Clinical Characteristics and Developmental Profile of Child Abuse Victims Assessed at Child Assessment Service in Hong Kong: A Five-year Retrospective Study

HPW *Lo*, VWY *Lau*, ESM *Yu*

Abstract

Objective: To investigate the clinical characteristics and developmental profile of child abuse victims assessed at Child Assessment Service (CAS) in Hong Kong. ***Method:*** A retrospective chart review was conducted. Children with multidisciplinary case conference concluded as child abuse victims and who were assessed at CAS were studied. An age-, sex- and condition-matched comparison group was also selected for comparison. ***Results:*** Fifty-five children (36 boys and 19 girls) were studied. Developmental delay/intellectual disability and attention deficit hyperactivity disorder/problem were the two major developmental disabilities identified. Types of abuse included physical abuse (56.4%), neglect (32.7%), sexual abuse (3.6%) and multiple abuse (7.3%) and 80% of the abusers were parent(s). Parents with psychiatric problems or substance abuse, single parenting, low-income families and children having sibling(s) with developmental problems were associated with higher risk for child abuse. ***Conclusions:*** Psychosocial risk factors for child abuse were identified in children with developmental problems assessed at CAS. Support for these children from disadvantaged families is important in child protection.

Key words   Child abuse; Developmental disabilities

Introduction

Children with disabilities were consistently found to be associated with higher risk for child abuse in various studies.[1] For instance, a school-based population epidemiological study in the United States (US) found that children with disabilities were 3.4 times more likely to be abused than those without.[2] A population-based birth cohort in the United Kingdom (UK) showed that children with disabilities were associated with increased risk of registration for child abuse and neglect.[3] A scoping study which reviewed researches about child abuse, child protection and children with disabilities in 1996-2009 indicated that children with

disabilities were significantly more likely to experience abuse than their non-disabled peers.[4] A systematic review and meta-analysis of observational studies in 1990 to 2010 indicated that children with disabilities had a significantly higher risk of being victims of all types of violence.[5] In a survey of school-aged children in Hong Kong, children with disability were reported to have 1.6 times higher risk of experiencing physical maltreatment than those without.[6] An epidemiological study of child abuse and its geographic distribution in Hong Kong matched the two major local child abuse databases under Social Welfare Department (SWD) and Hospital Authority. After matching the records in 2001-2010, 9364 child abuse victims were identified. Mental health problems and congenital malformations/ chromosomal abnormalities were found to be significantly more prevalent among the child abuse victims than in the general population.[7] But the question about to what extent does child abuse contribute to disability, and whether disability predisposes to child abuse is still unanswered.[3-5] Regarding the long term adverse effects of child abuse, studies in foreign countries have found the association of child sexual and nonsexual abuse with long term adverse

Child Assessment Service, Department of Health, Hong Kong, China

HPW **Lo** (盧佩雲)   *MRCPCH, FHKCPaed, FHKAM(Paed)*
VWY **Lau** (劉慧然)   *MSocSc(Clin Psy)*
ESM **Yu** (余筱敏)   *MSocSc(Clin Psy)*

Correspondence to: Dr HPW **Lo**

Email: henny_lo@dh.gov.hk

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mental health consequences.[8-10] A recent meta-analysis also identified a significant positive association of psychiatric disorders and childhood physical abuse in Chinese populations.[11]

In Hong Kong, multidisciplinary case conference (MDCC) would be held for cases of suspected child abuse in order to decide the nature of the incidents, to analyse the risks and to recommend the welfare planning of the child and the family.[12] SWD and non-governmental organisation service units providing casework service are invited to report child abuse/at risk cases to the Child Protection Registry (CPR).[12] According to the CPR statistical report, there were 963 newly reported child abuse cases in 2013. Concerning the contributing factors of child abuse, 549 (57%) cases were recorded as having factors relating to the abused child/ child-at-risk. Behavioural problem (65.6% of the total 549 cases), school performance problem (29.5%) and emotional/ psychological problem (18.0%) were the three most usual factors recorded.[13]

Child Assessment Service (CAS) of the Department of Health is the major public organisation providing service to children with developmental disabilities in Hong Kong. The catchment area of CAS covered over 90% of Hong Kong. It provides comprehensive diagnostic evaluation, multidisciplinary developmental assessment, prescription of rehabilitation plan and interim child and family support to children who presented with developmental and behavioural problems.

