

# BMJ Open Cohort profile: Norwegian youth study on child maltreatment (the UEVO study)

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## ABSTRACT

**Purpose** Exposure to childhood maltreatment is not uncommon, and is linked to both short-term and long-term health problems. Population-based surveys for adolescent samples provide excellent opportunities for addressing the substantial burden of early-life adversities, because collecting information close in time to exposure may increase accuracy of assessment. Still few large studies have been conducted, following individuals through adolescence. Therefore, the UEVO cohort was created with the aim of investigating prevalence of child maltreatment throughout childhood and adolescence, and its effects on health and functioning in a long-term perspective in a representative sample of Norwegian adolescents.

**Participants** The baseline for the cohort includes a representative sample of 9240 Norwegian adolescents (response rate 86.6%) aged 12–16 years, surveyed in January and February 2019. The cohort to be followed over time comprises the 5502 adolescents who agreed to be recontacted for subsequent data collection waves.

**Findings to date** The overall prevalence figures from the first wave of measurement have been published in a comprehensive national report on child maltreatment in Norway.

**Future plans** A second study wave will commence in 2021, including about half of the original cohort (longitudinal), as well as a new sample starting at age 12. For participants above age 16, original survey data will be connected to national registries (pending individual consent), enabling the study of real-life functioning within the areas of healthcare utilisation, school drop-out, workforce participation and prescription of medication.

## INTRODUCTION

Epidemiological studies suggest that a large number of children under the age of 18 worldwide have been subject to violence or abuse, and that maltreatment in this age group is associated with long-term adverse outcomes, including persistent emotional and physical health problems<sup>1</sup> and labour market marginalisation.<sup>2</sup> As such, childhood maltreatment, such as physical, psychological, and sexual abuse as well as neglect, has emerged as a key public health issue given its association with long-lasting negative consequences and significant societal costs. Although some large epidemiological studies have been designed to comprehensively assess a history of child

## Strengths and limitations of this study

- This will be the largest and most comprehensive survey to date on various forms of child maltreatment in a nationally representative sample of Norwegian adolescents.
- The cohort is established during a developmentally important transitional phase, allowing for prospectively tracking adolescents development and victimisation during this critical time for both risk and opportunity.
- For the first time, adolescents independently consent to participation, without the consent of parents, reducing risk for selective dropout.
- Prospective data from the adolescents' childhood are lacking. However, permission to link answers to national registries on birth, health, social services and education will mitigate the lack of prospective data from early development.
- Multi-informant data on child maltreatment are lacking, precluding the verification of self-reported child maltreatment and the possibility to make statistical inferences on the differences and similarities in exposure and outcome depending on source of information.

maltreatment among adolescent samples (<sup>3–6</sup>), few are designed to follow a cohort throughout adolescence, but see,<sup>7</sup> despite this being a crucial transitional period making this group particularly important for study.<sup>8</sup> Therefore, we established a large prospective cohort, the UEVO cohort (an acronym for the Norwegian title: Ungdomsundersøkelsen om Erfaringer med Vold og Overgrep (*Youth survey on exposure to violence and abuse*)), with a focus on comprehensively assessing exposure to violence and abuse throughout childhood and adolescence.

The risk of being exposed to sexual abuse increases in the transition from childhood to adulthood.<sup>9–11</sup> This increased risk coincides with the onset of puberty in combination with spending more time with peers and less time at home. Neurobiological, psychological and social plasticity is a hallmark of childhood and adolescence which puts children and

adolescents at greater risk for the negative consequences of severe stressors, including maltreatment, throughout childhood, but also represents an opportunity for intervention and recovery.<sup>12 13</sup> Thus, the potential health and socioeconomic benefits of knowledge-based prevention measures in this phase of life are large. Moreover, more precise knowledge of when children's risk of exposure increases is important to determine for a timely introduction of appropriate preventive measures.

Assessing maltreatment experiences as well as health and functioning among young adolescents provides excellent opportunities for addressing the substantial burden of early-life adversities. Compared with retrospective studies investigating child maltreatment in adult samples, population-based surveys for adolescent samples provide a valuable approach in obtaining accurate information that is close in time to exposure and covering the whole range of children's experiences of being exposed to child maltreatment. This may in turn reduce the influence of recall bias.<sup>14</sup> Furthermore, it is suggested that adolescents' self-report is more reliable compared with children under the age of 10 years.<sup>15</sup> In addition, identifying this population at an early stage in their life has several important benefits, given the potentially detrimental consequences that both mental and physical health problems have on subsequent educational, social and economic outcomes.

