

Child Abuse Management Units: How can Mental Health Services be Further Improved?

Hanne K. Greger¹, Thomas Jozefiak¹, Arne K. Myhre²

¹Department of Child and Adolescent Mental Health, St. Olav's University Hospital, Trondheim, Norway; Regional Centre for Child and Youth Mental Health and Child Welfare, Norwegian University of Science and Technology, Trondheim, Norway; ²Children's Clinic, St. Olav's University Hospital, Trondheim, Norway; Department of Public Health and General Practice, Norwegian University of Science and Technology and Regional Resource Center, St. Olav's University Hospital, Trondheim, Norway

Corresponding Author: hanne.k.greger@ntnu.no

Abstract

Background: *Child abuse* is a broad term that includes physical, sexual, and emotional (e.g., psychological, verbal) abuse. There are huge variations with regard to the level of severity and the consequences of abuse. Because child abuse is such a sensitive topic, it is a challenging task to conduct studies concerning this subject.

Objective: The aim of the study was to identify areas that could be improved to offer better health care services to patients. Therefore, routine assessments, the characteristics of the cases, and the types of follow up were emphasized.

Method: The Norwegian Ministry of Health and Care Services provided an exception from the principle of informed consent so that this study could be conducted. We had access to the medical records of all children between the ages of 0 and 14 years old who were referred to the regional child abuse management unit in 2006 and 2007. A descriptive, cross-sectional study was performed.

Results: One hundred and six children were referred to the child abuse management unit. For the majority of these patients (80.2%), sexual abuse was the only concern. The children presented diverse psychological and somatic symptoms and problems. Psychosocial functioning was in general not properly described in the records. Four out of five of the children were referred to services for follow up after the first examination in the child abuse management unit. Only 36% of the children were referred to child protective services.

Conclusion: This study revealed that psychosocial functioning is seldom documented and that psychological symptoms could be described more reliably and in more detail. A systematic approach may be helpful for health care providers, and we suggest the implementation of valid evidence-based instruments, such as the Child Behavior Checklist and the Children's Global Assessment Scale.

Key words: Child abuse, abuse management, health services, psychosocial functioning

Introduction

Child abuse is a broad term that includes physical, sexual, and emotional (e.g., psychological, verbal) abuse. There are huge variations with regard to the level of severity and the consequences of abuse. In extreme cases, abuse can cause death, but mostly the physical damage will have limited influence on the development and future well-being of the child. The psychological effects and the long-term consequences of abuse on the child's cognitive, emotional, and neurological development will generally be

more important (1-3). Previous studies have shown an association between childhood abuse and a number of mental and physical health problems later in life, such as depression, post-traumatic stress disorder (PTSD), anxiety disorders, and attention-deficit/hyperactivity disorder (2-10). The young human brain is highly plastic and able to change. Adverse experiences, such as childhood abuse, can modify brain structures and increase the risk of impaired health later in life (7;11-14).

The estimated prevalence of child abuse is substantial throughout the world. International studies in high-income countries based on self- or parental reports estimate a yearly prevalence of child physical abuse of 5% to 35%, of child psychological abuse of 4% to 33%, and of child sexual abuse of 15% to 30% for girls and 5% to 15% for boys (5). These numbers seem to be representative for the Norwegian population as well (15).

Health care for alleged victims of abuse can be organized in different ways. The main purposes of child abuse management units (CAMUs) are to treat acute and long-term health problems and to provide forensic services. One of the challenges involving the organization of CAMUs concerns how to provide mental health care to patients (16). In the county of Sør-Trøndelag in Norway, one CAMU has chosen to establish a low-threshold hospital-based service for children that is organized in the specialist health care service located at St. Olav's Hospital in Trondheim. Nurses, pediatricians, and psychologists work as an interdisciplinary team that optimizes services and care for these patients. Patients are offered emergency medical care, which is available at all hours, as well as long-term follow-up care with professionals, if needed. The treatment team also cooperates with law enforcement, child protective services, and child and adolescent mental health services (CAMHS).

When organizing an interdisciplinary, low-threshold, hospital-based unit of this kind, health-service research should also be included. However, few studies have been conducted in Scandinavian countries on this topic, and matters of confidentiality complicate this task.

Adult survivors of childhood abuse are at severely increased risk of developing impaired physical and mental health (2-3;7). An optimized health service for children and adolescents who have been exposed to abuse may prevent some of these problems, but, to achieve this, it is essential for the clinician to know what kinds of assessments and treatments are best for each patient. A systematic and evidence-based assessment would be an important prerequisite for gaining this knowledge.

The primary aim of this study was to identify areas that could be improved to offer better and more holistic health care services to patients. To achieve this, we wanted to focus on the routine assessment that occurs in the unit; the characteristics of the abuse, including the diversity of symptoms presented; and the type of follow-up services provided to children referred to the CAMU.

Methods

Subjects

This is a descriptive, cross-sectional study in which we have included all patients between the ages of 0 and 14 years old who were assessed by a psychologist in a hospital-based CAMU from January 1, 2006, to December 31, 2007. The majority (79%) of these patients were also examined by a pediatrician. The patients were identified by searching the hospital patient administrative system and by gathering information from colleagues in the CAMU. A total of 106 patients (79 girls and 27 boys) were seen in the unit, either by direct contact or after referral from other professionals. The patient records were studied, and they contained the reports of both psychologists and pediatricians. The ages of the patients were registered in age intervals (0 to 4, 5 to 9, and 10 to 14) after a recommendation from the Norwegian Ministry of Health and Care Services. The demographic distribution is shown in Table 1.

