Clinical Features and Risk Factors of Psychiatric Disorders among Maltreated Children

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Abstract

Objective: In this survey, we intended to study the clinical features and possible risk factors including types of maltreatment, family factors, and psychopathology of maltreated children. **Methods:** We reviewed the clinical case reports of comprehensive assessment in annual projects of maltreated children placed in the children's homes between 1997 and 2016. The comprehensive assessment included history of maltreatment, family condition, psychiatric interview, physical examination, and psychological assessment. We divided maltreated children into Axis I psychiatric disorder and non-Axis I psychiatric disorder groups for comparing the difference in clinical features and risk factors. **Results:** Among the 377 participants, the average age was 9.1 ± 3.0 years. The majority were male (60.5%) and pupils of elementary school (69.9%). Only 22.5% of their parents still maintained as married in marital status. In Axis I psychiatric disorder group, both age ($p < 0.05$) and full intelligence ($p < 0.001$) were significantly lower than non-Axis I psychiatric disorder group. Besides, the study participants in the Axis I psychiatric disorder group had significantly more times of changes in placement ($p < 0.05$) and stayed longer in a placement ($p < 0.05$). In both groups, around 40% of all the participants were 25 percentile or less in height. The feature was not found in weight dimension. **Conclusion:** While the problem of psychiatric disorder adds complexity to child maltreatment issues, the promotion, protection, and restoration of mental health can be regarded as a vital concern in these vulnerable children.

Key words: age, duration of placement, frequency of changes in placement, intelligence
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Introduction

Child maltreatment has been an important issue ever since the World Health Assembly declared that violence is a major public health issue in 1996 [1]. As reliable measurement of the frequency and severity of child maltreatment is not straightforward, different types of measures including official statistics and community studies have been used. Different measurement methods bring about different prevalence data. In 2014, 9.4 per 1,000 children experienced maltreatment in the United States of America [2] while 32% in Canada [3], 16% in the United Kingdom [4], and 1.5–4.3 of 1,000 children in Taiwan [5, 6]. The prevalence varies in different types of maltreatment including neglect (75%), physical abuse (17%–26%), sexual abuse (8%–10.1%), and psychological abuse (6%) [2, 3]. However, in one population-based study on the prevalence of different forms of child maltreatment

among Taiwanese adolescents through self-report in Taiwan, the distribution of maltreatment types is a little different. The psychological abuse (69.2%) is more common than physical abuse (61.4%), neglect (54.6%), and sexual abuse (19.8%) [7].

In general, the gender shows similar risk for victims of abuse or neglect [2,8], except higher prevalence of sexual abuse among females [3]. A similar phenomenon has been observed in Taiwanese society [6].

The causes of child maltreatment is heterogeneous; associated with parent, child, social and culture factors. According to statistics in the United States, child maltreatment may occur in all social and economic classes. Nearly 80% of abusers are parents [9]. But the risk of child maltreatment

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is related to poverty; a child whose family income being < US$15,000, the risk of child maltreatment is increased 22 times that of those earning more than US$30,000. The other two risk factors are domestic violence and substance abuse [10]. Another population-based study of 189,055 babies showed that mothers' smoking during pregnancy, having more than two siblings, being eligible for Medicaid, being unmarried, and having low birth weight are high-risk factors for infant maltreatment [11]. Data from the administrative statistics of Taiwan in 2018 showed that 79.2% of abusers are parents. Analysis of the parental factors investigated by social worker in the administrative data of child maltreatment revealed that the highest proportion of parental factors are lack of parental knowledge (61%), followed by emotional instability (39.5%), and economic factors accounts for 16.2% while alcohol and substance abuse for 14.9% [11].

As far as child factors in the administrative data of Taiwan are concerned, over a half of them have obvious factors not attributable to patients (59.3%), followed by misbehaved (13.9%) and hyperactive factors (5.6%) (https://dep.mohw. gov.tw/dops/lp-1303-105-xCat-cat04.html). Disability and developmental delay account for 4.8% and 4%, respectively.