This study aimed at analysing the clinical characteristics and profile of child abuse victims in the subgroup of children with developmental problems. By providing child care professionals with more understanding about the clinical characteristics and developmental profile of child abuse victims with developmental problems, it is hoped that this study can increase their awareness on both child abuse and paediatric developmental disabilities and provide more insights to the future direction in developing preventive measures against abuse of children with developmental disabilities.

Methods

This was a retrospective study conducted at CAS. All the subjects in this study would be younger than 12 years old because this was the age group that CAS served. Children assessed in CAS from 2009 to 2013 who met the following inclusion criteria were included as the 'abuse group':

(i) documented history of at risk of or established child abuse after MDCC, or

(ii) suspected child abuse after assessment at CAS and subsequent MDCC concluded the case as at risk of or established child abuse.

The computerised information system of CAS contained the diagnostic coding of all the children assessed in CAS. By searching with the coding related to child abuse from the system, potential subjects were identified. In order to avoid missing any cases, all the clinicians and medical social workers working at CAS were also invited to recall and identify cases with history of child abuse that they encountered in their clinical sessions. A retrospective chart review of the identified cases was then conducted. The information about the history of abuse was obtained from the referral letters, from the history provided by the parents or caregivers or from the medical social workers. For those cases with incomplete or uncertain information about the child abuse incident, permission was obtained from SWD to release the minimum information required for this study. Cases which did not meet the inclusion criteria were excluded from the study. To supplement the analysis, a 'comparison group' consisted of same number of age-, sex- and condition- matched children but without history of child abuse was selected from CAS during the same study period. The paper records of both groups were reviewed and data related to the study was retrieved for analysis. The demographic data and the background of the parents and families, e.g. history of substance abuses, etc., were obtained from the parents, other family members or medical social workers. The information related to the parental psychiatric follow up was obtained by history taking or when the assessors in CAS identified that the parents had the need for psychiatric referral for their mental health problems during assessment of their children.

Ethics Approval
The Ethics Committee of the Department of Health granted approval for this study.

Statistical Analysis
McNemar's chi-square was used to test the equality of proportion of characteristics found in abuse and comparison subjects. The null hypothesis for abuse-comparison paired data was the proportion of a particular characteristic found in abuse subjects was equal to the proportion of the corresponding characteristic found in comparison subjects. In other words, the numbers of pairs in two discordant cells

of contingency table were the same. A *p* value less than 0.05 indicated the proportion of characteristics was not the same between abuse group and comparison group. If the total number of discordant pairs was greater than 10, *p* value for uncorrected chi-square was used; otherwise exact *p* value based on binomial distribution was used.

Moreover, for characteristics which were shown to be different statistically, odds ratio was calculated to test and quantify the strength of association between occurrence of characteristics and abuse. An odds ratio of 1 indicated there was no association between occurrence and abuse. If the 95% confidence interval of odds ratio did not contain 1, a statistically significant association, at 0.05 significance level, existed between occurrence and abuse. Odds ratio was estimated by maximum likelihood based logistic regression or exact logistic regression on paired data. Exact logistic regression was used when some cells in the 2x2 paired data contingency table having very small or zero cell count. The statistical tests, including t-test, chi-square test, Fisher's exact test, McNemar's chi-square test, logistic regression, and exact logistic regression, were conducted by using SAS/STAT 9.22.[14]

Results

Fifty-five children, 36 boys (65.5%) and 19 girls (34.5%), met the inclusion criteria and were included in this study as the 'abuse group'. Three of them were cases of suspected child abuse after assessment and subsequent MDCC conclusion was established child abuse. At the time of assessment at CAS, the mean age of these children was 57.24 months (SD 28.81months), ranged from 3 months to 10 years 9 months old. Another 55 age-, sex-, and condition-matched children were selected as the 'comparison group' (Table 1).

