

REGULAR ARTICLE

Amongst Norwegian paediatricians there is little agreement in management of cases of suspected child maltreatment

Mary Jo Vollmer-Sandholm^{1,2,3}  | Arne Kristian Myhre^{4,5} | Gabriel Otterman⁶  | Stian Lydersen⁷ | Arne Stray-Pedersen^{1,2} 

¹Department of Forensic Sciences, Oslo University Hospital, Oslo, Norway

²Institute of Clinical Medicine, University of Oslo, Oslo, Norway

³Department of Paediatrics, Oslo University Hospital, Oslo, Norway

⁴Department of Paediatrics, St. Olavs University Hospital, Trondheim, Norway

⁵Department of Clinical and Molecular Medicine Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology (NTNU, Trondheim, Norway

⁶Department of Women's and Children's Health, Uppsala University, Uppsala, Sweden

⁷Department of Mental Health, Faculty of Medicine and Health Sciences, Regional Centre for Child and Youth Mental Health and Child Welfare, Norwegian University of Science and Technology (NTNU, Trondheim, Norway

Correspondence

Mary Jo Vollmer-Sandholm, Department of Forensic Sciences, Oslo University Hospital, Oslo, Norway.
 Email: majovo@ous-hf.no; mjsandholm@gmail.com

Funding information

Stine Sofie Stiftelsen

Abstract

Aim: Child maltreatment is not unusual in our society but little is known about the medical management of cases in the Nordic countries. This study investigated physician knowledge and practice in cases of suspected physical and sexual abuse and neglect.

Methods: Using a patient vignette questionnaire, we assessed paediatrician knowledge and clinical decision-making on paediatric wards at 17 hospitals in Norway. Experts and non-experts in child maltreatment responded to the survey which described six potential cases of physical and sexual abuse and neglect.

Results: A total of 156 paediatricians, 67% of whom were female and with a mean age of 40, responded. There was a high level of unanimity in recognition of abuse, but wide variation and little consensus in clinical decision-making and adherence to national guidelines, with Fleiss kappa ranging from -0.002 to 0.468. In cases involving physical abuse concerns in infants and toddlers, less than half of all paediatricians reported they would order a full radiologic skeletal survey and head MRI/CT imaging, and less than 30% would plan follow-up consultations.

Conclusion: This study shows little agreement in the paediatric management of child maltreatment cases. These findings suggest the need for a national plan ensuring appropriate paediatric care for maltreated children.

KEYWORDS

child abuse and neglect, child maltreatment, child sexual abuse, clinical practice, physicians

1 | BACKGROUND

During the last two decades, there has been a growing awareness in the medical community that child abuse and neglect have great negative influence on an individual's childhood^{1,2} as well as their future health, well-being³ and even lifespan.⁴

Child maltreatment is defined by the World Health Organization (WHO) as 'all forms of physical and emotional ill-treatment, sexual abuse, neglect and exploitation that results in actual or potential harm to the child's health, development or dignity'.⁵ This is a highly prevalent societal and health threat today. In a recent report from Norway involving students aged 12–16 years, 20% reported being

Abbreviations: CPS, Child Protective Services; WHO, World Health Organization.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2021 The Authors. *Acta Paediatrica* published by John Wiley & Sons Ltd on behalf of Foundation Acta Paediatrica.

victims of physical abuse, with 5% describing serious abuse, '...such as being beaten up, beaten with an object, or beaten with a fist'.⁶ Furthermore, 5–10% of the youth had experienced emotional/mental abuse, and 20% of girls and 7% of boys experienced sexual abuse. Only one in five of these victims had disclosed the abuse to a professional.⁶ A substantial proportion of infant deaths are attributable to serious child abuse and neglect, and those numbers are likely underestimated.⁷ Amongst infant deaths in Norway in 2010–16, 4% were ruled homicide and in 12% the forensic examination and death scene investigation raised concerns of physical abuse or neglect.⁸ Child maltreatment has been deemed a public health crisis by local, national and international agencies and governmental bodies; however, on a practical level, this awareness has yet to adequately lead to changes in clinical practice.^{9–11}

The crucial role of paediatricians in recognition and response to these cases has been acknowledged in the literature.^{12,13} The creation of national reporting laws and paediatric guidelines^{14,15} illustrates the priority that has been placed on adequate and consistent care. However, there has been no evaluation nationally regarding whether these guidelines are followed, nor if the current training for recognition, diagnosis and treatment is adequate. Several other studies have exposed the shortcomings caused by inadequacies in these areas.^{16–19}

Recent research suggests that medical communities are inadequately prepared to manage cases of child maltreatment.^{20–22} In a case vignette survey by Naughton et al. published in 2018, the authors reported a wide variation in medical practice amongst four European countries, with physicians varying significantly on issues such as when to further investigate concerns for abuse, management of the cases and reporting to the authorities.²³ Researchers who surveyed paediatric clinicians across Europe observed wide variations in the organisation of the paediatric response to child maltreatment in Europe, including legislative frameworks and models of care.²⁴ The 2017 comprehensive government report on the state of child protection in Norway emphasised gaps present in the system that is responsible for these cases. This included inadequate understanding, recognition, management, treatment, systems, empowerment and follow-up.¹¹

