

BMJ Open How adolescents experience and cope with pain in daily life: a qualitative study on ways to cope and the use of over-the-counter analgesics

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ABSTRACT

Objective: The aim of this study was to describe how different adolescents experience and manage pain in their daily life, with a focus on their use of over-the-counter analgesics. More specifically, the aim was to explore different patterns among the adolescents in pain descriptions, in the management of pain, in relationships with others, and in their daily life.

Design: Qualitative semistructured interviews on experiences with pain, pain management and involvement of family and friends during pain. Pain and stress management strategies and attachment theory will be in focus for interpretations.

Participants and setting: 25 participants aged 15–16-years from six different junior high schools, both genders, with and without immigrant background were interviewed at their local schools in Norway.

Results: We identified 4 groups of adolescents with similarities in attitudes and management strategies to pain: ‘pain is manageable’, ‘pain is communicable’, ‘pain is inevitable’ and ‘pain is all over’. The participants within each group differed in how they engaged their parents in pain; how they perceived, communicated and managed pain; and how they involved emotions and used over-the-counter analgesics.

Conclusions: The adolescents’ different involvement with the family during pain related to their pain perception and management. Knowledge of the different ways of approaching pain is important when supporting adolescents and may be a subject for further research on the use of over-the-counter analgesics in the family.

INTRODUCTION

Pain in daily life is a common experience for adolescents, and headache, abdominal and musculoskeletal types of pain are the most common. Such pain frequently affects their daily life and might result in absence from school, sleep problems, poor school performance and problems with social activities.^{1–2} Over-the-counter (OTC) analgesics are

Strengths and limitations of this study

- This study integrates experience of pain with descriptions of family, friends and leisure activities.
- The knowledge of interconnection between pain, management and daily life may make it easier to identify adolescents at risk for inappropriate use of over-the-counter analgesics and better tailor interventions.
- A limitation might be a possibility for oversimplification. Our descriptions are given with a perspective on attachment and management theories. Other theories may give different descriptions.

helpful tools in managing pain, and self-medication with these medicines—such as paracetamol or ibuprofen—is common during the early teens.³ During the last decade, there has been a marked increase in the use of OTC analgesics among adolescents.^{4–6} It is known that adolescents differ in their attitudes to using OTC analgesics during pain episodes: some are liberal and some are more restrictive.⁷ Pain is not always treated with medication. However, there is limited knowledge on the connection between the ways of managing pain and the use of OTC analgesics. Differences in pain management and attitudes towards medication might relate to each adolescent’s personality and coping style.⁸ How children and adolescents cope with pain can influence their emotional and physical functioning, as well as any pain-related disability.^{9–10} ‘Coping’ is defined as the combination of cognitive and behavioural efforts to manage demands appraised as taxing or exceeding the resources of the person.¹¹ In simple words, coping is what people do—consciously or otherwise—to manage the challenges of pain in everyday life. Following the

theory of stress management, it is relevant to assume that different coping strategies, such as problem-oriented and emotionally oriented approaches, are used to manage stressful experiences such as pain.¹¹ It has been shown that how children and adolescents experience and conquer pain will affect the severity of pain-related disability.¹⁰ However, there is still a lack of studies focusing on the experiences of pain and pain coping in adolescence.

Most adolescents have access to OTC analgesics at home and can easily get hold of them without asking their parents.^{7, 12} Parents are considered to play an important part in modelling the perception and expression of pain, and coping strategies for their children.^{13–15} Thus, it is reasonable to assume that adolescents' use of OTC analgesics is influenced by their parents' use and attitudes.¹⁶ Parents do not always know to what extent their children suffer from pain,¹ and neither might the parents be aware of their child's self-medication with OTC analgesics. How pain and pain coping are communicated between parents and adolescents might be a crucial factor to consider in research. Simons *et al*¹⁵ found that parents' protective responses to adolescents' problems about pain seemed to promote greater disability and more problems. Attachment theory, which describes the importance of the relationships to significant others in modelling the perception of pain, can be used as a framework to understand these processes.¹³

The aim of this study was to describe how different adolescents experience and manage pain in their daily life, with a focus on their use of OTC analgesics. More specifically, the aim was to explore different patterns among the adolescents in pain descriptions, in the management of pain, in relationships with others, and in their daily life.