All types of child maltreatment have been found to be associated to axis I mental disorders of *DSM-IV* system. Elevated risk has been noted over psychiatric disorders including attention deficit hyperactive disorder (ADHD) [2, 3], conduct disorder (CD) [3], oppositional defiant disorder (ODD) [2], substance use disorder [2], major depressive disorder [2, 3, 12], bipolar disorder [3], anxiety disorders [2, 3], and posttraumatic stress disorder (PTSD) [2]. Male victims are more likely to have antisocial behavior while female ones show to have depression or PTSD and substance use disorders [13]. In addition, a systemic review of population-based studies by Govindshenoy and Spencer showed that the empirical correlation between child maltreatment and physical and mental disabilities is weak. Psychological and emotional problems as well as learning disabilities are related to child abuse but may share common pathogenesis [14].

Besides, earlier age of onset of child maltreatment is associated with poorer mental health outcomes [2, 15]. The adverse experience of child maltreatment increases the risks of adult behavioral problems including antisocial behavior, criminal arrests, and symptoms of depression, anxiety, and PTSD [2, 14].

Besides psychiatric disorder, the psychosocial and environmental factors are also correlated to child maltreatment. Being male, older age, living in a single-parent home, living in household running out of money, moving two or more times in the past year, and household overcrowding are associated with increased risks of child functional impairment [8]. The increased unemployment rate has late-onset effect of increased child maltreatment rate in the study of Taiwan [5].

In Taiwan, social workers will provide intervention for the children with maltreatment according to their different risks and needs. The intervention includes necessary protection, placement, and emergency placement. Some children are placed to children's home or other institutes if they face persistent or potential risks to their safety. Since 1997, we have done annual projects to assess the maltreated children placed in one of children's home in Taiwan. In the projects, comprehensive assessment was given by child psychiatrists, nurses, social workers, and psychologists. The routine clinical procedure covers history of maltreatment, family condition, psychiatric interview, physical examination, and psychological assessment. All the diagnoses were made using the *DSM-IV,* and *DSM-IV-TR* classification. A joint meeting was held routinely where more than two child psychiatrists reached agreement on diagnoses during their discussion. Although many issues and psychosocial factors of child maltreatment had been discussed, we are interested in the factors associated with psychopathology of Taiwanese maltreated children. This survey aimed to investigate the clinical features and possible risk factors, including types of maltreatment, physical condition, intelligence, and family factors of Taiwanese maltreated children.

Methods

Study participants

We reviewed the clinical case reports of comprehensive assessment in annual projects of maltreated children placed in the children's home between 1997 and 2016. We used 377 reports for further analysis.

This study to review risk factors of child maltreatment and psychopathology was approved by the institutional review board of the Taoyuan Psychiatric Center (the IRB protocol number = B20171024 and date of approval = December 11, 2017) without the stipulation of obtaining informed consents from the study participants.

Study procedures

We recoded the clinical features and risk factors into five domains:
- Demographic data, including sex, age, education, sibling number, and birth order
- Physical examination such as percentile of height and weight by the age and the result of electroencephalography (EEG)
- Family characteristics as parental marital status and guardianship
- Profile of maltreatment indicating to maltreatment patterns (physical abuse, neglect, emotional abuse, sexual abuse, family dysfunction, abandon), time of being abused, abuser, placement frequency, and duration
- Psychiatric diseases diagnosed after interview and assessment
- Psychological test for intelligence quotient using WPPSI for children under six years of age, WSIC-III and WSIC-IV for children under 15 years of age, and WAIS-IV for teens above 16 years of age as measuring tools.

For all the reports, we divided into two groups according to whether psychiatric disorder was diagnosed using the *DSM-IV*, and *DSM-IV-TR* classification. Any mental health conditions that met diagnostic criteria of DSM-IV system,

other than personality disorders or mental retardation, would be counted as Axis I.

Statistical analysis

We presented the study data in descriptive statistics according to diagnoses and demographic characteristic. We compared these two groups using Pearson Chi-square test for categorical variables and using Student t-test for continuous variables.