Norway has a mandatory reporting system for health professionals for any cases where there is reason to believe that a child is or may be abused or neglected,^{14,15,25} yet to our knowledge there are no specific systems or mandates as to how the healthcare system will respond. There have been no studies yet on who reports, which agency is contacted and which professionals become involved in the hospital or community settings. For example, whether a paediatric expert will be consulted, a forensic pathologist, or both, is uncertain. There are 22 paediatric departments in Norway, but only one of which has a dedicated section for child abuse. Therefore, to our knowledge, Norwegian paediatricians have not received a standard training or consistent supervision. This includes the often-fluctuating physicians who staff the country's 11 child advocacy centres, called 'barnahus', where forensic medical determinations may be provided to law enforcement in cases where a crime against

KEY NOTES

- Child maltreatment has a large impact on our society but little is known in regard to tertiary clinical management of these cases in the Nordic countries.
- Paediatricians showed agreement in recognising cases of abuse; however, there was a wide disparity in responses regarding management and follow-up was insufficient.
- A formalised nation-wide child maltreatment curriculum and continuing education programme should be developed for more consistent recommended care.

a child is suspected. This lack of standard training or certification was considered as contributory in previous research showing wide variation in physician management of cases.²³ The situation is not unique for Norway, as only a few European countries have a formalised certification or training for child maltreatment for health-care providers.²⁴

The aim of this study is to assess the knowledge and practice of Norwegian paediatricians as they encounter cases of child maltreatment, and how their level of experience or expertise may influence these responses.

2 | METHODS

We conducted a cross-sectional national survey amongst paediatricians from May 2019 to January 2020. According to the latest available statistics (2019), there were 757 paediatricians practising in hospitals in Norway, 485 consultants and 272 in registrar positions, which means that we surveyed approximately 21% of the target population.²⁶ We divided the paediatricians into two groups of experts and non-experts. Experts were deemed such based on a combination of three factors: i. Level of practice: they completed all medical and postgraduate paediatric training and were considered consultant physicians; ii. Level of experience: they had seen more than one case of child abuse or neglect per week on a regular basis; and iii. They had made more than 10 reports of abuse or neglect to Child Protective Services (CPS) and or law enforcement during their career. The remainder of the paediatrician respondents were grouped as non-experts.

2.1 | Data collection

Invitations for a seminar and participation in a national study on child abuse were sent out by email to 18 of the 22 Norwegian hospitals with dedicated children's inpatient facilities, of which 17, including all 5 university teaching hospitals, responded. These 18 hospitals were identified based on several factors, including geographic location and size, and the study was limited to these based on both

organisational factors and that the authors agreed were representative of Norwegian hospitals. We gathered data from all administrative healthcare regions, as well as both small and regional hospitals. The research questionnaire was distributed in a breakfast or lunch seminar at the 17 hospitals by the research coordinator and research team physicians during the period April 2019-January 2020. Over 450 healthcare professionals participated in the seminars and completed the survey, which was followed by a 1.5-h workshop where the case-based questions were discussed in an open forum, and the clinical guidelines and latest research were conveyed. Of the 450 clinician respondents, 156 were paediatricians, whom we have chosen to focus on since they bear the primary responsibility for meeting and managing these cases in secondary and tertiary care facilities. However, we invited all healthcare personnel who work with children to participate.

2.2 | Survey tool

The survey consisted of six sections including medical evaluation and practice vignette questions which were provided by authors of a published study and further developed in consultation with those authors.²³ They used case materials and then tested for face validity using SurveyMonkey. We used these vignettes, added a control case, and then two sections on personal challenges, barriers and self-perceived competency; recognition of red flags and risk factors; participant professional experience; and demographics (see Appendix S1). The participants were instructed to answer individually and were observed by research staff as they completed the survey.

Due to the brevity of the questionnaire, this article addresses only the first and last sections (vignettes and demographics).

With permission, the five vignettes used by Naughton and colleagues,²³ three of which were published, were translated and reverse-translated using a team of five medical professionals proficient in both English and Norwegian. We piloted the vignettes in a group consisting of eight paediatric and primary care physicians. An extra control case was also developed from a witnessed event in order to create more balance in the questions presented and for control purposes.