METHODS

Recruitment of informants

We approached all adolescents in their final grade at six junior high schools by visiting the school classes and invite for participation in our interview study—of 626 students approached 117 volunteered. It was a requirement that the adolescents volunteered with consent at the level of parents. Adolescents interested in participating received an invitation letter to be signed by the student and the parents at home. These signed consents were collected by the teachers. Those wishing to participate in the interview study submitted a cell phone number enabling an appointment to be made for an interview on the consent letter attached to the invitation letter. They also responded to questions about sex and whether both, one or neither of their parents spoke Norwegian as their mother tongue. The last question was intended to identify participants with different cultural backgrounds. No selections were done based on consumption of OTC analgesics or pain experience. A strategic sample of adolescents was contacted to attain

an equal number of informants from each school and sex, and to include those whose parents were either bilingual or only spoke Norwegian. In total, 26 adolescents were contacted by phone according to the sampling strategy. One refused participation giving 25 informants. A description of the recruited participants is given in [table 1](#).

The interview guide

The interview technique was open-ended semistructured interviews based on a guide ([box 1](#)) developed in consultation with teachers, school health nurses, leaders of youth clubs and child welfare authorities, and tested in a pilot study. The main topics were their descriptions on interactions with family and friends, leisure activities, pain descriptions (location and intensities), pain management, and their own use and attitudes to OTC analgesics and information.

The interviews

One of the authors (PL) performed all the interviews, which were taped. The interviews lasted 20–45 min and were conducted at each school during ordinary school hours. The conversation was private and in a separate room away from the classroom. One secretary transcribed all interviews. The verbatim account was reviewed by the interviewer, and the soundtracks were available to all researchers.

Ethical issues

The school health nurse and school counsellor at each school were informed about the study. When the interviewer found it appropriate because of topics raised during the interview, they recommended that the

Table 1 Information on the 25 adolescents taking part in interviews, describing their cultural background reflected by the language used at home, and their family characteristics

Sex	
Male	11
Female	14
Language used as mother tongue	
Norwegian used by both parents	17
Norwegian used by one parent	4
Foreign language used by both parents	4
Living with	
Mother and father together	19
Mother and father separately	2
Mother only	4
Total number in the household (siblings, parents, grandparents)	
Two	1
Three	6
Four	8
Five or more	8
Changing	2

Box 1 Interview guide: pain, adolescence and self-medication*About you*

1. Who do you live together with?
2. Please tell me about an ordinary weekday, from the time you get out of bed until bedtime. Is there anything in your everyday routine you would like to change?
3. Please tell me about a day off.

Attitude to pain and behaviour when in pain

4. Please tell me about the last time you experienced pain.
5. What do you think was the cause of that pain?
6. What did you do to get rid of the pain?
7. Please tell me about a period where you experienced much pain or frequent use of painkillers.
8. What happens when you take painkillers?
9. What kind of thoughts do you have when you are using over-the-counter(OTC) analgesics?
10. What kind of feelings, if any, do you have when you are using OTC analgesics?
11. In which cases would you seek a doctor's advice for your ailments?

About other afflictions and delimitation to pain

12. Please tell me about the last time you were feeling very tired and worn-down.
13. Please tell me about the last time you experienced sleeplessness or muscle tension?
14. What do you think may be the causes (for 12 and 13)? Was it related to a special situation?
15. How did you manage to change the situation?
16. What are your considerations for using OTC analgesics in these circumstances?

Culture and knowledge about using medication

17. How did you first learn about the use of painkillers?
18. How do your family (father and mother) look on the use of painkillers?
19. What do you know about the use of painkillers among your friends?
20. Please describe the information or advertisements about OTC that you have seen or received on.
21. In which way do you wish to be informed about OTC analgesics in the future?

At the end of the interview

- ▶ Is there anything you would like to add, for instance something I have not asked about?
- ▶ How did you experience this interview?

participant should consult the school health nurse later. Two participants were given such advice.