TABLE 1. Demographic distribution

		n	%
Sex	Girl	79	74.5
	Boy	27	25.5
Age	0 to 4 years	25	23.6
	5 to 9 years	41	38.7
	10 to 14 years	40	37.7
Residence (missing = 1)	City	45	42.5
	Village	31	29.2
	District	29	27.4
Care situation (missing = 1)	Both biol. parents	28	26.7
	One biol. parent	41	39.0
	Biol. parent and step-parent	19	18.1
	Other*	17	16.2

*adoptive parents, foster parents, child welfare institution

Instruments

Scoring manual

We developed a scoring manual for retrospectively collecting information from the patient records. Before reading the records, scoring categories were chosen after literature studies and discussions with experienced colleagues (17). For example some of the variables related to mental symptoms (e.g., externalizing, internalizing, attention problems) were constructed on the basis of the main categories of the Child Behavior Checklist (CBCL) (18). The CBCL is an integrated part of the Achenbach System of Empirically Based Assessment, which provides an evaluation of children and adolescents from several informants. The CBCL measures the total emotional and behavioral problems of the child, and it can identify different syndrome clusters, including the variables mentioned previously.

One of our variables addressed whether it was concluded that abuse had taken place or not. This scoring was based on the following: 1) medical findings (i.e., the presence of hymenal transection, sex-

ually transmitted disease, scars, and wounds (19)); 2) information in the patient record about a suspected abuser's conviction in court; and 3) information in the patient record about whether the abuser had confessed to the incident. We chose to categorize abuse with regard to its type and severity, because we wanted to investigate whether there were differences in symptom load or assessment that were dependent on these factors. It has been shown in earlier studies that different types of childhood abuse can have long-term consequences on mental and physical health (5;20). Severe sexual abuse included forced masturbation and anal, vaginal, or oral penetration. Moderate sexual abuse included the touching or fondling of an intimate area, the viewing of pornography, and other sexual acts. Severe physical abuse included violence that resulted in fractures, internal bleeding, or other injuries that demanded medical attention and care, whereas moderate physical abuse included violence that resulted in wounds, bruises, or no visible marks at all. Psychological abuse was not categorized by severity.

We also registered what kind of follow up the children received after their first examination. For some of the patients, especially those from other regions of the country, this included the follow-up care that was recommended by either pediatricians or psychologists at the CAMU. Further adjustments were made after reading the medical records. Variables that proved not to be useful for organizing the text of the medical records were omitted, and we ended up with a scoring manual that included 171 variables (Appendix).

The Children's Global Assessment Scale

The Children's Global Assessment Scale (CGAS) is widely used by health professionals to assess the psychosocial functioning of children and adolescents on a scale from 0 to 100, where 100 = "Excellent psychosocial functioning" and 0 = "Extreme and pervasive dysfunction." The CGAS has demonstrated satisfactory psychometric properties (21). In this study, we tried to set a CGAS value that was based on information taken only from the patient records. The CGAS is mainly used for children in the age range of 4 to 16 years. We therefore chose not to use the CGAS to rate children in the youngest age group.

Procedures

The first author read all of the identified patients' medical and psychological records (DocuLive) and registered the information according to the scoring manual during the period from October 2011 to December 2011. The second author also read 11 medical records, which were arbitrarily selected.

Potential differences in interpretation and scoring between the authors were then discussed to increase the quality of the scoring procedures.

Statistics

We used descriptive statistics. Categorical variables were analyzed with the chi-squared test. An alpha of .05 was chosen to indicate the level of significance needed for the study.

Ethics

Because of the sensitive nature of the study, we applied to the Norwegian Ministry of Health and Care Services for exception from the principle of informed consent. The reason for this was that we wanted to protect children and their families from retraumatization by reliving unpleasant memories that may occur during the process of asking for their consent. We also expected a very low response rate from parents if we applied the principle of informed consent, because some of the parents would have been suspected of abusing their own children. It is highly probable that many of these parents would not have wanted to participate in this kind of study. Ethics approval was obtained from the Norwegian Ministry of Health and Care Services, which provided us with an exception from professional secrecy to perform the study as described (201005216-/SVE).

As a result of the sensitivity of the subject and related matters of confidentiality, the list of patients included in the study was destroyed after the reading and scoring of the medical records. Thus, all information was registered anonymously in the research database. We hope that the knowledge gained from this study will help the team at the CAMU to improve their services for children and their families and that it will also be of value for other CAMUs. It was felt that these advantages were greater than the disadvantages involved in the avoidance of the principle of informed consent.

Results

Routine assessment in the child abuse management unit

Somatic medical examination

The medical examination was performed by a trained pediatrician. It routinely included a history from the child and his or her caregiver; a general physical examination from head to toe; an anogenital examination with a colposcope; and supplementary examinations as indicated (e.g., microbiology, blood tests, forensic sampling, radiographs).

Psychological interview

The psychological interviews were performed by trained psychologists. The consultations with the children and their caregivers focused on background history, the family and social environment, symptom load, coping, and supporting factors around the child. Instruments and methods such as rating scales, play sessions, and structured interviews were used when indicated. The psychologists would routinely discuss reporting to the police with the children or the parents.