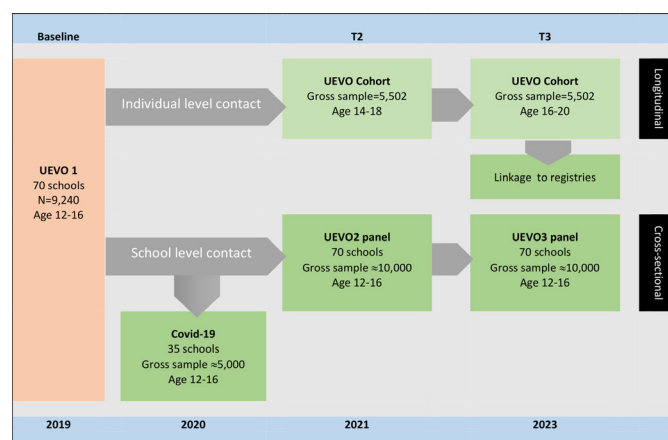
The UEVO study is a national student survey for secondary schools in Norway. The study is designed as a combined cohort—and panel survey in which a proportion (approx. 60%) of participants enrolled in the first data collection will be followed over time (the UEVO cohort), while data will also be collected repeatedly in the enrolled schools in a panel design (see figure 1 for a visual presentation of the longitudinal study design). One study wave has been completed and a second is planned. The UEVO study has a sizeable, nationally representative sample. Information about the perpetrator as well as the timing of abuse are included in the survey, adding new and highly requested information to this field of study.<sup>16</sup> At present, it includes detailed information on mental and physical health, quality of life, health-related

behaviours, demographics and information on help-seeking behaviours and other life traumas including accidents, war, sudden death of a loved one and bullying.

The background for the development of the survey is that limited data existed on these topics in the child and adolescent populations, also within the Nordic countries. Although some data had been collected retrospectively among young and older adults,<sup>17–19</sup> systematic surveys among adolescents yielding more comprehensive knowledge had yet to be conducted. There also remain features of child maltreatment exposures that are significantly understudied. For example, childhood psychological abuse is highly co-occurring with other forms of maltreatment yet receives substantially less attention in the research literature than other types of maltreatment (e.g., physical and sexual abuse).<sup>20</sup> This is also applicable for the other Nordic countries (i.e., Sweden, Denmark and Finland), where a systematic review of studies on child maltreatment conducted between 1990 and 2013 showed that only one out of 24 studies included measures of psychological abuse or neglect.<sup>11</sup>

Several definitions of child maltreatment exist, and labels such as child abuse and neglect, violence against children and adverse childhood experiences have been used interchangeably in the literature to describe transgressions and potentially harmful behaviours towards children. In the present study, the World Health Organization's (WHO) typology of violence has been guiding in the definition of child maltreatment, and maltreatment is accordingly assessed using five categories: physical abuse, psychological abuse, witnessing intimate partner violence, child sexual abuse and sexual abuse by peers. All types of abuse are often termed acts of commission, referring to acts that inflict physical or psychological harm on the child. Neglect and witnessing domestic violence, however, can be viewed as an act of omission, depriving children from physical, emotional or educational needs. Child maltreatment in the present study refers to abuse and neglect inflicted on the child by a parent or other caregiver. The exception is sexual abuse which is mapped both within the family as well as caused by other adults or peers. To assess these experiences throughout childhood, both lifetime- and last-year prevalence is considered, as well as duration of abuse.

Regular collection of data regarding child maltreatment and its relation to mental health via population-representative surveys is crucial for our understanding of the implication of child maltreatment for population health. A continuous evaluation of child maltreatment as a preventable problem is therefore required to inform public policy and further research.<sup>21</sup> With this backdrop, the Norwegian Centre for Violence and Traumatic Stress Studies established a national youth survey to be repeated every 2–3 years, with the aspiration to build a representative knowledge base on child maltreatment in Norway and possibly expand to the other Nordic countries.