We compared the cases to our national guidelines and adjusted the original published correct responses to meet our population based on a combination of what we deemed was recommended, common practice, and relevant according to our research team. We determined that most of the questions had an intended response to each case. However, there were a few that we thought were more open to interpretation but determined to retain them in the interest of maintaining the original vignettes from the Naughton study, because they were addressed loosely in the guidelines, and because we were also interested in the agreement of paediatricians in addition to whether they responded correctly or not. Finally, we established which of the clinical management options in each case would be recommended; open to interpretation but

TABLE 1 Summary of cases

Case 1: 10-week-old infant with torn labial frenulum and scratches on the face, no history of trauma
Case 2: 7-year-old child with disclosure of sexual abuse by teen neighbor
Case 3: 4-year-old child with single small burn to arm (control case)
Case 4: 2-year-old child with ear bruise, face bruises and history of family violence
Case 5: 2-year-old child with femur fracture
Case 6: 4-year-old child with repeated burn injuries with delay in seeking care and other signs of neglect

may be recommended, or not recommended. We then categorised each case as such.

The vignettes required consideration of potential physical abuse, sexual abuse and neglect in children age seven and under, primarily under age three (see Table 1 for summary and Appendix S1 for full text). We assessed the respondents' level of concern for abuse; reason for the concern (qualitative written answers); confidence in own competence, and which clinical management, reporting and follow-up actions would be taken.

The participants were informed prior to the questionnaire administration that it would be used for research purposes. Participation was anonymous and voluntary. The study was approved by the Norwegian ethics committee.

2.3 | Statistical analysis

The frequency distributions of questionnaire responses are reported for item, for paediatricians as a whole and for experts and non-experts as individual groups. Proportions were compared using the Pearson chi-squared test for each of the variables in each vignette individually. Interrater agreement was quantified in terms of negative agreement and positive agreement, calculated as described by de Vet.²⁷ These can be interpreted in a similar way as specificity and sensitivity.

In addition, we calculated Fleiss' kappa, which is a generalisation of Scott's pi, and is similar to Cohen's kappa. This quantifies agreement which exceeds that caused by chance. We interpreted these agreement measures following this guideline²⁸: ≤ 0.20 poor, ≤ 0.40 fair, ≤ 0.60 moderate, ≤ 0.80 good and > 0.80 indicate very good agreement. Two-sided p-values under 0.05 were regarded as statistically significant.

3 | RESULTS

One hundred and fifty-six paediatricians responded to the questionnaire, 22 of whom we had deemed experts. Experts were predominantly female (64%), the majority (73%) between 40 and 59 years of age, and 86% reported more than 10 years of experience. The 134 non-experts consisted of 59 consulting physicians who as a

group were very similar to the expert group with regard to sex, age and years of experience, and 75 were residents or paediatricians in training. The residents were also primarily female (73%), 95% were younger than 39 years of age and 55% reported between 3–5 years of clinical experience.

3.1 | General knowledge and recognition

When asked general knowledge questions about red flags and risk factors for abuse and neglect, there was a >85% recognition rate and no differences between experts' and non-experts' recognition of dental caries, chronic illness, underweight, unkemptness and behavioural problems in the child; and alcohol and drug abuse, social isolation and mental illness in the caregivers. Two factors were appraised differently by the two groups: obesity was recognised as a risk factor by 100% of the experts and 82% of non-experts ($p=0.03$), and prematurity by 100% of the experts and by 63% of non-experts ($p < 0.001$). (Appendix S2).

In all but one of the patient vignettes, there was no significant difference between the experts and non-experts in ability to recognise cases with concern for child maltreatment. The details of the responses by the paediatricians to the patient vignettes are given in Figures 1–6 and Appendix S3, which includes a break-down of paediatricians by experts, consultants and residents in training. More than 82% of both experts and other paediatricians stated they were concerned for maltreatment in 4 out of the 5 maltreatment cases, and none of the experts and 11% of the other paediatricians were concerned in the control case (see Figure 3). For case five involving a child-witnessed spiral femur fracture in a toddler, it was notable that more non-experts were concerned for child maltreatment: 76% vs. 41% of experts $p = 0.02$ (Figure 5).

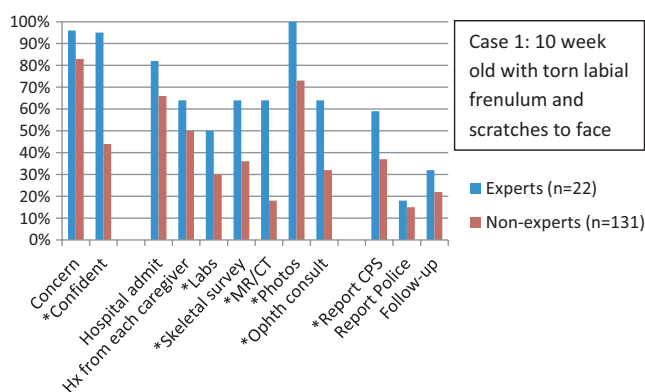


FIGURE 1 Paediatricians' response to vignette 1: 10-week-old infant with torn labial frenulum and scratches on the face. There is significant variation between confidence of expert and non-expert paediatricians in this vignette but agreement on concern for abuse. There is also significant difference between and within the groups in terms of management. Columns represent responses to management of patient by expert paediatricians (blue) and non-expert (red). *= p -score < 0.05