General characteristics of cases seen at the child abuse management unit

In 80.2% of the cases, sexual abuse was the only concern. In 10.3% of the cases, physical abuse was the only concern. In 1.9% of cases, psychological abuse and neglect were the only concerns. For 7.5% of the children, combinations of these types of abuse were suspected.

TABLE 2. Percentages of children and their relationships to suspected abusers

Relationship to suspected abuser	0 to 4 years old n = 25	5 to 9 years old n = 41	10 to 14 years old n = 40	P value
Biological father	72.0	51.3	20.0	.01
Stepfather/foster father	0.0	10.3	17.5	.083
Biological mother	0.0	10.3	5.0	.221
Siblings	4.0	0.0	2.5	.495
Uncle/aunt/cousin	0.0	2.6	10.0	.132
Other relative	0.0	2.6	5.0	.498
Friend/acquaintance	4.0	12.8	25.0	.063
Person of authority	12.0	2.6	2.5	.156
Stranger	4.0	5.1	7.5	.821
Unknown	4.0	7.7	7.5	.822

The same child can be represented more than once as a result of exposure to several abusers

In the youngest group of children, biological fathers were the most commonly suspected abusers (Table 2). The next most likely suspect was a person of authority to the child (e.g., teacher, adult working in a kindergarten, sports coach). In the middle age group, the biological father still was the most common suspected abuser, followed by a friend or acquaintance, a stepfather or foster father, and the biological mother. For the oldest children, the abuser most often was a friend or acquaintance of the child, followed by the biological father, a stepfather or foster father, and an uncle or another relative. When comparing the age groups, there were significant differences with regard to the biological father being the suspected abuser ($P < .001$). For the other categories, the differences were not significant.

The children and their caregivers reported a wide spectrum of symptoms and problems during their contact with the unit. Several children reported sadness and anxiousness, and some were also de-

scribed in the records as demonstrating sexualized behavior in addition to abusing others. As shown in Table 3, some children reported symptoms that may be part of PTSD, including flashbacks, nightmares, avoidance, and irritability. A total of 53 children (50.0%) were described as having one or more psychological symptoms.

We were interested in studying the psychosocial functioning of the children, because this can be a valuable variable when it comes to assessing the needs of the individual child. When it is scored appropriately, with the use of all available information about the child, the CGAS can help to identify persons in need of psychiatric treatment, have predictive value, and measure changes over time, including treatment effects (21). In this study, functioning in school or kindergarten was mentioned in the patient records in only 27 out of 106 cases; therefore, it was not possible to set a valid CGAS score.

Table 4 shows the spectrum of psychosomatic and physical complaints of the children in question. Several of the children reported pain, either as headaches, pelvic pain, or diffuse pain. A total of 40 children were registered as having “other symptoms and findings from sexual organs or anal area.” These include findings such as genital redness and synechiae, which are fairly common abnormalities, especially in the youngest age group. Sixty-three children reported one or more somatic or psychosomatic symptoms (59.4%). There were no significant differences between the age groups with regard to psychological, psychosomatic, or somatic symptoms, except for the presence of significantly more “other symptoms and findings from sexual organs or anal area” in the youngest age group ($P < 0.05$).

In 24.5% of cases, it was concluded in the records that abuse had probably taken place. This was based on convincing medical findings (i.e., hymenal transection, sexually transmitted disease, scars, and wounds), information about a suspected abuser’s conviction in court (5.7%), or information in the patient record system that the abuser had admitted to the incident. In 70.8% of cases, no conclusion was possible, and abuse was found to be unlikely in 4.7% of cases. For those cases in which abuse was confirmed, it was significantly more likely (as compared with the cases in which abuse was not confirmed) that the child belonged to the oldest group of children (i.e., 10 to 14 years old; $P < .001$) and that the suspected offender was a friend or acquaintance ($P = .002$) or a relative other than a parent ($P = .001$). The type of abuse was more often categorized as severe sexual ($P = .002$) or moderate physical ($P = .003$); there was significantly more often suspected previous abuse ($P = .003$); and the examination was completed during the first 24

TABLE 3. Numbers and percentages of children in the child abuse management unit reporting different psychological symptoms*

Symptoms		0 to 4 years old		5 to 9 years old		10 to 14 years		Total (n)	P value
		(%)	n	(%)	n	(%)	n		
Internalizing problems	Tired/exhausted/lack of initiative	4.0	1	0.0	0	7.5	3	4	.208
	Sadness	4.0	1	2.4	1	20.0	8	10	.015
	Suicidal thoughts	0.0	0	0.0	0	5.0	2	2	.186
Attention problems	Anxious	12.0	3	17.1	7	15.0	6	16	.855
	Attention problems	0.0	0	7.3	3	12.5	5	8	.178
Externalizing problems	Hyperactivity	8.0	2	7.3	3	0.0	0	5	.202
	Impulsivity	4.0	1	4.9	2	7.5	3	6	.807
	Sexualized behavior	8.0	2	19.5	8	5.0	2	12	.100
	Antisocial behavior	8.0	2	12.2	5	0.0	0	7	.083
Post-traumatic stress disorder–associated symptoms	Flashbacks	0.0	0	0.0	0	7.5	3	3	.078
	Nightmares	16.0	4	4.9	2	7.5	3	9	.279
	Avoidance	16.0	4	7.3	3	2.5	1	4	.134
	Nervous/alert	0.0	0	0.0	0	2.5	1	1	.435
	Irritable/tantrums	8.0	2	4.9	2	2.5	1	5	.595
	Delusions/memory loss/dissociation	0.0	0	0.0	0	0.0	0	0	
Other mental symptoms	8.0	2	19.5	8	7.5	3	13	.195	

