, $p < 0.001$). We reviewed the etiologies and

found that they were similar in both genders: falling down, accidental injury, mis-swallowing, riding a motorcycle illegally when aged < 18 years. The higher percentage of males may be due to greater sense of teenage rebellion. Males were predominant in all age groups except in the 12 – 18 age group, and the mean age was higher in the girls than in the boys (7.2 ± 6.2 vs. 5.0 ± 5.3 years). Sexual abuse accounted for 27.1% of all cases, and all were reported in females. These findings are similar to the study in the USA 2019 and Chang's study in Taiwan.^{3,6,12}

The characteristics of different types of child abuse were specific. Neglect was the most common type, and the children in this group were the youngest (4.1 ± 4.4 years). Young children are curious about their environment and can easily injure themselves if not properly supervised, particularly boys.³ Cases are usually reported to have various degrees of injury at an ED, and they usually happen unexpectedly.^{15,16} High alertness is needed to identify neglect cases.¹⁷ There were no significant differences in the percentage of ward hospitalization or ICU hospitalization among the child abuse types in this study. All four of the children who died were in the neglect group, and the causes of mortality were milk choking-induced asphyxia ($n = 3$) and drowning ($n = 1$). The government should implement strategies to educate caregivers to prevent these possibly preventable causes, including strengthening the anticipatory guidance education during well-baby clinic visits.

The percentage of physical abuse was similar in the males and females. The mean age of these children was 7.13 ± 6.13 years, and most cases were identified at the ED. The first-line physicians and nurses in an ED are expected to be able to identify the different presentations of cases with and without abuse.¹⁷ Healthcare providers receive continuous education about the signs of child abuse to increase their alertness, including unexplained

burns, bites, bruises, broken bones, black eyes, fading bruises or other marks noticeable after an absence from school, appearing to be frightened of their parents and protests or cries when it is time to go home, or shrinking at the approach of adults.^{3,15,18} The hospitalization rate was highest in the physical abuse group (20%), and they also had the longest length of hospital stay (15.00 ± 14.86 days) and the highest rate of ICU admission (12%). The two ICU hospitalization cases were diagnosed as neonatal abstinence syndrome, which is a severe issue in our hospital. Whether this is related to a high drug addiction rate in the location of our hospital needs to be evaluated in further studies.

Sexual abuse was the least common type of abuse other than psychological maltreatment in this study. Children who suffer from sexual abuse have been reported to be afraid to report the abuse and worried about whether others will believe that it really happened.^{6,19} It is possible that when the perpetrator was a family member the child would hesitate to report the sexual abuse event. Therefore, the actual number of cases of sexual abuse may be higher than that reported in our study. The sexually abused children had the highest mean age (14.51 ± 2.85 years). The most common perpetrator were friends, which is different to Merav's study in Israel reporting relatives were the most common.⁶ The females in our study had a higher risk of sexual abuse, which is similar to the study in the USA 2019 and Chang's study in Taiwan.^{3,6,12} In fact, all cases were female in our study. The majority were in the 12 to 18 years age group, however 6.9% and 3.4% were in the 6 – 12 years and 1 – 6 years age groups, respectively. Therefore, health providers need to keep in mind that sexual abuse can occur in elementary school and pre-school aged children.^{20,21} Young children also need to be taught how to protect themselves from sexual abuse. No case of sexual abuse was reported in male children in this study. This

may be related to the traditional concept of sex, in which males do not talk about sexual abuse to others.^{19,22} In addition, Valente reported that fear of being called homosexual and loss of self-esteem resulted in lower number of reported cases in males.²²

The detailed data regarding reported child abuse in a hospital located in a rural region in southern Taiwan is more useful than national data. Local data enhances professional knowledge and skills about child abuse, and creates a network between healthcare providers, caregivers, and society are very important to identify suspected child abuse cases and promote child health in rural regions.¹⁰ Therefore, our data are very important for continuous education of healthcare providers in hospitals and members of the community who care of pediatric populations, including teachers, school nurses, and physicians in local medical departments.^{9,11}

However, there were some limitations to the study. First, the enrolled children were suspected cases of abuse in a hospital rather than children with confirmed child abuse by government authorities. However, based on the aim to identify all cases of child abuse, encouraging the reporting of suspected cases is the most important policy at present. Second, psychological maltreatment was not well assessed due to the difficulty in identifying cases by staff who were not experts in psychological evaluations.

Conclusion

This study reports detailed clinical characteristics of suspected child abuse cases at a medical center located in a rural region in southern Taiwan. The neglect type of abuse was the most common, and all of the children who died were in the neglect group. The unique data regarding child abuse in a rural region presented here are very important for educating healthcare providers and members of networks regarding the healthcare of children in the community. We hope that our findings will increase

awareness, help to identify suspected abuse cases and to promote children's health in rural regions.

Author Contributions

Yu-Cheng Tsai, Yu-Tsun Su, Yu-Shen Chen, and Pei-Hsuan Chen conceptualized the study, collected grants, and wrote the initial paper; En-Ling Chao, Yi-Feng Su, San-Nan Yang and Ching-Chung Tsai contributed to data collection and data analysis; Yi-Feng Lin and Yu-Tsun Su contributed to the study design and edited the paper. All authors approved the final paper as submitted.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the E-Da Hospital Ethical Review Committee.

Informed Consent Statement

Patient consent was waived due to this being a retrospective study based on recorded data.

Data Availability Statement

The data that support the findings of this study are available on reasonable request from the corresponding author.

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Conflicts of Interest

The authors declare no conflict of interest.

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