All the data were coded and analyzed using the Statistical Package for the Social Science software version 20 for Windows (SPSS Inc., Chicago, Illinois, USA). The differences between the groups were considered significant if p-values were samller than 0.05

Results

Table 1 displays the demographic data of all participants. Among 377 participants, the average age was 9.1 ± 3.0 years, ranging from 2 to 18 years. The majority were male (60.5%) and pupils of elementary school (69.9%). Most of their parents were divorced (32.1%), followed by never married (24.1%). Only 22.5% of the parents still stayed married. We found single biological father and biological mother having the guardianship, 38.7% and 30.5%, respectively, with only 6% ($n = 21$) of participants' guardianship owned by both biological parents. Furthermore, court-appointed guardian accounted for 11.9% ($n = 45$).

Table 1 shows all the psychiatric diagnosis and percentage. There were 76.9% ($n = 290$) of the participants diagnosed with one or more psychiatric disorders. The most diagnosis revealed as ADHD, amounting to 48.2%, followed by mental retardation (17.5%) and anxiety disorder (16.7%).

Among the 66 participants with mental retardation, 47 cases of participants was found with Axis I psychiatric disorders. The proportion of the presence of Axis I psychiatric disorders in participants with mental retardation were non-significant compared with those without mental retardation. Then, we divided into two groups based on the presence or absence of Axis I psychiatric disorders. Table 2 shows the demographic data and family characteristics of different groups according to the presence or absence of Axis I psychiatric disorder. No significant difference was noted in sibling number, birth order, parental marital status, and guardian. Both age and full intelligence were significantly lower in the psychiatric group. In contrast, no difference was noted in gender, education level, height and weight, and result of EEG. But around 40% of all the participants were 25 percentile or less in height no matter in participants with Axis I psychiatric disorder or non-Axis I psychiatric disorder group, though the proportion of children with weight < 25 percentile was around one in four.

In review of the past history of participants in our study, the participants were maltreated for 3.8 ± 3.4 years in average. Some of them experienced physical abuse (19.6%) and sexual abuse (5.3%) as direct physical harm. Other maltreatment pattern included neglect (54.6%), family dysfunction (18.3%), abandon (6.7%), and emotional abuse (4.5%). Ninety percent

Table 1. Demographic data and psychiatric diagnosis of all participants ($n = 377$)

Characteristics	n (%)
Gender	
Male	228 (60.5)
Female	149 (39.5)
Age (years)	9.1 ± 3.0
Education	
Kindergarten	60 (15.9)
Elementary school	252 (69.9)
Middle school	63 (16.7)
High school	2 (0.5)
Parental marital status	
Married	85 (22.5)
Widowed	76 (20.2)
Divorced	121 (32.1)
Separated	4 (1.1)
Never married	91 (24.1)
Guardian	
Biological father only	146 (38.7)
Biological mother only	115 (30.5)
Both biological parents	21 (5.6)
Partner of biological parents	2 (0.5)
Relatives	34 (9.0)
Court-appointed	45 (11.9)
Others	14 (3.7)
Psychiatric diagnosis	
No	87 (23.1)
Yes (one or more diagnosis)	290 (76.9)
Schizophrenia	1 (0.3)
Depressive disorder	28 (7.4)
Anxiety disorder	63 (16.7)
mental retardation	66 (17.5)
pervasive developmental disorder	6 (1.6)
Attention deficit hyperactive disorder	182 (48.2)
Learning disability	33 (8.8)
Conduct disorder	21 (5.6)
Enuresis/encopresis	19 (3.5)
Others	35 (6.4)
Number of Axis I psychiatric diagnosis	
No diagnosis	106 (28.1)
Single diagnosis	135 (35.8)
Dual or more diagnoses	136 (36.1)

of their biological parents involved as abuser. No difference was noted no matter among participants with Axis I psychiatric disorder or not. But the participants in the Axis I psychiatric disorder group had more times of displacement and stayed longer in placement (Table 2).