Analytical procedure

The analytical process is described in five steps (figure 1). The thematic analysis followed Kvale and Brinchman¹⁷ and our preconception was the theory of stress and coping, and attachment theory.^{11 13} The first step was to be acquainted with the data without a theoretical perspective. By making ourselves acquainted with these theories, the observations derived from the transcripts were then formulated in language compatible with the theories. The last analytical step was grouping

the adolescent according to the descriptions on each topic into an overall experience and approach to pain, and design different groups encompassing all participating adolescents, in accordance with the Norwegian sociologist Karen Widerberg.¹⁸

Description of the five analytical steps

Step 1: Each member of the research team listened to the soundtracks individually, read the transcriptions and condensed all the interviews, staying close to the adolescents' own descriptions (self-understanding), within the frame of four broad categories or topics: family and friends; leisure activity; pain descriptions; pain management.

Step 2: The researchers asked questions such as: 'What does this tell us about the adolescent's daily life?' and 'What does this tell us about how he/she experiences and manages pain?' These questions were discussed in the light of common sense, using our experience in different professions (medical doctors, pharmacist and nurse). The results of this step of analysis were described for each adolescent within the four broad topics of step 1.

Step 3: Putting the results of step 2 into a spreadsheet, we were able to perform the analysis across the individuals, looking for similarities and differences in the descriptions. During this process, patterns emerged across the participants, indicating that similarities within one topic (eg, family relations) were followed by similarities in the other topics (eg, pain coping behaviour).

Step 4: Participants with similar descriptions on all topics were then grouped. The groups were not preformed but emerged as an outcome in the work of describing the individual adolescent as a person according to description on the topics given in step 1. This work took place during several meetings with all four authors. Four groups emerged, sharing characteristics on how they lived and managed their everyday lives and on how they experienced and managed pain. During each of steps 1–4, the transcripts and soundtracks were frequently consulted to ensure comparability.

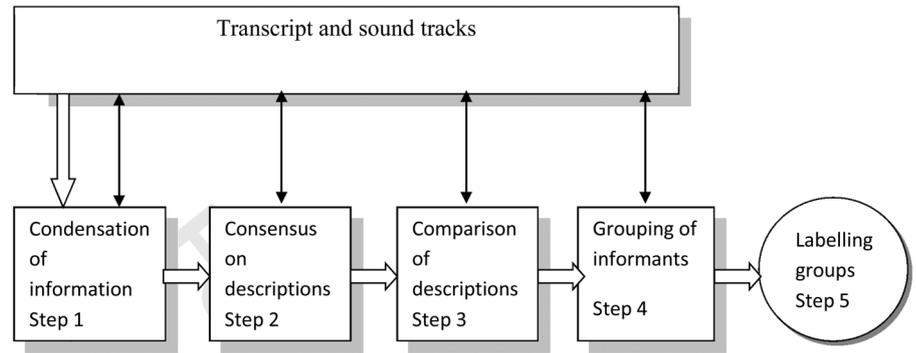
Step 5: This step involved discussing the results in the light of earlier research, and constructing a statement describing the characteristics of each group of adolescence.

RESULTS

We were able to describe four groups of adolescents, illuminating different experiences and approaches on how to handle pain. Within each group, the adolescents expressed similarities on the topics 'family and friends, leisure activity, pain descriptions, and pain management'. These groups were described with statements: 'pain is manageable', 'pain is communicable', 'pain is inevitable' and 'pain is all over' (table 2).

The four groups varied in their ways of coping with pain, but seemingly there was also a pattern that

Figure 1 The process of analysing adolescents' descriptions of pain in daily life. The main arrows symbolise the stepwise process of analysis, and the double arrows indicate that throughout the analysis the transcript and sound tracks were consulted to ensure congruence between derivatives and data.



connected relationships with family and friends and how they lived their lives with their pain-coping behaviour and use of OTC analgesics. There were some differences between the four groups in their use of OTC analgesics; however, the groups also shared some common attitudes to the medicines. Particular views on the low risks of using OTC analgesics could not be ascribed to any specific group. The only concern presented by few participants was that frequent use of analgesics might cause the painkilling effects to wear off: "I am sure I will have more pain in the future. I am worried that the painkillers will have no effect then." (School A, girl 2). Participants also shared the view that information should not be forced on them, and it should be adapted to their age: "The information might better fit adolescents if it could be incorporated into a vivid story from real life." (School F, girl 4). They also appreciated the information leaflet in the package. They felt that some form of warning on the package would be useful: "On a package of cigarettes is a warning that they might cause cancer. If needed, similar warnings could be given for OTC analgesics, however this might be printed with small letters." (School F, boy 2).