**Figure 1** Outline of planned assessments.

## METHOD

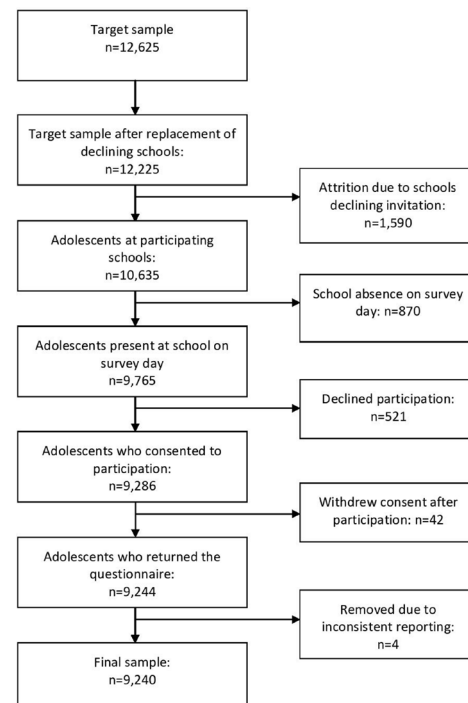
### Setting

Norway is a Northern European country characterised as a social democratic welfare state, with generous universal public health insurance coverage and predominately public health services. All forms of child maltreatment, including physical punishment and harsh parenting, is prohibited by law in Norway, which was among the first countries to ratify the United Nations Convention on the Rights of the Child, in January 1991. In 2018–2019, 96% of secondary school students in Norway attended public schools, with the remaining 4% attending private schools (<https://www.udir.no/in-english/>). Public schools in Norway are free for families. Private schools are also available to the majority of children as the school attendance fees are low due to public subsidies.

### Baseline: the UEVO1 (2019) study

The baseline for the UEVO cohort is a national web-based survey administered in 72 schools. Participants include eighth to 10th graders in Norway, between the ages of 12 and 16, and data for the first wave were collected between 8 January and 19 February 2019. Participating schools allocated one school hour for the students to complete the questionnaire, which also included a cognitive task incorporated in the digital platform. Overall, 10365 students were registered at the participating schools, of whom 9240 completed the questionnaire, yielding a response rate of 86.6%. A second wave of data collection in the UEVO cohort is planned during the spring term of 2021. Simultaneously, data collection will be commenced in the schools that took part in UEVO1. Funding has been granted for these data collections.

Due to the situation that occurred early 2020 with the COVID-19 outbreak across the globe, and the following lockdown of societies, new research needs emerged, in particular related to the psychosocial consequences of lockdown for children and adolescents. We therefore conducted an additional brief survey in 35 of the schools originally included in the UEVO1 to assess maltreatment and health outcomes in the context of the pandemic. A recent review of literature on the effect of pandemics before COVID-19 showed negative psychological effects of quarantine measures including post-traumatic stress symptoms, confusion and anger.<sup>22</sup> Because very little research has focused on children and adolescents during pandemics, and because baseline data on child maltreatment and associated health and functioning is very rare in situations like this, we considered a COVID-19 intermediate data collection of imminent importance. With the limited time and resources to plan and conduct such a study during times of lockdown spring 2020, recontacting the cohort (n=5502) from UEVO1 was considered too time consuming. We therefore conducted a new cross-sectional data collection by recontacting all schools that took part in the UEVO1 sample. As such, UEVO1 data could be used as a baseline with which new data could be compared. We define this as an interim data collection,



**Figure 2** Overview of the recruitment process and sample attrition.

not directly part of the longitudinal design of the study. The main focus of that data collection was to assess levels of violence and abuse exposure in families during lockdown, as compared with baseline.

### Representativeness of the UEVO 1 (2019) cohort

In collaboration with Statistics Norway (SSB), we drew a representative sample of schools based on the following criteria: (1) geographical representativeness, (2) school size and (3) ethnic majority/minority status. To ensure geographical representativeness, we created five regions (strata) that covered the entire country. Within each of the five strata, schools were divided into three strata depending on school size. In Norway, this stratification of schools corresponds well with the urban–rural dimension because urban schools are generally larger. Schools were further divided into two strata depending on whether the proportion of ethnic minority students in the schools was below or above the average for that specific region. Every school within each stratum was given an equal likelihood of being drawn, and the draw was continued until the optimal number of students within each stratum was reached. We also had a list of substitute schools for each stratum, and these schools were approached when schools in the original draw declined participation. The final gross sample drawn comprised 86 schools with a total of 12643 students. See figure 2 for an overview of attrition throughout the recruitment process.

Compared with the total population of secondary school students in Norway (N=63344 in 2019), the UEVO1 sample had a nearly equal distribution of sexes (49.2% girls, 49.7% boys and 0.7% gender nonconforming, vs 48.7% girls and 51.2% boys in the total



population), and age distribution corresponded with the distribution in Norwegian secondary schools: 13 years or younger (29.8%, n=2750), 14 years (33.3%, n=3076), 15 years (32.7%, n=3018) and 16 years (4%, n=365) as in the total population. According to Statistics Norway, around 18% of secondary school students in Norway have an ethnic minority status, which was nearly identical to the distribution in the UEVO1 sample (16.8%). Accordingly, the UEVO1 sample is considered to be representative of the Norwegian youth population.