3.2 | Managing child maltreatment vignettes

The unanimity of concern expressed in these cases was not consistently reflected in management of these same patients. Aside from the control case, the only case that showed concern for abuse matched with conformity between the groups and appropriateness of management was that involving an allegation of sexual abuse (Figure 2). In this case, 100% and 99% of experts and non-experts were concerned, 96% and 87% expressed the need to elicit a clear history, 73% would take photographs, 100% of experts and 87% of non-experts would do a thorough genital examination, 91% of experts and 79% of non-experts would report the case to CPS, and 86% of experts and 77% of non-experts would report to law enforcement. Despite the uniformity between the groups on these points, within both groups, there remained inconsistency: 68% of experts would order laboratories, 23% would admit to the hospital, and 55% would follow up the patient.

In cases involving physical abuse concerns in infants and toddlers (cases 1 and 4) there was very low uniformity in the clinical responses, both within and between the groups. For example, in the case of an infant with unexplained torn frenula, 64% of experts would order a full radiologic skeletal survey, head MRI/CT imaging and ophthalmological examination and 50% would order labs in line with current guidelines to rule out abusive head trauma and other occult injuries. In comparison, 36% ($p < 0.05$), 18% ($p < 0.001$) and 32% ($p < 0.01$) of the non-experts would perform these tests and 30% would order laboratory evaluations (Figure 1). In the case of a toddler with repeated facial injuries and a history of police-investigated violence in the home, there is a high agreement 96% of experts and 88% of non-experts on concern for abuse, but 64% of the experts and 49% of the non-experts ($p = 0.2$ N.S.) responded they would order a skeletal survey, and 55% and 27% would order laboratory tests. Only 25% of all paediatricians would report this case to law enforcement despite knowledge of previous family violence (Figure 4).

In the case involving a combination of neglect and potential physical abuse in an immigrant child (Figure 6), 97% were concerned for maltreatment and no significant differences in management or reporting of the child were observed between experts and non-experts, despite a significant difference in their levels of confidence (86% vs. 55% $p < 0.01$). There was however somewhat limited agreement within the 2 groups in regard to various management procedures, as 59% of experts would admit to the hospital, 23% would order full skeletal survey, 23% would do laboratory analyses, and 50% would schedule a follow-up appointment. The numbers within the non-expert group were very similar, also showing a lack of agreement.

The case of a 2-year-old child with a femur fracture (Figure 5) raised concern amongst 41% of the experts. However, an additional 27% of the experts noted that they were unable to decide based on the available information and would consult with other specialists (radiologist/paediatric orthopaedic surgeon). There was no agreement amongst the experts regarding management of the case, as

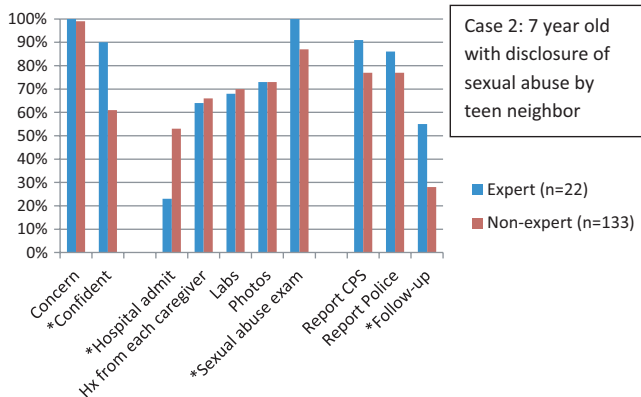


FIGURE 2 Paediatricians' response to vignette 2: 7-year-old child with disclosure of sexual abuse by teen neighbour. There was strong agreement between the groups, with some variation on key points both within and between the groups when it came to management and follow-up. Columns represent proportion of expert paediatricians (blue) and non-expert (red). *=*p*-score <0.05

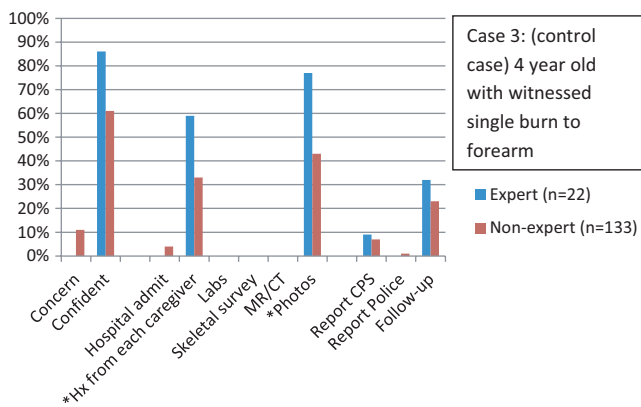


FIGURE 3 Paediatricians' response to vignette 3 (Control case): 4-year-old child with single burn to forearm. None of the experts were concerned for child maltreatment; however, 11% of the non-experts indicated worry. Columns represent proportion of expert paediatricians (blue) and non-expert (red). *=*p*-score <0.05

64% would perform full skeletal survey, 23% would ask for head MRI/CT imaging, 27% would report to CPS and 14% would report to law enforcement. The non-experts did not respond differently on these issues.