Below we describe for each group the emerging themes on the topics pain descriptions and management, and family and friends.

Pain is manageable

Interviewees in this group (four boys and five girls) described pain as a nuisance that hindered them in sports and other activities, although it was mostly manageable. Pain was often attributed to sports activities and frequently appeared in the extremities: "It's the knee (that hurts). I don't believe it's serious; it is only that I should not do things that give pain. Might be the meniscus, I don't think that anything has broken." (School A, boy 1).

Because these participants invested much effort in competitive sports, pain was mostly not to be bothered about and seemed not to be of central importance. They experienced good control of their lives and dealt with challenges in a systematic stepwise manner as they appeared: "If my back hurts, then I have learned some exercises I can do, and, for instance, if I am to lie flat on the floor, I put a pillow under here..." (School B, girl 2).

They experienced few conflicts in life and had good relationships with family and friends. They had a busy life with leisure activities and often did not eat dinner with the family. Their parents trusted them to manage large parts of their own lives, including pain, and the adolescents did not involve their parents in pain management. If necessary, OTC analgesics were accessible at home and were used as part of a logical approach, but not as the first tool when in pain: "If I really was in pain, and I felt I had to take a painkiller, then I would have decided to do so myself, because in a way it is my choice. Mum can't feel how much my head hurts." (School A, girl 2). If they needed information, they would ask their parents. Overall, pain or pain management was not a topic much discussed with parents or friends in this group of adolescents: "I cannot remember that we ever have talked about painkillers at school." (School B, boy 1). "We (my friends and I) usually don't talk about painkillers; it is not a very interesting topic." (School E, boy 2).

Pain is communicable

Pain was typically described as headache and muscle pain among the five boys and three girls in this group. The symptoms often arose from tension, stress, or the pressure of their own expectations. "It is much homework in the final grade, the time for exams are approaching. I turn very tense and tired. I am working till late hours" (School C, girl 3). The participants were bothered by pain and in several ways felt emotionally affected by it. They used energy to adjust to the environment. To do so, they had to be open to inputs from other people, receiving both help and hindrances, through communication. Pain was mostly managed in a structured way: one remedy at a time. If OTC analgesics were the remedies most easily accessed, they were the first to be tried: "I tell myself when in pain: Yes, now I can take a painkiller and it will become better." (School E, boy 3).

This group described pain to be a topic for discussion with friends but not so often with parents. They had frequent social interactions with friends, but also joined in on activities with the family. "Some of my girlfriends use painkillers all the time since they cannot await recovery." (School C, girl 3). However, the parents in most cases in

Table 2 Descriptions of four ways of experiencing and approaching pain among adolescents