Compared with the original UEVO1 sample (n=9240), the participants who consented to recontact are similar with regard to age and gender distribution, country of origin, whether they lived with one or both parents and family affluence (see [table 1](#)). A relatively greater proportion of parental higher education is observed among those who have agreed to be recontacted, although the difference is rather small. Proportion of adolescents reporting exposure to child maltreatment (i.e., physical, sexual and psychological abuse and neglect) and who have consented to be recontacted are equal compared with the UEVO1 sample. Together, this supports the representativeness of the sample to be recontacted for wave 2 measurements.

Additional attrition analyses investigating systematic differences between participants who did and did not consent to be recontacted, identified no substantial associations with regard to age (Cramer's  $V=0.07$ ,  $p<0.001$ ), country of origin (Cramer's  $V=0.02$ ,  $p=0.001$ ), family affluence (affording activities; Cramer's  $V=0.02$ ,  $p=0.248$ ), parental higher education (Cramer's  $V=0.05$ ,  $p=0.001$ ) or any forms of maltreatment exposure; physical abuse (Cramer's  $V=0.03$ ,  $p<0.001$ ); psychological abuse (Cramer's  $V=0.06$ ,  $p<0.001$ ); sexual violations from peers (Cramer's  $V=0.08$ ,  $p<0.001$ ); sexual abuse from adults (Cramer's  $V=0.02$ ,  $p<0.001$ ) and neglect (Cramer's  $V=0.02$ ,  $p<0.009$ ). There was, however a difference between genders with a higher proportion of girls agreeing to be recontacted (55% girls vs 43% boys, Cramer's  $V=0.12$ ,  $p<0.001$ ). Important to note is that although differences were statistically significant, effect sizes for all covariates could be interpreted as weak (negligible associations: Cramer's  $V<0.10$ <sup>23</sup>), and low p-values could most likely be attributed to the large sample size. In summary, attrition analyses suggest that gender may play a role when recruiting participants for subsequent data collection waves.

## Instruments

An overview of the key health and functioning instruments in the UEVO study is presented in [table 2](#) covering self-reported information on both mental and physical health, quality of life, health-related behaviours as well as more specific study-related information.

Of special interest was a self-administered cognitive task incorporated in the flexible web-based solution. We used the Emotional Go/NoGo paradigm, designed to assess inhibitory control within the context of emotional

stimuli.<sup>23</sup> Validated pictures of human faces (The Umeå University Database of Facial Expressions)<sup>24</sup> with neutral and angry facial expression were flashed on the screen for 500 ms. Participants responded by tapping a key on the computer on the majority of trials (70% of trials) or held back responses (inhibitory control) by not tapping the key on 30% of the trials. The aim of the task was to assess inhibitory control on a behavioural level. Results from the inhibitory control task may serve as a supplement to self-reported data, capturing important mechanisms in emotion regulation.<sup>25</sup> Inhibitory control can thus be used as a marker of the ability to hold back prepotent responses to emotional information and may thus be linked to many aspects of daily functioning as well as psychological health and exposure to negative experiences such as violence and abuse.

## Maltreatment exposure

Participants' history of exposure to maltreatment was assessed by inquiring about experiences of physical, psychological and sexual abuse, as well as neglect.<sup>26,27–29</sup> To ensure comparability to other studies and possibility for replication, item selection was based on previous prevalence studies on child abuse in Norway<sup>26</sup> and Sweden,<sup>27–29</sup> and culturally adapted to the target age group in Norway (i.e., 12–16 years old). For all forms of abuse, we assessed lifetime prevalence, last-year prevalence, as well as duration of abuse (age at first and last time of exposure, with response options from age zero to actual age at time of the survey). For peer sexual abuse, we restricted response options to reduce the number of false positive responses related to sexual play in childhood.

Physical abuse was measured by six items and psychological abuse by eight items based on the Parent–Child Conflict Tactics Scales,<sup>30</sup> presented on a four-point scale: 0 (never), 1 (once), 2 (sometimes) and 3 (often). Specific items describe experiences with different degrees of physical and psychological abuse from someone at home. For physical abuse selective follow-up questions were administered to those with positive responses, including age at the time of the perpetration(s), relation to the perpetrator, contact with medical care, whether reported to the police and whether they had self-disclosed. Degree of suffering related to the experience was also rated on a scale from 1 to 10. For psychological abuse, relation to perpetrator was assessed.