The Developmental Profile
The developmental disabilities identified after assessment in the 'abuse group' were shown in Table 1. Thirty-two children had single developmental problem while 20 children had more than one condition. Three children were found to have normal development after assessment. Regarding the types of developmental problems, 30 (54.5%) children had developmental delay or intellectual disability. Developmental delay was defined as preschool children having delay in one or more developmental domains, including gross motor, fine motor, speech and language, cognitive, social and adaptive

functioning. Twenty-one (38.2%) children had attention deficit/hyperactivity disorder or problem (ADHD), nine (16.4%) were at risk of or confirmed to have dyslexia and five (9%) had speech sound disorder and/or specific language impairment. The other developmental problems identified included autism spectrum disorder (5.5%), anxiety disorder or problem (3.6%), oppositional defiant disorder (3.6%), physical impairment (1.8%) and visual impairment (1.8%).

Information Related to the Child Abuse Incidents
In the abuse group, 45 cases (81.8%) were concluded as established child abuse and 10 (18.2%) at risk of child abuse after MDCC. Types of abuse included physical abuse (56.4%), neglect (32.7%), sexual abuse (3.6%) and multiple abuses (7.3%) (Table 2). There was no known case of psychological abuse. The relationship of abusers with the victims was shown in Table 3. Forty-four (80%) cases were abused by either or both parents. Other abusers included unidentified persons (10.9%), family friends or friends (3.6%), family member (1.8%), domestic helper (1.8%) and neighbour (1.8%).

Demographic and Other Characteristics
Table 4 summarised the demographic and other characteristics of abuse and comparison groups. Significant differences were found in some of the characteristics between the two groups, including mother having psychiatric follow up (25.5% in abuse group, 1.8% in comparison group, *p*=0.0008), father with history of substance abuse (10.9% in abuse group, 0.0% in comparison group, *p*=0.0313), mother with history of substance abuse (27.3% in abuse group, 0.0% in comparison group, *p*=0.0001), single parents (61.8% in abuse group, 1.8% in comparison group, *p*<0.0001), family receiving comprehensive social security allowance (CSSA) (56.4% in abuse group, 7.3% in comparison group, *p*<0.0001) and family having more than one child with developmental problems (30.9% in abuse group, 5.5% in comparison group, *p*=0.0017).

Table 5 shows the odds ratios (OR), estimated by maximum likelihood based logistic regression or exact logistic regression, for child abuse and the significantly different characteristics. Mother having psychiatric follow up was associated with increased risk of child abuse (OR=14.00, 95% CI=1.841-106.465, *p*=0.0108). Having parents with known substance abuse was also associated with higher chance of child abuse (father: OR=8.166, 95% CI=1.177-infinity, *p*=0.0312; mother: OR=21.144, 95%

Table 1 Developmental profile of abuse and comparison subjects

	Abuse group (n=55)	Comparison group (n=55)	Test statistic	*p* value
Matching variables				
Gender of child				
Female	19	19	$\chi2$ (1) = 0	1.000
Male	36	36		
Age of child (months)				
Mean (s.d.)	57.24 (28.81)	56.60 (29.05)	t(128) = 0.12	0.9084
Conditions identified				
Multiple conditions				
ADHD + Delay/ID	5	5	0.000[†]	1.000[§]
ADHD + dyslexia	3	3		
ADHD + ODD	2	2		
ADHD + dyslexia+ Sp/Lang	2	2		
ADHD + ASD	1	1		
ADHD + Anxiety	1	1		
Dyslexia + Sp/Lang	3	3		
Anxiety + Delay/ID	1	1		
Delay/ID + PI	1	1		
Delay/ID + VI	1	1		
Single condition				
Delay/ID	22	22		
ADHD	7	7		
ASD	2	2		
Dyslexia	1	1		
Normal development	3	3		