*The total number of children with one or more psychological symptoms is 53 (50%)

TABLE 4. Percentages of children in the child abuse management unit reporting different somatic and psychosomatic symptoms and findings

Symptoms	0 to 4 years old		5 to 9 years old		10 to 14 years old		Total (n)	P value
	(%)	n	(%)	n	(%)	n		
Sleeping difficulties	4.0	1	1.9	2	15.0	6	9	.172
Eating difficulties	0.0	0	2.4	1	7.5	3	4	.258
Headache/migraine	4.0	1	2.4	1	10.0	4	6	.311
Gastrointestinal problems	8.0	2	2.4	1	5.0	2	5	.583
Diffuse pain	0.0	0	2.4	1	7.5	3	4	.258
Pelvic pain	4.0	1	7.3	3	20.0	8	12	.082
Dysuria	0.0	0	7.3	3	15.0	6	9	.102
Other symptoms and findings from sexual organs or anal area	56.0	14	39.0	16	25.0	10	40	.042
Other somatic symptoms	16.0	4	19.5	8	2.5	1	13	.053

TABLE 5. Characteristics of cases in which abuse was confirmed

		Abuse confirmed (n)	Abuse not confirmed (n)	P value
Sex	Girl	20 (77%)	59 (74%)	.747
	Boy	6 (23%)	21 (26%)	
Age	0 to 4 years old	1 (4%)	24 (30%)	<.001
	5 to 9 years old	6 (23%)	35 (44%)	
	10 to 14 years old	19 (73%)	21 (26%)	
Suspected offender	Father	6 (23%)	40 (50%)	.012
	Stepfather/foster father	3 (12%)	8 (10%)	.854
	Mother	0	6 (8%)	.145
	Other relative	7 (27%)	3 (4%)	.001
	Friend/acquaintance	9 (35%)	7 (9%)	.002
	Person of authority	0	5 (6%)	.186
	Stranger	2 (8%)	4 (5%)	.627
	Unknown	0	7 (9%)	.114
	Type of abuse	Severe sexual abuse	13 (50%)	15 (19%)
	Moderate sexual abuse	8 (31%)	18 (23%)	.433
	Severe physical abuse	0	0	
	Moderate physical abuse	8 (31%)	6 (8%)	.003
	Psychological abuse	3 (12%)	4 (5%)	.259
Suspected previous abuse		15 (58%)	21 (26%)	.003
Medical examination findings*		12 (63%)	17 (26%)	.003
Contact with unit within 24 hours after abuse		4 (2%)	2 (3%)	.011

*Twenty-two patients were not examined

hours after the assault ($P = .011$). Table 5 lists some additional characteristics of cases in which abuse was confirmed.

TABLE 6. Numbers and percentages of children with or without confirmed abuse referred to different services after first contact with the child abuse management unit

Follow-up services	Abuse confirmed (n)	Abuse not confirmed (n)	Total (n)
Child and adolescent mental health services	8 (31%)	24 (30%)	32 (30%)
Pediatrician	0	2 (3%)	2 (2%)
Psychologist employed at the child abuse management unit	15 (58%)	24 (30%)	39 (37%)
Child protective services	8 (31%)	30 (38%)	38 (36%)
Community health services	3 (12%)	8 (10%)	11 (10%)
School psychologist	1 (4%)	9 (11%)	10 (9%)
Others	0	4 (5%)	4 (4%)
None	3 (12%)	17 (21%)	20 (19%)
Two or more services	9 (35%)	29 (36%)	38 (36%)

Follow-up after the first examination

Four out of five of the children received some kind of follow-up care or were referred to other services for follow up after the first examination at the CAMU. The most common follow-up care was provided by a psychologist at the unit, by child protective services, and by CAMHS. Several of the children were later evaluated by more than one service unit (Table 6). Of those children with confirmed abuse, significantly more were followed up with by a psychologist in the CAMU ($P = .011$). Otherwise there were no significant differences in

follow-up treatment between those with or without confirmed abuse. Significantly more of the youngest children were among those not referred for any kind of follow-up care ($P < .05$), but there were otherwise no significant differences regarding sex, type of abuse, symptom pattern, symptom load, or documented findings in the patient record.

Discussion

Strengths and limitations

One strength of this study is that we had access to complete patient record files for all children referred to the CAMU during a 2-year period. The age distribution is also balanced, with the age groups including 25 (0 to 4 years old), 41 (5 to 9 years old), and 40 children (10 to 14 years old). There are limited personnel connected to the CAMU (i.e., three to five people), which was helpful in that the records were written in a uniform manner. Because the involved staff members are well aware that the records may be used for legal purposes, one could also assume that the records are more carefully obtained than what might be expected in other medical departments. However, the awareness of the possible use of the records as legal documents may also have limited what was actually written in them. Retrospective assessment by reading and scoring medical records has clear methodological limitations. We had to rely on the information that was written in the records, without being able to confirm that this information was correct. We did not know if the children and their parents were asked about more details than were documented or if some details may have been left out. To assess the validity of our text interpretations, the first and second authors

discussed every tenth record, thereby excluding variables that proved to not reflect the content of the medical record text appropriately. This procedure may have had an impact on the registered prevalence of, for example, the somatic and mental symptoms registered for each child. These numbers are therefore most certainly slightly underestimated, but they are nonetheless interesting as minimum estimates. Further, the retrospective assessment of psychological and psychosomatic symptoms resulted in a variety of categories, thereby reducing statistical power as compared with an assessment involving standardized questionnaires.