Adolescents' history of sexual abuse by an adult was measured by six items each rated on a four-point scale (0=never, 1=once, 2=sometimes, and 3=many times). Items were adapted to Norwegian from the Jernbro and Janson<sup>27</sup> questionnaire, which is based on several international studies.<sup>31–33</sup> The content of items varies from whether the participant has had any history of an adult trying to kiss him/her to attempting sexual intercourse with him/her. Higher scores indicates more severe abuse. Similarly to physical abuse, selective follow-up questions were provided, including details about age at the time of the perpetration(s), relation to the perpetrator, contact

**Table 1** Description of the UEVO sample at baseline (n=9240) and participants consenting to recontact (n=5502)

	UEVO1		Recontact	
	N	%	N	%
<b>Age*</b>				
13 or younger	2750	29.8	1753	32.8
14	3076	33.3	1859	33.9
15	3018	32.7	1683	30.7
16	365	4.0	190	3.5
<b>Gender†</b>				
Boy	4542	49.2	2436	44.5
Girl	4594	49.7	3002	54.8
Gender diverse	60	0.6	40	0.7
<b>Country of origin‡</b>				
Born in Norway, at least one parent born in Norway	7518	81.5	4493	83.0
Born in Norway, both parents born abroad	812	8.8	420	7.8
Born abroad, both parents born abroad	743	8.0	743	7.5
<b>Living arrangement§</b>				
Living with both parents	6459	70.3	2651	71.4
Living with one of the parents	2603	28.2	1017	27.4
Foster care	87	0.9	32	0.9
Other (eg, institution)	37	0.4	<10	<1.0
<b>Parental higher education¶</b>				
None of the parents	559	6.0	303	7.5
One parent	1700	18.4	1009	24.9
Both parents	4351	47.1	2747	67.7
Do not know	2564	27.7	1415	25.7
<b>Family affluence¶¶</b>				
Can afford to buy necessary items	9013	97.5	5363	98.1
Cannot afford necessary items	170	1.8	106	1.9
Can afford activities	8921	96.5	3650	98.3
Cannot afford activities	226	2.4	64	1.8
<b>Maltreatment exposure††</b>				
Physical violence	1742	19.4	1107	20.4
Sexual abuse by adult	543	6.0	355	6.6
Psychological abuse	2990	32.9	1905	35.1
Neglect	1294	14.4	731	13.6

\*Missing n=33 (0.3%).

†Missing n=44 (0.5%).

‡Missing n=167 (1.8%), we use Statistics Norway's definition of immigrant status.

§Missing n=54 (0.6%).

¶Missing n=66 (0.7%), higher education is defined as college or university level.

¶¶Missing n=57 (0.6%).

††Missing n=93 (1%).

with medical care, whether reported to the police, whether they revealed their experience to anyone, and if not, reasons why.

Items measuring neglect were partly drawn from the Juvenile Victimization Questionnaire (JVQ). Originally, the JVQ asks for several different neglectful childhood

experiences in one question. However, for the purpose of the present study and age group, the question was divided into several different items mapping each component of the original JVQ item separately. This is in line with the procedure applied by the Swedish research team.<sup>27</sup>

**Table 2** Overview of key variables included in the UEVO survey

Variables	Measure used	Comments
<b>Main health-related variables</b>		
Depression and anxiety	Hopkins Symptom Checklist HSCL-10 <sup>37</sup>	6 items on depressive symptoms and 4 items on anxiety symptoms.
Post-traumatic symptoms	The Child and Adolescent Trauma Screen, CATS <sup>38</sup>	In an attempt to keep the total survey comprehensive but brief and easy to complete, items mapping complex PTSD were not included.
Externalising behaviour	The Reactive-Proactive Aggression Questionnaire, RPQ <sup>39</sup>	Aggression was assessed by 6 items of the Proactive aggression scale and 2 items of the reactive aggression scale.
Quality of life	KIDSCREEN-10 <sup>40</sup>	
Somatic symptoms	Children's Somatic Symptoms Inventory (CSSI-8) <sup>41</sup>	4 items concerned muscle/joint pain and the last 4 items concerned faintness/dizziness, heart beating too fast, nausea or upset stomach and weakness.
Sleep	Questions previously used by Hysing and collaborators in a representative child sample in Norway <sup>34</sup>	Sleep and waking hours in 30 min intervals for weekdays and weekends respectively. Sleep problems and sleeping habits are also mapped.
Other information		School attendance is measured by 4 items asking about school absence (number of days and reasons for absence).
<b>Main exposure variables</b>		
Physical and emotional abuse	Parent-Child Conflict Tactics Scales, CTSPC <sup>30</sup>	Physical abuse was measured by 6 items and emotional abuse by 8 items from the CTSPC.
Sexual abuse	Questions previously used in Jernbro and Janson <sup>42</sup> derived from several international studies. <sup>31-33,42,31-33</sup>	6 items measuring sexual abuse from an adult. Following our choice to divide sexual abuse in sexual abuse from adults and from peers, 6 more items were developed in order to measure sexual violations from peers.
Witnessing intimate partner violence	Questions previously used in a Norwegian violence survey among 18-year-olds <sup>26</sup>	2 items measuring emotional abuse, 3 items measuring physical violence, and 1 item asking about other types of violence.
Neglect	Derived from the Juvenile Victimization Questionnaire (JVQ), as applied by Jernbro and Janson <sup>42</sup> .	6 items measuring physical and emotional neglect were included.
Other traumatic experiences	Assessment of traumatic experiences—Child version, CATS <sup>38</sup>	14 items measuring range of potentially traumatising events.