Themes	Experiences and approaches to pain			
	Pain is manageable	Pain is communicable	Pain is inevitable	Pain is all over
Family and friends <i>Duties, involvement of family and friends</i>	<ul style="list-style-type: none"> ▶ Have few or no duties at home and dine infrequently together with the family. ▶ Do not involve parents during pain. ▶ Have full access to OTC analgesics. ▶ Pain is an uninteresting topic not to be discussed with friends. 	<ul style="list-style-type: none"> ▶ Have duties at home and often dine together with the family. ▶ Usually do not involve parents during pain. ▶ Have limitations in access to OTC analgesics. ▶ Pain is a topic to be discussed with friend. 	<ul style="list-style-type: none"> ▶ Have few duties at home but often dine together with the family. ▶ Involve parents during pain. ▶ Have full access to OTC analgesics. ▶ Pain is a personal experience, rarely discussed with friends. 	<ul style="list-style-type: none"> ▶ Have many duties at home, dine together with the family and are heavily involved in family difficulties. ▶ Mothers are involved during pain and the use of OTC analgesics. ▶ Pain experience stays within the family and is not discussed with friends.
Leisure activity <i>With family or friends</i>	Interact with friends through competitive sport activities.	Have frequent social interactions with friends.	Have equal interactions with family and friends.	Have few out-of-home activities.
Pain description <i>Location, causes and emotionality</i>	<ul style="list-style-type: none"> ▶ Pain frequently appears in extremities. ▶ Pain is attributed to specific situations, for example, a sports injury. ▶ Are not emotionally affected by pain. 	<ul style="list-style-type: none"> ▶ Pain located in head and muscles. ▶ Pain arises from tension and stress or the pressure of own expectations. ▶ Are emotionally affected by pain. 	<ul style="list-style-type: none"> ▶ Mainly headache without specific causes. ▶ Pain is a part of destiny. ▶ Are emotionally affected by pain and worrying 	<ul style="list-style-type: none"> ▶ Pain is global. ▶ Pain affects the head, stomach or the muscles without evident external causes. ▶ Are emotionally affected, often feel tired, and have depressed moods.
Pain management <i>Strategy</i>	<ul style="list-style-type: none"> ▶ Have a stepwise approach to pain management. ▶ Have a variety of strategies used in a systematic way. ▶ OTC analgesics are a late choice. 	<ul style="list-style-type: none"> ▶ Have a stepwise approach to pain management. ▶ Choice of strategy depends on what is at hand. 	<ul style="list-style-type: none"> ▶ Trial-and-error approach. ▶ OTC analgesics are one of several approaches. 	<ul style="list-style-type: none"> ▶ No strategy for pain management. ▶ OTC analgesics are used occasionally. ▶ Resignation.
Number and gender <i>OTC, over-the-counter.</i>	Four boys and five girls.	Five boys and three girls.	Two boys and three girls.	Three girls.

this group restricted the access to medication: “My parents have come to an agreement about where to put the boundaries (when it comes to the use of painkillers).” (School F, boy 2).

Pain is inevitable

In this group, two boys and three girls, tension headache was the most prominent pain, frequently described with emotional involvement. They participated in life with family and friends as it unfolded and described pain as inevitable. “...this (my headache) happens when there has been a very hectic day at school, and there have been too many things like shouting and screaming...” (School D, girl 2). When in pain, the goal was to deal with the pain using the remedies offered to them, often resulting in a trial-and-error approach. These participants would involve their parents during pain, but it was seldom a topic among peers: “I will seek a doctor if those around me (family) notice that I have frequent headaches.” (School C, boy 1). OTC analgesics were used in combination with other remedies, but were not part of a strategic plan. They described OTC analgesics as easily accessible at home: “...taking analgesics makes me feel more safe and secure, and I get rid of the pain.” (School D, girl 4). If information about analgesics was needed, they expressed a preference for verbal information since they found this more easily accessible. They also suggested consulting the school nurse or their general practitioner.

Pain is all over

The group labelled ‘pain is all over’ consisted of three girls who were heavily affected by pain in everyday life. The pain appeared as headaches, abdominal and muscle pain. They could not describe any distinct causes of pain and no treatment really worked. “I don’t trust that Ibux (ibuprofen) and similar medicines work, I think that you just imagine that it makes you better...it is the imagination that works.” (School B, girl 4). Typically, they were all deeply involved in the fate of the family, who had more than an average number of difficulties. These girls were, in a way, locked up in pain at home with many duties and few out-of-home activities: “...[the pain] may be because you are thinking a lot... about lots of things in life...and it is no good...especially when [I’m] alone.” (School A, girl 3). Their mothers were their ‘partners in pain’ and were involved in pain management. “My mom thinks in a way it’s straightforward to take an Ibux (ibuprofen) and the like.” (School B, girl 4). They often felt tired and had limited physical ability: “I often take a nap when I come home from school...and I sleep through the night...but it happens that I am more tired in the morning than when I went to bed...I am not happy. There are lots of difficulties for us. ...” (School B, girl 4). Their goal was to sustain everyday life and hope for the future. Now, they had resigned to the pain and felt depressed. These girls had no systematic strategy for pain management,

but they would have liked to have some information about what worked best.

DISCUSSION

Four major attitudes to pain were identified among our adolescents: pain is manageable, pain is communicable, pain is inevitable and pain is all over.