Confidence in their own ability to manage the cases was not necessarily predictive of such. In the majority of the cases, there was statistical significance between levels of confidence between experts and non-experts, yet in few of the actual practice variables. For example, though in case 5 there was a significant difference in the confidence of paediatricians to handle the femur fracture (73% vs. 42% *p* = 0.02), it was the non-experts who identified concern, had similar or more tendency to take the history from the caregivers individually, order a skeletal survey and report to CPS and law enforcement (Figure 5).

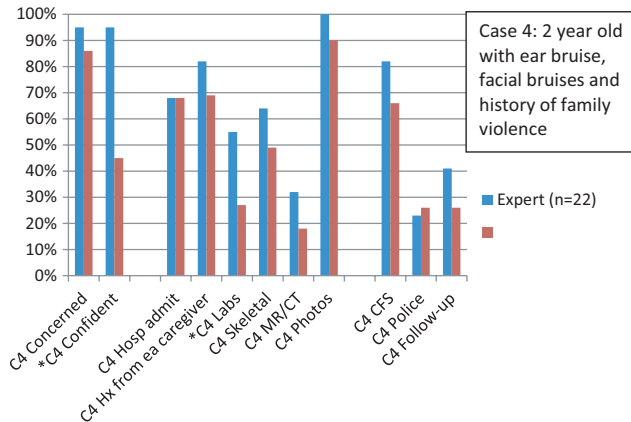


FIGURE 4 Paediatricians' response to vignette 4: 2-year-old child with ear bruise, facial bruises and history of family violence. A low proportion of experts and non-experts would order skeletal survey and MRI/CT, and few would arrange follow-up examinations. Columns represent proportion of expert paediatricians (blue) and non-expert (red). *=*p*-score <0.05

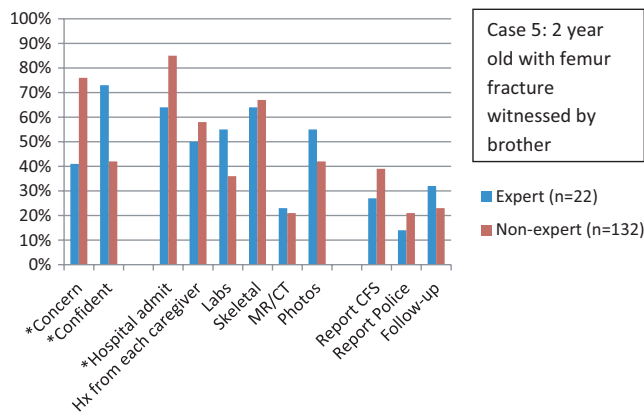


FIGURE 5 Paediatricians' response to vignette 5: 2-year-old child with femur fracture. This vignette differs significantly from the others in that more of the non-experts are concerned for abuse and would admit to the hospital. There is otherwise lack of consensus within and between the groups. Columns represent proportion of expert paediatricians (blue) and non-expert (red). *=*p*-score <0.05

3.3 | Follow-up

Despite national guidelines^{14,15,25,26} that recommend paediatric follow-up in cases of concern for child neglect and maltreatment there was a low inclination amongst both paediatric groups to do so. In some cases, a higher concern for abuse seemed to influence the tendency to follow up, yet not necessarily and not nearly with the same level of commitment. For example, in the case of sexual abuse where there was high agreement on recognition, there remained a low commitment to offer follow-up, with a larger variation between the experts and non-experts (55% vs. 28%). In the case with the most uncertainty in both management and

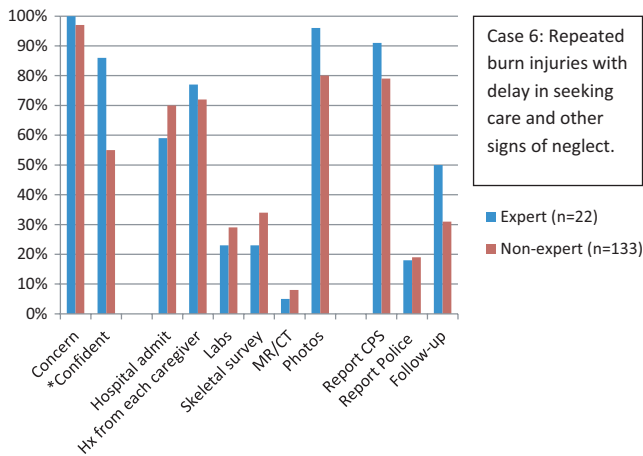


FIGURE 6 Paediatricians' response to vignette 6: Repeated burn injuries with delay in seeking care and other signs of neglect. The only significance between experts and non-experts is their confidence level in management. Both experts and non-experts recognised this vignette as highly concerning for maltreatment. Columns represent proportion of expert paediatricians (blue) and non-expert (red). * p -score <0.05