Our list of variables was very comprehensive as result of the chosen research method of investigating medical records. To obtain meaningful scoring categories, we had to reduce the original number of variables, which was 235, to the final 171. A shorter list from the beginning might have resulted in more significant results given the limitations of the present sample size, but it could also have resulted in the loss of important information. However, we found this approach useful, and the resulting scoring manual was convenient for our purposes.

General characteristics of the cases seen at the child abuse management unit

The results demonstrated that children of both genders and all age groups that we investigated had been referred to the CAMU. Among the children, only 26.7% were living with both of their biological parents (see Table 1). In the general population, 75% of children who are less than 18 years old are living with both parents. The proportion decreases with age, from 88% during the first year of life to 62% when the children reach 17 years of age (22). Similar patterns have also been reported in other studies (23). There could be different possible reasons for this deviation. Abusive behavior on the part of one parent can, in some cases, be the reason for splitting up the family. However, this pattern may also reflect conflicts between parents who are not living together or even more complex difficulties in certain families.

Sexual abuse was the main concern in the vast majority of the referred cases. In Norway, a tradition for the assessment of child abuse has developed in which the larger pediatric departments are responsible for medical examinations in sexual abuse cases. Victims of other kinds of abuse are often taken care of locally, either by local health care services, surgical departments, child welfare services, or other organizations. The use of this tradition can be questioned. It is known that exposure to physical abuse during childhood is as important a risk factor as exposure to sexual abuse for the development of somatic and psychiatric disease.

The prevalence of sexual and physical abuse is approximately equal in the general population (5, 15). One could argue that all children exposed to abuse of the same degree of severity should be offered the best possible and most competent health services. Another reason for this skewness in the cause of referral in our study may be that the public and health workers are not aware that the CAMU is also concerned with physical and emotional abuse.

The patient records in our study describe a variety of both mental and somatic symptoms and problems. We assume that the problem rates registered were a minimum rate, because the children and their parents were not systematically asked about all problem areas. The heterogeneity of the expressed and reported symptoms reflects what is already known about victimized children, their diversity of symptoms, and the challenges of identifying the optimal treatment plan for each individual child (24, 25). There were only limited significant differences in the expression of mental, somatic, or psychosomatic symptoms among the age groups. The oldest children expressed more sadness than the younger ones ($P = .015$), and the youngest age group had significantly more "other symptoms and findings from sexual organs or anal area," including soreness ($P < .05$). This is not a rare finding, especially in toddlers, and it was also the main cause of referral in some of the cases. Irritation and soreness in young children are seldom signs of sexual abuse, unless there are other findings that confirm the suspicion (26). Some of the children reported symptoms that could be part of PTSD. However, these symptoms are often vague and unspecific, especially in children, and they could often be explained by other means. Diagnosing PTSD in children is a challenging task by itself; in addition, the time span between the assault and the examination may not be long enough for PTSD to develop. According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, the symptoms must last for more than one month after the event for the diagnostic criteria to be fulfilled (27). Some patients may present with their symptoms later as part of delayed-onset PTSD.

It is often difficult to conclude whether suspected abuse has taken place. Medical findings are often unspecific, and, depending on the age of the child, there can be doubts about to what degree the child's statements are valid. In this study, we chose a rather narrow definition. Therefore, only those cases with convincing medical findings, a convicted offender, or a confession would be coded as "confirmed." Information about the status of the legal process was often lacking; this is due to the fact that legal processes may take years to conclude. However, most patients are not followed for years by the CAMU, and results would therefore not be provid-

ed in the victim's medical file. Because many of the children had only limited contact with the unit and during a short time span, the registered percentage of cases in which an offender was convicted (5.7%) was probably underestimated.

It is not surprising that most of the cases that could be concluded were found among the oldest children. Younger children are less likely to verbalize their victimization. The older children were also more exposed to severe sexual abuse. In these cases, the chance of documenting confirmed medical findings is higher. The results in Table 5 show that, when abuse is confirmed, the offender is most often a relative other than a parent (e.g., sibling, uncle, aunt, cousin) or a friend or acquaintance. Victims of severe sexual abuse are more likely to seek help within the first 24 hours. This increases the chance of documenting substantial medical findings as well as the success of forensic sampling. These variables seem to reflect different aspects of the same patterns. Some of the huge challenges in this field are how to conclude cases in which young children and toddlers are exposed to abuse and in which no certain findings are documented.