PTSD: Posttraumatic stress disorder

CM: Child maltreatment

CM, Child Maltreatment; PTSD, Posttraumatic stress disorder.

In addition, questions related to degrees of negative social control from family members (i.e., a Nordic description of parental control and intrusiveness in their child's life, often associated with ethnic minority parental practices) are covered in the survey, as well as questions about female genital mutilation.<sup>34</sup>

### Recruitment and procedures for data collection

Students were recruited at school during school hours, and all eligible students were approached with letters of information given a minimum of 1 week prior to the administration of the survey. All survey data were collected digitally through a secure web-based platform developed

and maintained by Conexus, located in Norway. Informed consent was given digitally. Students logged on with a secure personal login that all students in Norwegian schools use for school purposes, and a personal identification number was retrieved and stored securely on a server separated from the server storing the survey data. A matching key was generated to connect personal information to survey data, and this key is securely stored separately from the two other data sources. A total of 5502 (62% of the sample) of the participating students consented to recontact and linkage of data from wave 1 to subsequent data collection efforts.

To ensure that correct, nuanced and age-appropriate information was provided to all potentially participating students, a 5-min animation film developed and tailored for the present study was presented prior to administration of the survey in each classroom. The purpose of the film was to inform students about the aim of the survey, motivate participation, inform them about the participants' rights (including right to withdraw, as well as data storage procedures) and information on web survey functions. Students who declined participation were given alternative assignments in the classroom until data collection was completed. For students with a lower reading speed, reading difficulties or students who were not fluent in the Norwegian language, we incorporated a loud-reading function in the web survey, allowing participants to click on a symbol to get the question read aloud (all students were requested to bring a headset to school on the day of data collection).

### Postsurvey follow up

A comprehensive follow-up procedure was prepared for the study due to the young age of the participants and the sensitive topics being surveyed. All participating schools were committed to having a school nurse available during and after data collection. One teacher and one school nurse from all participating schools were invited to a full-day training seminar prior to data collection. Those who could not take part in person could follow the seminar by livestream or watch a recording afterwards. About half of the participating schools took part in the seminar; the second half was followed up by telephone.

A follow-up survey was presented to all students after they had completed the questionnaire. This form was administered independently of the questionnaire and thus was not linked to responses on any questions in the questionnaire. Participants who logged on but did not complete the survey, also received the follow-up form. If worried about themselves or some one else, the adolescents were given four options for being contacted: either by (1) the school nurse, (2) a professional from the local child protection services, (3) a teacher at school (requested to provide the name of the preferred teacher) or (4) an operator at a helpline for youth run by the Norwegian Red Cross. Declining further follow-up was also an option. The information was encrypted and sent to a secure server, to which assigned project members could log on, accessing the information from the students, and ensure the appropriate helper was contacted. This innovative solution proved successful as 4.8% (n=480) of the sample sent a contact request. Linking these students to the appropriate helper proved feasible.

### Patient and public involvement—youth expert panel

To ensure user involvement and increase the likelihood that question format and procedures were optimal for the age groups in the target sample, the project involved a youth expert panel from an early stage in the planning process. The panel included four boys and four girls aged

14–15 years, who were all recruited from a local secondary school. The students were exempted from regular classes to attend monthly expert panel meetings at the research centre. Each panel meeting followed the same structure, with a tutorial related to the meeting theme, as well as a free discussion section and an evaluation. The expert panel has been involved several key parts of the project which has led to changes in the design of web-survey format. The adolescents were also involved in developing a dissemination strategy tailored for youth populations. In close collaboration with our youth expert panel, we also developed information to be made available on social media platforms used by adolescents.