TABLE 2 Agreement measures for all of the 156 paediatricians. Agreement measures coloured green, yellow or blue represent good, moderate and fair agreement

Vignette variable	Positive agreement	Negative agreement	Fleiss'a kappa
Concern	0.866	0.630	0.496
Confident	0.566	0.442	0.008
Hosp admit	0.682	0.585	0.267
Hx both parents	0.618	0.442	0.060
Lab	0.451	0.721	0.172
Skeletal_Xray	0.494	0.752	0.247
MR_CT	0.199	0.886	0.084
Photograph	0.736	0.405	0.141
CPS	0.656	0.623	0.278
Police	0.486	0.814	0.300
Follow-up	0.278	0.723	0.001

recognition, there remained a low follow-up trend (32% vs. 23%), and in the case with almost no concern, the response for follow-up was 32% vs. 23% (Figures 1-6).

3.4 | Interrater agreement

When all cases were analysed as a group, expert paediatricians exhibited good agreement (Fleiss kappa 0.716) for both when to raise concern (positive agreement 0.920) and when not (negative agreement 0.795). The non-expert paediatricians were in moderate agreement (Fleiss' kappa 0.468), with particular agreement on when to

raise concern (0.860 positive agreement) and when not (negative agreement 0.608). The details are given in Appendix S4.

There was a wide disparity in case management between and within the groups of experts and non-experts. This is shown in the individual cases using a p -value to compare experts' and non-experts' evaluation and management of cases, and in the cases as a group with Fleiss' kappa, ranging from 0.001 to 0.300 for all paediatricians. Positive agreement ranged from 0.736 (photo-documentation) to 0.199 for MR/CT. Negative agreement ranged from 0.405 for taking photographs to 0.886 for MR/CT. While there was slightly more agreement amongst the experts vs non-experts (specifically in regard to admitting to the hospital and alerting CPS), these scores fall within fair-to-moderate agreement (see Table 2 and Appendix S4).

4 | DISCUSSION

Child abuse and neglect is an area of high-pressure medicine, because regardless of what side a paediatrician might error on, there can be serious consequences for the patient, their family and even their communities. It is characterised by much ambiguity in recognition and management, and often requires the involvement of many other subspecialties and disciplines, which require time and energy.

Our study showed that paediatricians recognise the signs and symptoms of abuse. However, when children who are experiencing child sexual and physical abuse or neglect present to a healthcare facility for treatment, it is paramount that they receive consistent, evidence-based, adequate management. The youngest of children who experience maltreatment cannot explain their injuries and are at the highest risk for morbidity and mortality.^{7,29} It is therefore imperative that guidelines are understood and implemented and that there is as much support and agreement as possible. Our results indicate unpredictable responses, whether the child is being treated by an expert or non-expert. The wide variation in how paediatricians responded to the 6 cases presented in this study is very concerning for the ability for society to be able to rely upon consistent medical help for these most vulnerable children.

As case 4 illustrated, a child who presents with red flags and risk factors such as previous violence in the home, multiple bruising and varying histories should be assured of a multi-disciplinary approach that considers the medical as well as psychosocial indicators impacting their lives. The fact that not 100% of paediatricians were concerned about abuse in the first place is perhaps most worrisome of all, but the lack of consistent management and follow-up gives further cause for concern.

The medical guidelines are clear that an infant presenting without a consistent history with trauma to the head, evidenced in case one by bleeding from the mouth, needs to be evaluated for other injuries. This would include, amongst other considerations, skeletal survey, CT and laboratory tests. Family and social factors must be considered with the involvement of outside agencies, and follow-up is important. However, there was not agreement or uniformity on any of these responses. Other than this case, where there seemed to

be more correlation between expertise and practising according to the guidelines, our data do not suggest that experts are always more likely to follow guidelines than non-experts.

Talking to the parents individually, which can be crucial for obtaining a thorough history, was also something that was not consistently valued by either group in any of the cases, but particularly the non-experts did not respond positively to this query.