ADHD=attention deficit/hyperactivity disorder or problem; Anxiety=anxiety disorder or problem; ASD=autism spectrum disorder; Delay/ID=developmental delay or intellectual disability; Dyslexia=at risk of or confirmed dyslexia; ODD=oppositional defiant disorder; PI=physical impairment; Sp/Lang=speech sound disorder or specific language impairment; VI=visual impairment.

[†]Table probability of Fisher's Exact Test

[§]Exact two-side *p* value

Table 2 Types of abuse

Types of abuse	Number (percentage)
Physical	31 (56.4%)
Neglect	18 (32.7%)
Sexual	2 (3.6%)
Multiple	4 (7.3%)

Table 3 Relationship of abusers with the victims

Relationship	Number (percentage)
Mother	27 (49.1%)
Father	13 (23.6%)
Both parents	4 (7.3%)
Other family member	1 (1.8%)
Family friend / Friend	2 (3.6%)
Domestic helper	1 (1.8%)
Neighbour	1 (1.8%)
Unidentified person	6 (10.9%)

Table 4   Test of equality of correlated proportions in abuse and comparison group

Characteristics	Abuse group (n=55)		Comparison group (n=55)		Number of discordant pairs	Test Statistic[‡]	p value
	Count	%	Count	%			
Mother was <=18 years old when pregnant with the child	4	7.3%	0	0.0%	4	4.0000	0.1250[§]
Child born at preterm	5	9.1%	6	10.9%	11	0.0909	0.7630[†]
Father is not Hong Kong resident	2	3.6%	4	7.3%	6	0.6667	0.6875[§]
Mother is not Hong Kong resident	1	1.8%	6	10.9%	5	5.0000	0.0625[§]
Father's education level below upper secondary	17	30.9%	18	32.7%	25	0.0400	0.8415[†]
Mother's education level below upper secondary	20	36.4%	19	34.5%	27	0.0370	0.8474[†]
Father has psychiatric follow up	1	1.8%	0	0.0%	1	1.0000	1.0000[§]
Father has medical follow up	1	1.8%	2	3.6%	3	0.3333	1.0000[§]
Mother has psychiatric follow up	14	25.5%	1	1.8%	15	11.2667	0.0008[†]
Mother has medical follow up	3	5.5%	1	1.8%	4	1.0000	0.6250[§]
Father has known substance abuse	6	10.9%	0	0.0%	6	6.0000	0.0313[§]
Mother has known substance abuse	15	27.3%	0	0.0%	15	15.0000	0.0001[†]
Father has known alcohol abuse	1	1.8%	0	0.0%	1	1.0000	1.0000[§]
Mother has known alcohol abuse	0	0.0%	0	0.0%	0	NA	
Family with domestic violence	5	9.1%	0	0.0%	5	5.0000	0.0625[§]
Father has criminal record	4	7.3%	0	0.0%	4	4.0000	0.1250[§]
Mother has criminal record	2	3.6%	0	0.0%	2	2.0000	0.5000[§]
Parents are separated, divorced or widowed	34	61.8%	1	1.8%	33	33.0000	<0.0001[†]
Family on social security assistance	31	56.4%	4	7.3%	29	25.1379	<0.0001[†]
Family having other child(ren) with developmental problems	17	30.9%	3	5.5%	20	9.8000	0.0017[†]
Father is unemployed/homemaker	9	16.4%	5	9.1%	12	1.3333	0.2482[†]
Mother is unemployed/housewife	38	69.1%	29	52.7%	27	3.0000	0.0833[†]