Pain management strategies

The strategies applied in pain managements were a purely problem-oriented approach, a mixed problem-oriented and emotion-oriented approach, a purely emotional approach and, finally, no approach or a passive approach (ie, helplessness).¹¹ The pain is manageable group seemed to succeed in a problem-oriented approach to pain. The pain is communicable group had a stepwise approach, and adjusted to using the remedies at hand. They were more open to discuss emotions, and thus had an emotional focus in resolving their pain. The pain is inevitable and the pain is all over groups did not seem to apply a stepwise strategy. Emotion-focused and less problem-oriented solutions tend to be used by people with insecure attachments.^{19 20} Folkman¹⁹ emphasised the importance of emotion-focused solutions to give meaning to what was happening, and as a tool to evaluate when to give in. The pain is inevitable group might have asked for help when it was time to give in, but the pain is all over group had given up. According to Walker *et al*,⁸ the way of coping used by the pain is all over group refers to a type of emotion-focused coping that has been termed passive coping. They described a depressed mood, and their helplessness might have resembled learned helplessness, which is known to go hand in hand with depression.²¹

Attachment

Different attachment relationships shape pain-signalling behaviour.²² It is anticipated that children’s attachment to their caregivers will shape how they react to pain. It is through an environmental mirror that children learn to regulate their feelings, emotions and physiological responses. According to Crittenden and Dallos²³ one type of reaction is the inhibition of pain signals. In this case, the caregivers do not manage to respond adequately to the child’s negative emotion. The caregivers turn away, and somehow reject the child.

Among the participants in the pain is manageable group, some suppression and detachment from pain stimuli might have been present; perhaps they were silencing their bodies. Their description of pain was sparse and without emotional involvement. Participants in the pain is communicable group, who were more involved in the family, stated that emotions bothered them and affected them physically. Members of the pain is inevitable group described the presence of pain as a part of destiny that could affect them as well as other family members.

The pain experiences among the first three groups might perhaps be ascribed to secure attachment forms according to Crittenden and Dallos,²³ but the members of the pain is all over group were different. They were heavily involved in difficult family situations, and it is reasonable to assume that their more general perception of pain could be a way to communicate a wish to be comforted. An expression of pain might also be more acceptable than expressions of anxiety and anger.²³ Their general perception of pain could have mirrored pain catastrophising, increased pain perception and anxiety.²⁴

Autonomy from family care

Participants in the pain is manageable group seemed to be more emancipated and detached from their families, unlike those in the pain is all over group who were heavily involved in family problems. Perhaps some liberation from the family is needed for a successful approach to pain. The use of OTC analgesics seems to be learned from the parents, especially from the mother.¹⁶ Parental protective responses to pain might inadvertently promote disability and symptom.¹⁵ To live in a strenuous family climate raises the levels of cytokines and creates resistance to steroids in a dose-response fashion, reflecting allostatic overload and predisposes to pain.^{25 26} In Norway, the health of adolescents is evaluated regularly.²⁷ The main impression from these surveys is that today's adolescents fare better than earlier, they are less in opposition to schools and teachers, are happier with their parents, and stay more frequently at home connected with people on the internet. However, adolescents, especially girls, report more frequently that they are anxious and depressed; their mental health has deteriorated.²⁷ Similar trends are reported from Denmark²⁸ and Sweden²⁹ which like Norway have had stable economic development. Thus, there might be an association between pain experience and management, and the degree of autonomy in family life. The participants in the groups pain is manageable and pain is communicable did not usually involve their parents during pain. They used problem-oriented management strategies in contrast to those from the pain is inevitable and pain is all over groups who involved their parents during pain.

OTC analgesics and information

The only concern raised about OTC analgesics was that they might lose their efficacy, and that an important tool to manage everyday pain would then be gone. To our knowledge, OTC analgesics do not produce tachyphylaxis.³⁰ The development of medication-induced headaches, which are well known to be initiated by the frequent use of OTC analgesics, might constitute an explanation of a lost effect.³¹ Perhaps the use of OTC analgesics is not as unproblematic as was stated by our participants.

There is evidence that different coping styles and attachment forms should be considered in tailoring information.^{8 32} Our findings support these studies.