Several similar studies internationally have also found inconsistencies at organisational and practice levels and lack of knowledge or implementation, some leading to detrimental results in child abuse cases.^{21,24,29} In a 2018 international metasynthesis study which included healthcare personnel, Albaek states, '...professionals' willingness to explore and identify childhood adversity seems limited'. Recognition is crucial; however, the inclusion of abuse and neglect as differential diagnoses in the medical evaluation of children has been found to be lacking.¹¹

Most of the articles attributed these discrepancies to inadequate knowledge due to the lack of sufficient initial and continuing education, and in addition, Naughton et al. underlined a lack or underuse of guidelines that could promote best practice and reduce variation.²³

It is clear that there remain questions: why are red flags and risk factors, such as presented in these vignettes, sometimes still unrecognised by paediatricians though they managed to recognise them in a list form? Why does there remain such a hesitancy to follow the guidelines, particularly regarding reporting to the authorities and following up the patient? And why does management not appear to necessarily reflect the level of concern? Part of the answers may lie in the fact that these cases are very complex, often open to interpretation, and few have extensive experience and training.²³ A final question is that of the high level of agreement in the decision to involve social services with immigrant patients compared with the other cases: does this indicate discrimination, or is there an awareness of the significant challenges these families have living in refugee centres and adapting to a new culture; as well as the acceptance of physical violence in other cultures?

4.1 | Strengths and limitations

The sample constitutes 21% (156/757) of all registered consultants and residents working in paediatric clinics in Norway.²⁶ There was a higher proportion of residents who participated in the study compared with consultants, but the sample was representative of Norwegian paediatricians with regard to gender, age and working institution (Appendix S5). Combined with the study's large geographic spread, the large sample could be regarded as a strength of our study.

There are several limitations of the study. Cases of abuse and neglect are very difficult to truly evaluate on a page, even in vignette form. They are subjective, and context and communication play large roles but are almost impossible to integrate into a study. However, this also can translate into real life and illustrate the crucial nature of following guidelines despite subjective information one might

have access to. As discussed previously, the lack of a gold-standard, as well as the individual case, clinician and variable interpretation, made the analysis and results process more challenging.

Further limitations are that all children presented in the vignettes are under 8 years of age and that the study/seminar was advertised as being on the topic of abuse, such that those that participated may have been more interested in child abuse than those that did not. However, this should bias the study in favour of the null hypothesis of reducing the difference between experts and non-experts. In addition, we were concerned that for the same reason they would answer positively to recognising abuse out of bias, but we hoped our control question would help to clarify if this bias was present.

5 | CONCLUSION

This study highlighted the seemingly inadequate knowledge and significant inconsistency in the management of cases of child maltreatment. Concerning gaps between recognition, treatment and follow-up, as well as collaboration with other child protection agencies, is lacking. Child abuse and neglect are preventable and yet they cause severe and often irreversible emotional and physical consequences.

The need for an integrated curriculum on all types of adverse childhood experiences and child maltreatment in the education of paediatricians, as well as continuing education, should be recommended. In addition, a formal training programme and preferably a subspecialty should be developed for child abuse paediatricians. Tools for screening and management should also be developed and implemented, and a better partnership between social services agencies, law enforcement and primary and tertiary health care should be emphasised.

ACKNOWLEDGEMENTS

Funding for this study was provided by Stine Sofie Stiftelsen, a children's rights charity formed to give support to victims of child abuse or other forms of violence towards children. They also collaborated with the planning and development stages and have assisted with feedback as team members throughout the process. The Regional Competency Center on Violence and Sexual Abuse of Children and Youth participated in the planning and implementation of the educational component of our research. We would also like to thank Aideen Naughton and Alison Kemp for sharing their study and vignettes with us.

CONFLICT OF INTEREST

There are no conflicts of interest to report.