Discussion

The issue of placement of maltreated children has been highlighted globally for the past decades. Statistics from the Children's Bureau of the United States show that every year about 400,000–500,000 children receive placement outside the home, that is, foster care, nearly twice as many as two decades

Table 2. Demographic data, family characteristics of different groups according to the status of Axis I psychiatric disorder

Characteristics	Case (%)	
	Axis I psychiatric disorder group (*n* = 271)	Non-Axis I psychiatric disorder group (*n* = 106)
Age (years), mean ± SD*	8.9 ± 2.9	9.6 ± 3.2
Average height (cm), mean ± SD	131.1 ± 18.0	134.0 ± 18.7
Average weight (kg), mean ± SD	30.7 ± 13.3	32.2 ± 11.7
Full intelligence (FIQ), mean ± SD***	83.4 ± 13.2	88.6 ± 13.2
Sibling number, mean ± SD	2.9 ± 1.6	3.0 ± 2.1
Gender		
Male	169 (62.4)	59 (55.7)
Female	102 (37.6)	47 (44.3)
Education level		
Elementary school or lower	229 (84.5)	83 (78.3)
Middle school or higher	42 (15.5)	23 (21.7)
Height		
25th percentile or less	107 (39.5)	38 (35.8)
> 25th percentile	164 (60.5)	68 (64.2)
Weight		
25th percentile or less	73 (26.9)	19 (17.9)
> 25th percentile	198 (73.1)	87 (82.1)
EEG		
Normal	250 (92.3)	102 (96.2)
Abnormal	21 (7.7)	4 (3.8)
Birth order		
First	116 (42.8)	47 (44.3)
Second or later	155 (57.2)	59 (55.7)
Parental marital status		
Married or widowed	110 (40.6)	51 (48.1)
Never married or divorced or separated	161 (59.4)	55 (51.9)
Guardian		
Biological parents	203 (74.9)	79 (74.5)
Other than biological parents	68 (25.1)	27 (25.5)
Time of being maltreated		
6 months or less	73 (26.9)	21 (19.8)
> 7 months	198 (73.1)	85 (80.2)
Maltreatment pattern		
Physical abuse or sexual abuse	67 (24.7)	24 (22.6)
Other than physical abuse or sexual abuse	204 (75.3)	82 (77.4)
Abuser		
Biological parents	247 (91.1)	95 (89.6)
Other than biological parents	24 (8.9)	11 (10.4)
Placement frequency*		
Once only	84 (31.0)	45 (42.5)
Twice or more	187 (69.0)	61 (57.5)
Duration of placement*		
6 months or less	70 (25.8)	40 (37.7)
>6 months	201 (4.2)	66 (62.3)

*$p < 0.05$; ***$p < 0.001$, using Student t-test or Pearson Chi-square test when appropriate.
SD, standard deviation; FIQ, full intelligence quotient; EEG, electroencephalogram

ago [10], and in 2009, about one-fifth of the battered children were placed outside the home [16]. In Taiwan, about 84%–85% of maltreated children lived at home and < 5% of children are placed outside their homes in emergency or continued resettlement (https://dep.mohw.gov.tw/dops/lp-1303-105-xCat-cat04.html).

It is estimated that 50%–75% of maltreated children after placement outside the home in the United States return home, while 20%–40% of them will re-enter foster care within 1 or 2 years [10]. In fact, providing a safe and stable care environment is the key to promoting the physical and mental health of children. One study of Landsverk and his colleagues revealed

that the number of placements is a robust predictor of children's anxiety symptoms after covarying for children's anxiety scores [15]. In the past 7–8 years, the impact of repeated placements on abused children has made breakthroughs in the study of genotype–environment interaction. The vulnerability of children exhibited more depressive symptoms associated with the two genotypes, the Met allele of the BDNF gene and two short alleles of 5-HTTLPR has the highest depression scores, but the vulnerability associated with these two genotypes is only evident in the maltreated children [15, 16].