Follow-up after the first examination

Not all children will require specialized follow-up care after being referred to a CAMU. Therefore, it is satisfactory that four out of five children were referred to a health or social service provider after contact with the CAMU. Many of the children were referred to (or recommended referral to) more than one service; most commonly, this was a psychologist at the unit, CAMHS, or child protective service. We consider it a positive sign that so many children and their families have had further contact with health or social services after such a serious and potentially distressful experience as a referral to a CAMU can be. However, the number of children that are referred to (or recommended referral to) child protective services is only 38 out of 106, which is a surprisingly low figure. We found that, in 4.7% of cases, abuse was unlikely; thus, this study reveals that, in about 95% of cases, abuse is either confirmed or suspected. It is possible that a larger proportion of these children and their families could benefit from child protective services. Several of the children in the study were referred from police authorities, who represent a main collaborator for the CAMU and who also play an important role in following up with some of the children afterward. In this study, however, follow-up evaluation was registered only with regard to medical and social services.

How can services be further improved?

The organization of CAMUs nationwide has been performed in different ways. The units are supposed to serve several functions, including advising the judiciary authorities and decreasing the health problems of the children. In what ways units of this kind should handle psychosocial problems has been questioned (28), and the unit in Trondheim is one of only a few that provide routine interdisciplinary assessment. Nevertheless, we observed through this study that psychosocial functioning was seldom documented in the patient record. Children in different age groups are at different levels with regard to their ability to describe their own problems and symptoms. Mental health providers will often have to rely on the interpretation of children's behavior. A systematic approach would be helpful for identifying children who need more extensive help (29). There are several reliable and valid instruments that are already commonly used by the regional CAMHS that could easily be incorporated into daily practice. Such measures should not be too time consuming for the staff, and they should reflect different perspectives, such as the clinician's evaluation and the parent report. Examples of such instruments are the CGAS, which measures psychosocial functioning, and the CBCL, which measures competence as well as emotional and behavioral problems.

Clinical significance

The CAMU in Trondheim serves the population of middle Norway and is available to children in all age groups and of both sexes. It is challenging to meet children and parents in crisis and to decide who requires more extensive evaluation and mental health care. This case study reveals that psychosocial functioning is seldom documented and that psychological symptoms could be described in a more detailed and reliable manner. A systematic approach could be helpful for health care providers, and we suggest the implementation of valid and reliable instruments such as the CBCL and the CGAS. It is important to remember the documented negative long-term health effects of child abuse. In addition to sexual abuse, physical child abuse and emotional child abuse are important risk factors that seem to contribute substantially to the burden of health problems in the adult population. The observed skewness with regard to the cause of referral should therefore be discussed further. For now, there is a wider target group of children that could possibly profit from this unique interdisciplinary competence.

References

1. Trocme N, MacMillan H, Fallon B, De Marco R. Nature and severity of physical harm caused by child abuse and neglect: results from the Canadian Incidence Study. *CMAJ* 2003;169(9):911-5.
2. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med* 1998;14(4):245-58.
3. 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 medicine* 2012;9(11):e1001349.
4. Anda R, Tietjen G, Schulman E, Felitti V, Croft J. Adverse childhood experiences and frequent headaches in adults. *Headache* 2010;50(9):1473-81.
5. Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. *Lancet* 2009;373(9657):68-81.
6. 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(4):384-92.
7. Chen LP, Murad MH, Paras ML, Colbenson KM, Sattler AL, Goranson EN, et al. Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. *Mayo Clin Proc* 2010;85(7):618-29.
8. Kaplan SJ, Pelcovitz D, Salzinger S, Weiner M, Mandel FS, Lesser ML, et al. Adolescent physical abuse: risk for adolescent psychiatric disorders. *Am J Psychiatry* 1998;155(7):954-9.
9. Scott KM, Smith DR, Ellis PM. Prospectively ascertained child maltreatment and its association with DSM-IV mental disorders in young adults. *Arch Gen Psychiatry* 2010;67(7):712-9.
10. Green JG, McLaughlin KA, Berglund PA, Gruber MJ, Sampson NA, Zaslavsky AM, et al. Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: associations with first onset of DSM-IV disorders. *Arch Gen Psychiatry* 2010;67(2):113-23.
11. Murgatroyd C, Spengler D. Epigenetics of early child development. *Frontiers in psychiatry/Frontiers Research Foundation* 2011;2:16.
12. Labonte B, Suderman M, Maussion G, Navaro L, Yerko V, Mahar I, et al. Genome-wide epigenetic regulation by early-life trauma. *Arch Gen Psychiatry* 2012;69(7):722-31.
13. McCrory E, De Brito SA, Viding E. The impact of childhood maltreatment: a review of neurobiological and genetic factors. *Frontiers in psychiatry/Frontiers Research Foundation* 2011;2:48.
14. Hassel S, McKinnon MC, Cusi AM, Macqueen GM. An Overview of Psychological and Neurobiological Mechanisms by which Early Negative Experiences Increase Risk of Mood Disorders. *J Can Acad Child Adolesc Psychiatry = Journal de l'Academie canadienne de psychiatrie de l'enfant et de l'adolescent* 2011;20(4):277-88.
15. Sorbo MF, Grimstad H, Bjørngaard JH, Schei B, Lukasse M. Prevalence of sexual, physical and emotional abuse in the Norwegian Mother and Child Cohort Study. *BMC public health* 2013;13(1):186.
16. Johnsen GE, Hunskaar S, Alsaker K, Nesvold H, Zachariassen SM. Beredskapssituasjonen ved norske overgrepsmottak 2011. Nasjonalt kompetansesenter for legevaksmedisin, Uni Helse, Uni Research, Bergen; 2012.
17. Hagemann CT, Stene LE, Myhre AK, Ormstad K, Schei B. Impact of medico-legal findings on charge filing in cases of rape in adult women. *Acta Obstet Gynecol Scand* 2011; 90(11):1218-24.
18. Achenbach TM, Rescorla L. An integrated system of multiinformant assessment — School age forms and profiles . Washington, DC: Library of Congress; 2001.
19. Adams JA. Medical evaluation of suspected child sexual abuse: 2011 update. *Journal of child sexual abuse* 2011;20(5):588-605.
20. Fry D, McCoy A, Swales D. The consequences of maltreatment on children's lives: a systematic review of data from the East Asia and Pacific Region. *Trauma, Violence & Abuse* 2012;13(4):209-33.
21. Schorre BE, Vandvik IH. Global assessment of psychosocial functioning in child and adolescent psychiatry. A review of three unidimensional scales (CGAS, GAF, GAPD). *Eur Child Adolesc Psychiatry* 2004;13(5):273-86.
22. <http://www.ssb.no/befolkning/statistikker/familie/aar/2013-04-11>; Statistics Norway; 2013.
23. Butler AC. Child sexual assault: Risk factors for girls. *Child Abuse Negl* 2013 Jul 27. Epub 2013/08/01.
24. McCrae JS, Chapman MV, Christ SL. Profile of Children Investigated for Sexual Abuse: Association With Psychopathology Symptoms and Services. *Am J Orthopsychiatry* 2006;76(4):468-81.
25. D'Andrea W, Ford J, Stolbach B, Spinazzola J, van der Kolk BA. Understanding interpersonal trauma in children: why we need a developmentally appropriate trauma diagnosis. *Am J Orthopsychiatry* 2012;82(2):187-200.
26. Kellogg ND, Parra JM, Menard S. Children with anogenital symptoms and signs referred for sexual abuse evaluations. *Arch Pediatr Adolesc Med* 1998;152(7):634-41.
27. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington DC: American Psychiatric Association; 2013.
28. Norwegian Government. Forebygging og bekjempelse av vold i nære relasjoner. In: Security MoJaP (editor); 2013.
29. Conners-Burrow NA, Tempel AB, Sigel BA, Church JK, Kramer TL, Worley KB. The development of a systematic approach to mental health screening in Child Advocacy Centers. *Children and Youth Services Review* 2012;34(9):1675-82.