Implications

This study might signify that regulations hampering access to OTC analgesics could have a counterproductive effect because it might disempower adolescents and tie them closer to family care. This may not necessarily improve their management strategy. Brief advice session from professionals in primary care—such as school nurses or general practitioners—might be sufficient to guide the majority of adolescents.³³ However, the excessive and regular use of OTC analgesics might reflect a difficult life and such adolescents could be in need of more extensive help.³⁴

Study strengths and weaknesses

We aimed for patterns of behaviour, and not isolated attitudes and strategies. We believe this gave a wider perspective because descriptions on single topics are interconnected. However, such a procedure might force an oversimplification. Another challenge is to ensure transparency because it is not easy to verify group descriptions based on extracts of statements concerning the specific topics.

Management and attachment theories affected our precognition. Other angles might have given different descriptions. The interview guide was designed for practical purposes. The strength was that it enabled easy communication. A theory-focused interview guide might have enabled deeper penetration into theoretical perspectives, but this was not the intent at the outset. However, our data are compatible with the theoretical perspective discussed. With regard to reflexivity,³⁵ the interviewer is a medical doctor, and the interviews took place at school during ordinary school hours. Strength of this study was that a medical doctor promises confidentiality. Its weakness might be the perception of some authority that might hamper openness, for instance on the excessive use of OTC analgesics.

The sample size was predetermined based on the selection criteria to ensure recruitment of informants from all schools in the chosen district, both genders, and with both native and foreign backgrounds. We cannot totally exclude the possibility of richer descriptions if more adolescents were included. However, because we were able to sort more than one adolescent into each group, it gives confidence that we have attained saturation for our descriptions. The impressions gained in our interviews should be transferable to the adolescents in Norway, independent of differences in consume of OTC analgesics.

CONCLUSIONS

Pain experiences and management strategies are affected by daily life with family and friends. We describe

four groups of adolescents whose experiences could be termed pain is manageable, pain is communicable, pain is inevitable and pain is all over. These groups differed in pain perception, management strategies and the use of OTC analgesics. When advising adolescents or making interventions to improve on the use of OTC analgesics, one should acknowledge the importance of the wider community, especially the family.

Contributors PL, EOR, TH and SH planned and prepared the study. PL and TH visited all junior high schools, and informed and invited the participants. PL conducted the interviews. PL, EOR, TH and SH all participated equally in the analysis of transcripts. PL and SH prepared the initial draft of the paper which was worked out in collaboration with all authors. All authors share the responsibility for what is published. None of us has any conflicts of interest in the publication.

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Competing interests None declared.

Patient consent Obtained.

Ethics approval The study was approved by The Regional Committee on Medical Research Ethics in Norway (registration ID number S-06286a) and registered at the Norwegian Data Inspectorate.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement No additional data are available.