### Pilot studies

Before the first data collection wave, we conducted three pilot studies in a total of four schools. The primary purpose of pilot 1 was to test the feasibility of the questioning format in the appropriate age group, to evaluate the information given to students prior to assent, as well as to assess the procedures for postsurvey follow-up. We used this information to make changes in the wording of questions about abusive experiences. Pilots 2 and 3 were conducted to test all technical solutions for login and the web-survey format, including the emotional Go/NoGo task and postsurvey follow-up. Together, the pilot studies proved very useful as feedback from youth participants, teachers, school administration and school nurses helped in planning the study to become as feasible and manageable as possible.

### Ethics

According to recent Norwegian legislative changes children from 12 years and onwards are able to independently consent to participation in health-related research. As adolescents are the target group of the UEVO-cohort and they, did not retrieve parental consent before completing the survey, several ethical considerations were made and precautions were taken. For instance, the above described follow-up procedure was designed to provide help for adolescents who wanted to consult with an adult helper about their worries.

Also, questions in the survey may reveal the occurrence of serious violence or abuse, but the answers will not allow for the disclosure of whether the child is experiencing current abuse or at risk of experiencing future violence or abuse. Thus, the public fend off duty did not apply for the present survey. However, if the planned follow-up resulted in disclosures of ongoing and/or threats of future violence or abuse, mandatory reporting and fend off duty was followed according to professional guidelines among the helpers listed (school nurse, teachers, child protection services and youth help lines).

### FINDINGS TO DATE

Descriptive results from the UEVO study 2019 have been published in a comprehensive Norwegian report.<sup>35</sup>

**Table 3** Key findings from UEVO1 study: overall prevalence of self-reported child maltreatment

	Total	
	N	%
Physical abuse		
Less severe physical abuse (eg, pinching, slapping, hair pulling)	1337	15
Severe physical abuse (beaten with an object, kicked, beaten up)	375	4
Any form of physical abuse	1742	19
Emotional abuse*	1600	18
Witnessing partner violence		
Physical abuse against mother	174	5
Physical abuse against father	361	2
Emotional abuse against mother	1489	16
Emotional abuse against father	1158	13
Neglect	1263	14
Sexual abuse and violations		
Sexual abuse from adults	543	6
Sexual violations from peers	2003	22
Accumulated score of child maltreatment (three or more types of CM)	874	11

\*Numbers represent repeated exposure.

**Table 3** provides a brief overview of the key findings from this report. Risk factors such as low socioeconomic status, parental substance abuse, parental psychiatric illness and incarceration, as well as parents' immigrant status were more strongly related to severe physical violence than to less severe physical violence. Adolescents having a physical disability reported more abuse experiences compared to peers with no disabilities. Gender diversity was also significantly associated with child abuse and neglect, adolescents not identifying as boys or girls are far more exposed to child abuse and neglect, compared with peers who identify as boy or girl.

### STRENGTHS AND LIMITATIONS

To the best of our knowledge, this is the first study to investigate child maltreatment in a nationally representative cohort with independent consent. An obvious strength of this cohort is its size and the very high response rate, contributing significantly to the value of the resulting data. It is possible that participation through independent consent, which was a feature of this study only enabled through recent changes in legislation, contributed to the high response rate and presumably more honest responses compared with previous self-report studies on child maltreatment.

The sizeable sample allows for analysing fairly infrequent phenomena and thus holds the potential to provide new knowledge about subgroups experiencing less frequent forms of maltreatment. Moreover, the representative sample paired with the high response rate allows for generalisation of findings from this study to the larger youth population. Finally, the high response rate and the

representativeness of the cohort also builds an excellent base for a longitudinal follow-up of these youth for monitoring potential revictimisation.

Another innovative feature of the UEVO cohort was the integration of a computerised behavioural test in a national representative study, which gives us the opportunity to attempt to replicate experimental findings in a population. Adding a computerised behavioural test in a survey like this adds to self-report data in a novel manner. This is one of the learning opportunities we can offer in collaboration with other interested research groups.

Finally, we developed a comprehensive postsurvey follow-up programme which proved efficient in linking youth to adequate help services. To the best of our knowledge, this is the first survey to develop and use such a programme, and we believe that this solution holds promise for future surveys.

The UEVO cohort also entails some limitations that need to be addressed. First, the retrospective nature in the first wave of measurement may have led to recall bias but compared with studies on adults it is likely to be lower with regard to the advantage of being relatively recent to exposure when investigating early to mid adolescence. The reliability of self-report data from adolescents compared with younger children is also greater by virtue of their more advanced cognitive development<sup>15</sup> and further by a greater understanding of their childhood.