Appendix

List of variables

1	Sex	Girl Boy
2	Age	0 to 4, 5 to 9, 10 to 14
3	Number of siblings	
4	Care situation	Both biological parents, single parent, foster care, and so on
5	Familial disease	Yes/no
6	Kind of familial disease	
7	Biol. Parents drug abuse	Yes/no
8	Biol. Parents chronic somatic illness	Yes/no
9	Biol. Parents chronic psychiatric disease	Yes/no
10	Biol. Parents other health problem	Yes/no
11	Caregiver (if not biological	Yes/no

12	parent) drug abuse Caregiver chronic somatic illness	Yes/no	57	munity health service for psychiatric difficulties	
13	Caregiver chronic psychiatric disease	Yes/no	58	Type of health service	Yes/no
14	Caregiver other health problem	Yes/no		Former referred to child and adolescent mental health service (CAMHS) or pediatric clinic for psychiatric difficulties	
15	Parents in conflict with each other	Yes/no	59	Type of health service	
16	Parents in conflict with others	Yes/no	60	Present medication	
17	Residence	City, village, district	61	Type of medication	
	Former disease/disability of the child:		62	Who referred patient	Direct contact, police, general practitioner, school nurse, child protective service, CAMHS, and so on
18	Reduced vision	Yes/no			
19	Reduced hearing	Yes/no			
20	Reduced mobility	Yes/no	63	Other referral	
21	Mentally disabled	Yes/no			
22	Chronic somatic disease	Yes/no		Registered contacts in patient record system	
23	Type of somatic disease				
24	Chronic psychiatric disease	Yes/no	64	Indirect contact (with other services)	Number
25	Type of psychiatric disease				
26	Learning difficulties	Yes/no	65	Direct contact with child present	Number
27	Self-harm, suicidal behavior	Yes/no	66	Direct contact without child present	Number
28	Fractures/trauma	Yes/no			
29	Allergy/intolerance	Yes/no	67	Phone/email contact	Number
30	Headache/migraine	Yes/no			
31	Stomachache	Yes/no		Judiciary actions	
32	Eating problems	Yes/no	68	Police report	Yes/no
33	Other pain	Yes/no	69	Police interrogation	Yes/no
34	Constipation/diarrhea	Yes/no	70	Trial conducted	Yes/no
35	Urinary tract infection or other symptoms	Yes/no	71	Conviction	Yes/no
36	Other problems	Yes/no	72	Acquitted	Yes/no
			73	Dismissed	Yes/no
			74	Other	
	Later diagnosed disease/problems with possible relevance		75	Non-judiciary actions (e.g., regulation of visitation)	Yes/no
37	Reduced vision	Yes/no	76	Child protective actions	Yes/no
38	Reduced hearing	Yes/no			
39	Reduced mobility	Yes/no		Characteristics of abuse	
40	Mentally disabled	Yes/no	77	Psychological abuse	Yes/no
41	Chronic somatic disease	Yes/no	78	Physical abuse	Yes/no
42	Type of somatic disease		79	Sexual abuse	Yes/no
43	Chronic psychiatric disease	Yes/no			
44	Type of psychiatric disease			Relationship to suspected offender	
45	Learning difficulties	Yes/no	80	Biological father	Yes/no
46	Self-harm, suicidal behavior	Yes/no	81	Stepfather/foster father	Yes/no
47	Fractures/trauma	Yes/no	82	Biological mother	Yes/no
48	Allergy/intolerance	Yes/no	83	Stepmother/foster mother	Yes/no
49	Headache/migraine	Yes/no	84	Sibling	Yes/no
50	Stomachache	Yes/no	85	Stepsibling/half-sibling	Yes/no
51	Eating problems	Yes/no	86	Grandfather/grandmother	Yes/no
52	Other pain	Yes/no	87	Uncle/aunt/cousin	Yes/no
53	Constipation/diarrhea	Yes/no	88	Other relative	Yes/no
54	Urinary tract infection or other symptoms	Yes/no	89	Boyfriend/girlfriend	Yes/no
55	Other problems	Yes/no	90	Friend/acquaintance	Yes/no
			91	Person of authority	Yes/no
			92	Stranger	Yes/no
56	Former referred to com-	Yes/no	93	Unknown	Yes/no