Many researchers stress on mental health among the maltreated youths involving whole foster care system in different continuum of severity and placement. One of the studies from Taiwanese researchers found that 95% of cases have internalizing behavior problems, while 73% of cases have externalizing behavior problems in a foster institute [17]. In the quality of care for abused children and the use of mental health resources, Ringeisen et al. showed that half of the children entering the child protection system have one or more indicators of mental health problems. But only a quarter of children have used psychiatric outpatient resources [18]. In a different study, by Burns et al. also provided similar data that 47.9% of children aged 2–14 years having received a survey from the child welfare system have obvious emotional and behavioral problems of clinical significance [19].

Our study focused specifically on the maltreated children placed in children's home, where all the participants experienced of abuse or neglect in various degrees, about the clinical features and risk factors. In addition, we did comprehensive assessments including diagnosis according to child psychiatrists and detailed information of past maltreatment history from an assigned social worker. The information from direct assessment and diagnosis by professionals is more advantageous and valuable than simple questionnaire surveys.

In our study (Table 1), 28.1% of the participants were not diagnosed with any Axis I psychiatric disorder while half of the rest participants had single diagnosis and another half had dual or more. The prevalence was similar to one study of foster institute in United States and between the findings of two studies of foster institute in Taiwan. Regardless of where they studied, ADHD was the most diagnosed [17, 20, 21].

To our knowledge, only one survey was found focusing on different levels of care in group homes in the US where the youth with maltreatment or psychiatric disorder were placed in [20]. Across different levels of care in group homes, three quarters of the youth have psychiatric diagnosis. Furthermore, 21.8% of them have one diagnosis while 54.5% of them have two or more. Higher numbers of diagnosis are correlated to higher level of care. Similar prevalence of psychiatric disorder, but less proportion of multiple diagnoses were found in our study; probably our participants had been less severe maltreatment before placement.

Many studies have shown childhood maltreatment as potentially associated with lowered IQ compared to matched

control groups [22]. Over 60% of maltreated children and adolescents in our results were found to have mild mental retardation to sub-average range of mental capacity. Those results are compatible with the previous findings [22]. But the intelligence score was 5.2 points significantly lower in Axis I psychiatric disorder group than that in non-Axis I psychiatric disorder group though both were in low average range of mental capacity. Child intelligence has the relationship between early childhood maltreatment and adolescent symptoms of depression or anxiety [23]. In the future, we need to further explore the impact of intelligence on the relationship between Axis I psychiatric diagnoses and maltreatment characteristics such as subtypes, severity, and duration.

The association between height and maltreatment has been studied in the past. A positive association exists between the number of substantiations of childhood maltreatment and height deficit after controlling for perinatal and familial confounders [24]. Except sexual abuse, all subtypes of maltreatment are associated with a 0.03 cm decrease in height among young adults who were experiencing multiple incidents before the age of 14 years. Under the consideration of development in child and adolescent stage, we used percentile instead of accurate centimeter to assess the height. We found that up to 38.5% of the participants below 25th percentile in height in our study (Table 2). But this finding is much higher than that in normal population. No obvious difference was found in the groups between Axis I psychiatric disorder and non-Axis I psychiatric disorder (Table 2). Based on the findings, we suggest that the child maltreatment experiences impact on child height growth but that the actual mechanism needs to be investigated.

Study limitations

Despite several benefits in our study, three major study limitations should be alerted and understood:

- The current study research was a cross-sectional and retrospective study. Some association existed, but the interpretation should be conservative, and longitudinal study is needed.
- Not all the residents in children's home were recruited into the study. Besides, the youths in children's home are a special group who are different from those in other population. Thus, it should be careful not to over-interpret the results of this study to maltreated children and adolescents.
- The prevalence of psychiatric disorder might be still under-estimated, especially internalizing symptoms were relatively difficult to clarify although we did comprehensive assessment by child psychiatrists, doing psychological assessment as well as collecting family characteristics and maltreatment.

Summary

In this study, we found that maltreated children with more frequency in the change of placements, longer duration of placement, and low mental capacity tend to have diagnosable psychiatric disorders. While the problem of psychiatric

disorders adds complexity to child maltreatment issues, the promotion, protection, and restoration of mental health can be regarded as a vital concern in these vulnerable children.

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Conflicts of interest

None of the authors have any proprietary conflicts of interest related to this submission.

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