[‡]McNemar's chi-square without correction for continuity
[†]p value for uncorrected chi-square
[§]Exact p value based on binomial distribution

Table 5   Odds ratios between characteristics and abuse, matched analysis

Characteristics	Odds ratio #	95% CI		p value
Mother has known psychiatric follow up[†]	14.000	1.841	-106.465	0.0108
Father has known substance abuse[§]	8.166	1.177	- Infinity	0.0312
Mother has known substance abuse[§]	21.144	3.587	- Infinity	<0.0001
Parents are separated, divorced or widowed[§]	47.111	8.455	- Infinity	<0.0001
Family on social security assistance[†]	28.000	3.810	- 205.791	0.0011
Family having other child(ren) with developmental problems[†]	5.667	1.661	- 19.336	0.0056

#Odds ratio is defined as the odds of characteristic found to characteristic not found in abuse group / odds of characteristic found to characteristic not found in comparison group
[†]Maximum likelihood estimates
[§]Exact estimates

CI=3.587-infinity, p<0.0001). Single-parent family was associated with the highest risk of child abuse (OR= 47.111, 95% CI=8.455-infinity, p<0.0001). Family receiving CSSA also increased the risk of child abuse (OR=28.00, 95% CI=3.810-205.791, p=0.0011). Children having sibling(s) with developmental problems were also more likely to be child abuse victims (OR=5.667, 95%CI=1.661-19.336, p=0.0056).

Discussion

This is the first study in Hong Kong to report the clinical profile of child abuse victims in the subgroup of children with developmental problems. In this cohort, the male to female ratio was 1.89:1, in contrast to the reversed gender ratio with more girls than boys in the CPR statistical report[13,15] and a local epidemiology study.[7] This finding echoes with the finding of males being more prevalent among abuse victims with disabilities in the school-based population study in the US.[2] A possible explanation was the association of male gender with disability, rather than that with child abuse.[2] Physical abuse was the commonest type of abuse in this study and also in CPR.[15] But the second commonest type was neglect in this cohort while that of the CPR was sexual abuse. One of the possible reasons why sexual abuse was less common in this study was that sexual victimisation tended to occur in older children.[16] While our study only included children less than 12 years old, sexual victimisation rate has been reported to rise from 9 years old and peak at 15.[16]

Although the data from this study could not represent the prevalence of developmental disabilities in all child abuse cases in Hong Kong, it could supplement the local data of child abuse cases, from the perspective of children with developmental problems. More than half of the child abuse victims in this study had developmental delay or intellectual disability, nearly 40% have ADHD and 16.4% were at risk of or having dyslexia. This finding was comparable with the three most prevalent disabilities among the maltreated children in the US school-based study.[2] In a population-based birth cohort in the UK, speech and language disorder, learning difficulties, conduct disorder and non-conduct psychological disorders were associated with increased risk of registration for child abuse and neglect.[3] One of the difficulties in comparing studies about the relationship of types of developmental disabilities and child maltreatment was the various methods of identifying and categorising developmental disabilities. The strength

of our study was that the finding of developmental disabilities was based on multidisciplinary assessment, rather than by self-report or proxy informants. However, we could not conclude about the causal relationship between developmental disabilities and risk of child abuse in this study due to limitations of the study design, including the biased sample and its cross-sectional nature. Regarding the association between specific types of abuse and disabilities, the number of cases in this study was too small to meaningfully analyse the association. The links between types of disability and forms of abuse were actually heterogeneous among different studies.[1-4,7,17,18]