94	Psychological reaction at first contact	None, moderate (e.g., anxious, sadness), severe (e.g., depression, despair, disorientation), not possible to evaluate	126	by caregiver Other problems reported by others	Yes/no
			127	If others, who	
	Severity of abuse			Psychiatric findings reported by doctor or psychologist:	
95	Severe physical violence (e.g., fractures, internal bleeding)	Yes/no	128	Anxious/depressed	Yes/no
			129	Withdrawn/depressed	Yes/no
96	Moderate physical violence (e.g., bruises, wounds)	Yes/no	130	Social problems	Yes/no
			131	Thought problems	Yes/no
97	Severe sexual abuse (oral, vaginal, anal penetration, forced masturbation)	Yes/no	132	Attention problems	Yes/no
			133	Rule-breaking behavior	Yes/no
98	Moderate sexual abuse (e.g., touching/fondling of intimate area, showing pornography)	Yes/no	134	Aggressive behavior	Yes/no
				Somatic and psychosomatic symptoms and findings	
99	Psychological abuse	Yes/no	135	Sleeping problems	Yes/no
100	Unknown severity	Yes/no	136	Eating problems	Yes/no
101	Threats from offender	Yes/no	137	Headache	Yes/no
102	Conclusion	Confirmed, uncertain/suspected abuse, disproved	138	Muscle/skeletal pain	Yes/no
			139	Gastrointestinal problems	Yes/no
103	Previous abuse (sexual, physical, psychological)	Yes/no	140	Diffuse pain	Yes/no
			141	Pelvic pain	Yes/no
104	Time span since abuse at time of examination	<24 hours, 1 to 7 days, 1 to 4 weeks, 1 to 2 months, 3 to 6 months, >6 months, unknown	142	Dysuria	Yes/no
			143	Other symptoms and findings from sexual organs or anal area	Yes/no
105	If repeated abuse, time since first event	<2 months, 2 to 6 months, 6 to 12 months, 1 to 2 years, 2 to 5 years, >5 years, unknown	144	Other problems reported by patient	Yes/no
			145	Other problems reported by caregiver	Yes/no
	Psychological symptoms reported by patient/caregiver or other		146	Other problems reported by others	Yes/no
106	Sadness	Yes/no	147	If others, who	
107	Anxiety	Yes/no		Physical findings	
108	Tired/exhausted/lack of initiative	Yes/no	148	Physical findings documented in patient record	Yes/no
			149	Light (superficial wounds, bruises)	Yes/no
109	Suicidal thoughts	Yes/no	150	Moderate (wounds, cuts)	Yes/no
110	Antisocial behavior	Yes/no	151	Severe (fractures, internal bleeding)	Yes/no
111	Abusing others	Yes/no	152	Marks on neck/throat	Yes/no
112	Impulsivity	Yes/no	153	Injuries in sexual area	Yes/no
113	Sexualized behavior	Yes/no	154	Injuries in anal area	Yes/no
114	Delusions	Yes/no	155	Sexually transmitted disease	Yes/no
115	Attention problems	Yes/no	156	Other	Yes/no
116	Hyperactivity	Yes/no		School functioning	
117	Flashbacks	Yes/no	157	Academic difficulties	Yes/no
118	Nightmares	Yes/no	158	Increased absence since time of abuse	Yes/no
119	Avoidance	Yes/no	159	Unchanged	Yes/no
120	Memory loss	Yes/no	160	Social problems	Yes/no
121	Nervous/alert	Yes/no			
122	Irritability/tantrums	Yes/no	161	Alcohol use	Never, mild (1 to 2 times), heavy (several times)
123	Dissociation	Yes/no			
124	Other problems reported by patient	Yes/no	162	Drug abuse	Never, mild
125	Other problems reported	Yes/no			

(cannabis), heavy

	Follow-up	
163	Referred to CAMHS	Yes/no
164	Pediatrician at children's clinic	Yes/no
165	Psychologist at children's clinic	Yes/no
166	Child protective service	Yes/no
167	Community health service	Yes/no
168	School psychologist	Yes/no
169	Other	Yes/no
170	C-GAS	0-100
171	Commentary	