Second, at present the UEVO study is cross-sectional, implicating that self-reported abuse and mental health ratings are collected concurrently. An inherent limitation of this type of design is the shared variance between the measures of child maltreatment and mental health,



precluding robust assessment of true associations between these variables. Prospective longitudinal assessments of mental health will likely mitigate some of the inherent limitations of cross-sectional design and shared variance with proposed associated health complaints. Third, despite the fact that the first wave of measurement yielded a high response rate, made possible a least partly due to recruitment and data collection in a school setting, the non-private nature of the classroom setting may have resulted in participation bias with respect to: (i) students' perception of confidentiality; (ii) which schools who agreed to take part in the UEVO-study and which did not; (iii) adolescents with experiences of more severe abuse may have declined participation because they did not want to report on their experiences in a setting with classmates present. For future data collection waves, we plan to develop a survey app to allow for survey participation through mobile devices such as cell phone or tablets, which allow for a more private data collection setting.

In order to enhance data accuracy when investigating child maltreatment through a population survey, the present study applies a variety of strategies discussed in previous methodological reviews in this field of research.<sup>14 36</sup> In addition to asking various behaviour-specific questions about specific forms of abuse, it also included items about developmental timing of the exposure. This makes it possible to investigate both characteristics of the type of abuse and also how developmental timing relates to various outcomes. The current protocol can be applied to future studies both nationally and internationally. This will allow more specific and robust analyses, as well as facilitate an understanding of social and cultural differences over time and across countries.

## FUTURE PLANS

A second wave of data collection for the UEVO cohort will commence during the second quarter of 2021. A third wave of data collection is planned in 2023, pending funding. By collecting an 11 digit personal identification number from all participants, the study will allow for recontact and a future follow-up study as well as allowing for linkages (given consent from participants after they turn 16 years old) to several high-quality national registries in order to examine predictive factors from birth through adolescence. This will also enable the study of important outcomes in terms of subsequent health, educational outcomes and work situations, and could potentially make important contributions to the dearth of evidence on this topic. Registries of particular interest for linkages are (1) the Norwegian patient registry (comprehensive registry of inpatient and outpatient hospital care in Norway); (2) the National education database (includes information about completed education at all levels); (3) FD-Trygd (the Norwegian social insurance database, including information about types of benefits received,

degree of compensation as well as start date of benefit reciprocity); as well as (4) the Medical birth registry in Norway (containing information about all childbirths in Norway, and widely used to identify causes and consequences of health problems related to pregnancy and birth). Acknowledging the fact that maltreatment may lead to heterogeneous outcomes in affected children, mapping risk and protective factors are of imminent importance so as to better understand what leads to adaptive compared with maladaptive development after child maltreatment. In addition to assessing quality of life, we will in future waves also include a self-report measure on emotion regulation strategies, as emotion regulation is considered a trans-diagnostic risk and protective factor. Based on the comprehensive planning and insights gained through this process, we are also planning an initiative for establishing a Nordic work group to develop a framework for assessing the occurrence of child maltreatment and victimisation across the Nordic countries. A joint Nordic youth survey would enable the evaluation of whether risk factors for maltreatment differ among the Nordic countries and make a foundation for better and more targeted prevention measures for children in these countries.

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**Contributors** GSH is the principal investigator of the study and has been responsible for the acquisition of funding, planning of the study, recruitment of participants and planning of the data collection procedures. She drafted the manuscript and is responsible for the finalised version. SSS has contributed in preparing the datafile, data analyses and codrafted the manuscript. MB-W has reviewed and commented on the draft. She has been responsible for coordination the cohort recruitment and has led the youth expert panel. MCM has taken part in the planning of the study, has read and reviewed the manuscript. E-MA codrafted and reviewed the manuscript. She has taken part in the planning of the study, acquisition of data and has been responsible for the development of the web-based survey. All authors have accepted the final version of the cohort profile description.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were involved in the design, or conduct, or reporting or dissemination plans of this research. Refer to the Methods section for further details.

**Patient consent for publication** Not required.

**Ethics approval** The study protocol has been approved by the Regional Committee for Ethics in Medical and Health research in the Southeastern region of Norway (Case # 2018/522). All participants provided informed written consent.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available upon reasonable request. The UEVO data set is administrated by the Norwegian Centre for Violence and Traumatic Stress Studies. Deidentifiable participant data may be made available at request by contacting g.s.hafstad@nkvt.no. Approval from a Norwegian regional committee for medical and health research ethics (<https://helseforskning.etikk.no>) is a pre-requirement. Guidelines for access to UEVO data are found at the cohort website [uevo.nkvt.no](http://uevo.nkvt.no).



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**Author note** Collaboration: we welcome collaboration with other research groups and interested researchers should contact the corresponding author for collaboration or discussions of data sharing.

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