In this study, results of the logistic regression showed that some of the characteristics of parents and families were associated with an increased risk for abuse in the children with developmental problems. Firstly, children with mothers having psychiatric follow up had a significantly higher risk to be abused. This echoed with the findings of previous studies of risk factors for child abuse in the general population. For instance, self-reported parental history of psychiatric disorder was associated with higher risk of child physical and sexual abuse according to the data of a population-based mental health survey.[19] Similarly, parents with past psychiatric history was one of the risk factors for child abuse in a longitudinal study in the UK.[20] De Bellis et al[21] found that both the mothers of maltreated children and child maltreatment victims exhibited a higher lifetime incidence of psychiatric disorders.[21] Specifically, maternal depression was identified to be associated with child physical abuse in a study of the data from a national survey in the US[22] and also in other studies.[23-25]

Secondly, parental substance abuse was also associated with higher risk of abuse in this study. This was not a surprising finding since many previous clinical studies[21,25,26] and review articles[24,27-29] have already identified parental substance abuse as a common risk factor for child maltreatment. For example, substance abuse was found to be strongly associated with the onset of child abuse and neglect in a prospective community survey in the US.[25] Parental substance abuse was found to increase the risk of child physical and sexual abuse by more than twofold in a comprehensive population-based mental health survey in Canada.[26]

Apart from parental psychiatric and substance abuse history, children with single parents were also found to be more likely to experience maltreatment in this study. This was in line with the findings of other studies. For example, a UK cohort study found that children with single parents were associated with higher risk of child protection

registration.[20] A survey in the US also revealed that children with single parents had greater lifetime exposure to victimisation including child maltreatment than those with two parents.[30] Single-parent families were noted to be associated with poorer caregiving environments leading to increased risk for child abuse.[31]

Families receiving CSSA implied low income in the family. In this study, children from families on CSSA were associated with increased risk of abuse. This was consistent with the findings of other studies.[23,24,27,28,30] Families with low income had inadequate resources to support child care and were more prone to harsher parenting and thus increased the risk for child abuse.[31] Low income has also been found to have a more significant effect on the risk of child abuse in single-parent families than in two-parent families.[22]

Studies showed that the risk of abuse increased as the number of children in the families increased.[22-24] In this study, the effect of extra children, specifically those with developmental problems, on the risk of child abuse was investigated. Children having sibling(s) with developmental problems are nearly 6 times more likely to be abused than their comparison counterparts. Understandably, caring for a child with disability imposed greater stress for parents, due to more medical appointments and training sessions, increased financial burden, lack of respite opportunities and worry about the future.[17,32] Not to mention that the stress must be even greater for parents having more than one child with developmental disability, contributing to the heightened risk of abuse in children with disabilities.

Studies have also identified other risk factors for child abuse, including low parental educational attainment,[6,20,24] parental unemployment,[6] domestic violence[6,22] and maternal alcohol use.[22] In our study, these characteristics were not significantly different between the abuse and comparison group. However, the data related to the paternal educational level and employment status should be interpreted with caution, as nearly 40% of either item was unknown. The number of cases with identified domestic violence in our study was low and this should also be viewed with caution, since it has been well known that barriers to disclosure of domestic violence existed in health care settings.[33,34]

The strength of this study was that the findings of developmental disabilities were the result of standardised assessment by multidisciplinary team and the case nature of child abuse was the conclusion of MDCC, in contrast to many studies in which the measurement of disability and abuse were self-report or by proxy measures.[4] However, this also resulted in one of the limitations of the study, that is, the underrepresentation of child abuse victims with developmental disabilities in this locality. This was because this study did not include child abuse cases without MDCC held, not all child abuse victims with developmental problems were managed at CAS, and referrers to CAS or the parents might not volunteer about the history of child abuse. This could be improved by recruiting cases by matching other child abuse databases, e.g. from SWD and Hospital Authority. Another limitation of this study was that the time of onset of developmental disabilities relative to the child abuse incidents could not be delineated. This limitation was common in similar studies. The direction of causation between child abuse and developmental disabilities could not be determined until further longitudinal studies investigating the causal direction are available.[5,6]

In this study, children with developmental problems suffering from abuse were noted to have more psychosocial risk factors, including mothers with history of psychiatric problems, parents with history of substance abuse, single parenting, low-income family and families with more than one child having developmental problems, than their counterparts without known abuse. This highlighted the importance of heightened awareness of possibility of abuse in children with developmental problems living in disadvantaged families. In order to prevent child abuse, apart from parenting advice and training for the children, interventions for families with children having developmental problems should include measures to improve mental health of parents, help drug addicted parents to attain abstinence, aid family with low income and enhance family services for single parents and families with multiple children with developmental problems.