ORCID

Mary Jo Vollmer-Sandholm  <https://orcid.org/0000-0002-2348-0065>

Gabriel Otterman  <https://orcid.org/0000-0003-4837-9614>

Arne Stray-Pedersen  <https://orcid.org/0000-0002-7238-0327>

REFERENCES

1. Harris NB. *The deepest well*. Boston: Houghton Mifflin Harcourt; 2018.
2. Oh DLJP, Silverio Marques S, Koita K, Purewal Boparai SK, Burke Harris N, Bucci M. Systemic review of pediatric health outcomes associated with childhood adversity. *BMC Pediatr*. 2018;18(1):1-19.
3. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health*. 2017;2:356-366.
4. Brown DWAR, Tiemeier H, Felitti VJ, et al. Adverse childhood experiences and the risk of premature mortality. *Am J Prev Med*. 2009;37:389-396.
5. WWHO. *Child Maltreatment: World Health Organization; 2020 updated 8 June 2020*. <https://www.who.int/news-room/fact-sheets/detail/child-maltreatment>
6. Hafstad GS, Augusti EM. (Red.). *Ungdoms erfaringer med vold og overgrep i oppveksten: En nasjonal undersøkelse av ungdom i alderen 12 til 16 år*. Oslo: Nasjonalt kunnskapssenter om vold og traumatisk stress. 2019.
7. Palusci VJ, Kay AJ, Batra E, et al. Identifying child abuse fatalities during infancy. *Pediatrics*. 2019;144(3):e20192076.
8. Bøylestad L, Stray-Pedersen A, Vege Å, Osberg S, Rognum T. Death-scene investigations contribute to legal protection in unexpected child deaths in Norway. *Acta Paediatr*. 2020;109(12):2627-2635.
9. Dube S. Continuing conversations about adverse childhood experiences screening: a public health perspective. *Child Abuse Negl*. 2018;85:180-184.
10. Hillis S, Mercy J, Amobi A, Kress H. Global prevalence of past-year violence against children: a systematic review and minimum estimates. *Pediatrics*. 2016;137(3):e20154079.
11. NOU Norges Offentlige Utredninger. *Svikt og Svik - Gjennomgang av saker hvor barn har vært utsatt for vold, seksuelle overgrep og omsorgssvikt*. Oslo: Departementenes sikkerhets- og serviceorganisasjon Informasjonsforvaltning; 2017.
12. Keeshin BR, Dubowitz H. Childhood neglect: the role of the paediatrician. *Paediatrics & child health*. 2013;18(8):e39-e43.
13. Kairys S. Child abuse and neglect: the role of the primary care pediatrician. *Pediatr Clin North Am*. 2020;67(2):325-339.
14. Norwegian Health Library - Pediatrics Association. *Social Pediatrics Recommendations 2012*. <https://www.helsebiblioteket.no/pedia/triveiledere?menuitemkeylev1=6747&menuitemkeylev2=6572>
15. Norwegian Directorate of Health. *Mandatory Reporting; Oslo Norway 2018*. <https://www.helsedirektoratet.no/rundskriv/helsepersonelloven-med-kommentarer/opplysningsplikt-m.v#paragraf-33-opplysningsplikt-til-barnevernet>
16. Bailhache M, Leroy V, Pillet P, Salmi LR. Is early detection of abused children possible? A systematic review of the diagnostic accuracy of the identification of abused children. *BMC Pediatr*. 2013;13:202.
17. Keenan HT, Cook LJ, Olson LM, Bardsley T, Campbell KA. Social intuition and social information in physical child abuse evaluation and diagnosis. *Pediatrics*. 2017;140(5):e20171188.
18. Kemp A, Mott A, McIntosh N, Vohra J, Chowdhary-Gandhi A. What clinical features in child sexual abuse do paediatricians consider to be significant? *Arch Dis Child*. 2012;97(Suppl 1):A94.2-A95.
19. Moody G, Cannings-John R, Hood K, Kemp A, Robling M. Establishing the international prevalence of self-reported child maltreatment: a systematic review by maltreatment type and gender. *BMC Public Health*. 2018;18(1):1164.
20. Demirçin S, Tütüncüler A, Aslan F, Velipaşaoğlu Güney S, Atılğan M, Gülkesen H. The knowledge level and opinions of physicians about the medical and legal procedures related to physical child abuse. *Balkan medical journal*. 2017;34(2):140-146.
21. Regnaut O, Jeu-Steenhouwer M, Manaouil C, Gignon M. Risk factors for child abuse: levels of knowledge and difficulties in family medicine. A mixed method study. *BMC Res Notes*. 2015;8:620.
22. Menech M, Zimmerman S, Garcia-Filion P, Bulloch B. Child abuse education: an objective evaluation of resident and attending physician knowledge. *Pediatr Emerg Care*. 2011;27(10):937-940.
23. Naughton ANU, Van Konijnenburg EH, Watkins JW, Otterman G, Nelson J, Kemp A. Variability in child protection medical evaluations of suspected physical abuse in four European countries: a vignette study. *Child Abuse Rev*. 2018;27:404-418.
24. Otterman G, Jalsenius M, Maguire S, Sarkadi A, Janson S. Paediatric approaches to child maltreatment are subject to wide organisational variations across Europe. *Acta Paediatr*. 2017;106(7):1110-1117.
25. Norwegian Center for Violence & Traumatic Stress Studies (NKVTS). *Family Violence: Recommendations for healthcare & social services; Oslo, Norway; 2018* <https://voldsveileder.nkvts.no/>
26. Norwegian Health Department. *Doctors in the primary and tertiary healthcare systems*. Oslo; 2018. <https://www.helsedirektoratet.no/rapporter/leger-i-kommune-og-spesialisthelsetjenesten-de-Vet-HCW,Dikmans-RE,Eekhout-I>
27. Specific agreement on dichotomous outcomes can be calculated for more than two raters. *J Clin Epidemiol*. 2017;83:85-89.
28. Fagerland ML, Laake P. *Statistical analysis of contingency tables*. Boca Raton, FL: Chapman and Hall/CRC. 2017;634 p.
29. Laurent-Vannier A, Chevignard M. Abusive head trauma, healthcare, and childhood professionals' lack of knowledge is detrimental to the child's interest. *Arch Pediatr*. 2019;26(4):199-204.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Vollmer-Sandholm MJ, Myhre AK, Otterman G, Lydersen S, Stray-Pedersen A. Amongst Norwegian paediatricians there is little agreement in management of cases of suspected child maltreatment. *Acta Paediatr*. 2021;110:2865-2872. <https://doi.org/10.1111/apa.16017>