Conclusion

In this retrospective study of child abuse victims assessed at CAS, physical abuse was the commonest type of abuse while parent(s) were the major abusers. Developmental delay/intellectual disability and ADHD were the commonest developmental disabilities identified. Parents with psychiatric problems or drug abuse, single parenting, low-income families and families with more than one child having developmental disabilities were the risk factors for abuse in children with developmental problems. Early intervention and support for children and families with these psychosocial risk factors are important in child protection.

Declaration of Interest

Acknowledgement

References

1. Sullivan PM. Violence exposure among children with disabilities. Clin Child Fam Psychol Rev 2009;12:196-216.
2. Sullivan PM, Knutson JF. Maltreatment and disabilities: a population-based epidemiological study. Child Abuse Negl 2000;24:1257-73.
3. Spencer N, Devereux E, Wallace A, et al. Disabling conditions and registration for child abuse and neglect: a population-based study. Pediatrics 2005;116:609-13.
4. Stalker K, McArthur K. Child abuse, child protection and disabled children: a review of recent research. Child Abuse Rev 2012;21:24-40.
5. Jones L, Bellis MA, Wood S, et al. Prevalence and risk of violence against children with disabilities: a systematic review and meta-analysis of observational studies. Lancet 2012;380:899-907.
6. Chan KL, Emery CR, Ip P. Children with disability are more at risk of violence victimization: evidence from a study of school-aged Chinese children. J Interpers Violence 2016;31:1026-46.
7. Ip P, Chan KL, Chow CB, Wong HS. Epidemiology of child abuse and its geographic distribution in Hong Kong: an important social indicator of different districts and communities (A Central Policy Unit Commissioned Report) [Internet]. 2013 Sep 4 [cited 2013 Dec 1]. Available from: http://www.cpu.gov.hk/doc/en/research_reports/executive_summary_epidemiology_of_child_abuse_and_its_geographic_distribution_in_hong_kong.pdf
8. Chen LP, Murad MH, Paras ML, et al. Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. Mayo Clin Proc 2010;85:618-29.
9. Norman RE, Byambaa M, De R, Butchart A, Scott J, Vos T. The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. PLoS Med 2012;9(11):e1001349.
10. Sugaya L, Hasin DS, Olfson M, Lin KH, Grant BF, Blanco C. Child physical abuse and adult mental health: a national study. J Trauma Stress 2012;25:384-92.
11. Ip P, Wong RS, Li SL, Chan KL, Ho FK, Chow CB. Mental Health Consequences of Childhood Physical Abuse in Chinese Populations: A Meta-Analysis. Trauma Violence Abuse [Internet]. 2015 May 13 [cited 2015 Oct 5]. Available from: http://tva.sagepub.com/cgi/doi/10.1177/1524838015585317.
12. Social Welfare Department. The Government of Hong Kong Special Administrative Region. Procedural Guide for Handling Child Abuse Cases (Revised 2007). [Internet]. 2007 [cited 2014 Mar 2]. Available from: http://www.swd.gov.hk/doc/fcw/proc_guidelines/childabuse/Procedural%20Guide(Child%20Abuse)(Eng)(Revised%20Feb2014).pdf.
13. Social Welfare Department. The Government of Hong Kong Special Administrative Region. Child Protection Registry: statistical report 2013. Social Welfare Department; 2014.
14. SAS. SAS/STAT(R) 9.22 User's Guide [Internet]. [cited 2016 May 27]. Available from: https://support.sas.com/documentation/cdl/en/statug/63347/HTML/default/viewer.htm#titlepage.htm.
15. Social Welfare Department. The Government of Hong Kong Special Administrative Region. Statistics on newly reported child abuse, spouse / cohabitant battering and sexual violence cases in 2013 [Internet]. [cited 2014 Mar 2]. Available from: http://www.swd.gov.hk/vs/stat/stat_en/201301-12/stat_en.pdf.
16. Finkelhor D, Turner H, Ormrod R , Hamby SL. Violence, abuse, and crime exposure in a national sample of children and youth. Pediatrics 2009;124:1411-3.
17. Brown I, Schormans AF. Maltreatment rates in children with developmental delay. CECW Information Sheet #9E. Toronto, ON, Canada: Faculty of Social Work, University of Toronto. [Internet]. 2004 [cited 2014 Mar 2]. Available from: http://cwrp.ca/sites/default/files/publications/en/DDMaltreatmentRates9E.pdf.
18. Turner HA, Vanderminden J, Finkelhor D, Hamby S, Shattuck A. Disability and victimization in a national sample of children and youth. Child Maltreat 2011;16:275-86.
19. Walsh C, MacMillan H, Jamieson E. The relationship between parental psychiatric disorder and child physical and sexual abuse: findings from the Ontario Health Supplement. Child Abuse Negl 2002;26:11-22.
20. Sidebotham P, Heron J; ALSPAC Study Team. Child maltreatment in the "children of the nineties": a cohort study of risk factors. Child Abuse Negl 2006;30:497-522.
21. De Bellis MD, Broussard ER, Herring DJ, Wexler S, Moritz G, Benitez JG. Psychiatric co-morbidity in caregivers and children involved in maltreatment: a pilot research study with policy implications. Child Abuse Negl 2001;25:923-44.
22. Berger LM. Income, family characteristics, and physical violence toward children. Child Abuse Negl 2005;29:107-33.
23. Kotch JB, Browne DC, Ringwalt CL, et al. Risk of child abuse or neglect in a cohort of low-income children. Child Abuse Negl 1995;19:1115-30.
24. Oliver WJ, Kuhns LR, Pomeranz ES. Family structure and child abuse. Clin Pediatr (Phila) 2006;45:111-8.
25. Chaffin M, Kelleher K, Hollenberg J. Onset of physical abuse and neglect: psychiatric, substance abuse, and social risk factors from prospective community data. Child Abuse Negl 1996;20:191-203.
26. Walsh C, MacMillan HL, Jamieson E. The relationship between parental substance abuse and child maltreatment: findings from the Ontario Health Supplement. Child Abuse Negl 2003;27:1409-25.
27. Vig S, Kaminer R. Maltreatment and developmental disabilities in children. J Dev Phys Disabil 2002;14:371-86.

28. Murphy N. Maltreatment of children with disabilities: the breaking point. J Child Neurol 2011;26:1054-6.

29. Wells K. Substance abuse and child maltreatment. Pediatr Clin N Am 2009;56:345-62.

30. Turner HA, Finkelhor D, Ormrod R. The effect of lifetime victimization on the mental health of children and adolescents. Soc Sci Med 2006;62:13-27.

31. Berger LM. Income, family structure, and child maltreatment risk. Child Youth Serv Rev 2004;26:725-48.

32. Murphy NA, Christian B, Caplin DA, Young PC. The health of caregivers for children with disabilities: caregiver perspectives. Child Care Health Dev 2007;33:180-7.

33. Rose D, Trevillion K, Woodall A, Morgan C, Feder G, Howard L. Barriers and facilitators of disclosures of domestic violence by mental health service users: qualitative study. Br J Psychiatry 2011;198:189-94.

34. Hegarty K. Domestic violence: the hidden epidemic associated with mental illness. Br J Psychiatry 2011;198:169-70.