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REFERENCES

- Haraldstad K, Sørnum R, Eide H, *et al.* Pain in children and adolescents: prevalence, impact on daily life, and parents' perception, a school survey. *Scand J Caring Sci* 2011;25:27–36.
- Roth-Isigkeit A, Thyen U, Stöven H, *et al.* Pain among children and adolescents: restrictions in daily living and triggering factors. *Pediatrics* 2005;115:e152–62.
- Sloand ED, Vessey JA. Self-medication with common household medicines by young adolescents. *Issues Compr Pediatr Nurs* 2001;24:57–67.
- Hansen EH, Holstein BE, Due P, *et al.* International survey of self-reported medicine use among adolescents. *Ann Pharmacother* 2003;37:361–6.
- Holstein BE, Andersen A, Kölner R, *et al.* Young adolescents' use of medicine for headache: source of supply, availability and accessibility at home. *Pharmacoepidemiol Drug Saf* 2008;17:406–10.
- Lagerløv P, Holager T, Helseth S, *et al.* Selvmedisinerer med reseptfrie smertestillende legemidler hos 15–16-åringer. (Self-medication with OTC analgesics among 15–16-year-old adolescents in Norway). *Tidsskr Nor Laegeforen* 2009;129:1447–50.
- Holager T, Lagerløv P, Helseth S, *et al.* [Attitudes to over-the-counter analgesics among 15-16 year-old teenagers]. *Tidsskr Nor Laegeforen* 2009;129:1451–4.
- Walker LS, Smith CA, Garber J, *et al.* Testing a model of pain appraisal and coping in children with chronic abdominal pain. *Health Psychol* 2005;24:364–74.
- Claar RL, Simons LE. Adolescents' pain coping profiles: expectations for treatment, functional outcomes and adherence to psychological treatment recommendations. *Pain Res Manag* 2011;16:192–6.
- Holm S, Ljungman G, Åsenlöf P, *et al.* How children and adolescents in primary care cope with pain and the biopsychosocial factors that correlate with pain-related disability. *Acta Paediatr* 2013;102:1021–6.
- Folkman S, Greer S. Promoting psychological well-being in the face of serious illness: when theory, research and practice inform each other. *Psychooncology* 2000;9:11–19.
- Holstein B, Andersen A, Due P, *et al.* Børn og unges brug af lægemidler mod smerter og psykiske problemer. Udvikling fra 1988 til 2006. (Children's and adolescents' use of medicine for aches and psychological problems: secular trends from 1988 to 2006). *Ugeskr Laeg* 2009;171:24–8.
- Brumariu LE, Kerns KA. Parent-child attachment and internalizing symptoms in childhood and adolescence: a review of empirical findings and future directions. *Dev Psychopathol* 2010;22:177–203.
- Keefe FJ, France CR. Pain: biopsychosocial mechanisms and management. *Curr Direct Psychol Sci* 1999;8:137–41.
- Simons LE, Claar RL, Logan DL. Chronic pain in adolescence: parental responses, adolescent coping, and their impact on adolescent's pain behaviors. *J Pediatr Psychol* 2008;33:894–904.
- Jensen JF, Gottschau M, Siersma VD, *et al.* Association of maternal self-medication and over-the-counter analgesics for children. *Pediatrics* 2014;133:e291–8.
- Kvale S, Brinkman S. *Interviews. Learning the craft of qualitative research interviewing.* London: Sage, 2009.
- Widerberg K. *Historien om et kvalitativt forskningsprosjekt. (The history of a qualitative research project).* Oslo: Universitetsforlaget, 2001.
- Folkman S. The case for positive emotions in the stress process. *Anxiety Stress Coping* 2008;21:3–14.
- Meredith P, Ownsworth T, Strong J. A review of the evidence linking adult attachment theory and chronic pain: presenting a conceptual model. *Clin Psychol Rev* 2008;28:407–29.
- Akiskal HS, McKinney WT Jr. Depressive disorders: toward a unified hypothesis. *Science* 1973;182:20–9.
- Kozłowska K. Attachment relationships shape pain-signaling behavior. *J Pain* 2009;10:1020–8.
- Crittenden PM, Dallos R. All in the family: integrating attachment and family systems theories. *Clin Child Psychol Psychiatry* 2009;14:389–409.
- Tremblay I, Sullivan MJL. Attachment and pain outcomes in adolescents: the mediating role of pain catastrophizing and anxiety. *J Pain* 2010;11:160–71.
- Miller GE, Chen E. Harsh family climate in early life presages the emergence of pro-inflammatory phenotype in adolescence. *Psychol Sci* 2010;21:848–56.
- Karatsoreos IN, McEwen BS. Psychobiological allostasis: resistance, resilience and vulnerability. *Trend Cogn Sci* 2011;5:576–84.
- Bakken A, ed. NOVA. Ungdata. Nasjonale resultater 2013. NOVA Rapport 10/14 2014. Oslo: NOVA. <http://www.ungdata.no> (October 2015).
- Ottosen M, Andersen D, Hansen AT, *et al.* Børn og unge i Danmark, velfærd og trivsel 2014, Det nationale forskningscenter for velfærd. <http://www.sfi.dk> (October 2015).
- Ung i dag 2013, Sammanfatning, Myndigheten för ungdoms- och civilsamhällesfrågor. <http://www.mucf.se/publikationer/ung-i-dag-2013-sammanfatning> (October 2015).
- Aronson JK, ed. *Meyler's side effects of drugs. The international encyclopedia of adverse drug reactions and interactions.* 15th edn. Amsterdam: Elsevier, 2006.
- Zwart JA, Dyb G, Hagen K, *et al.* Analgesic use: a predictor of chronic pain and medication overuse headache. the head-HUNT study. *Neurology* 2003;61:160–4.
- Claar RL, Baber KF, Simons LE, *et al.* Pain coping profiles in adolescents with chronic pain. *Pain* 2008;140:368–75.
- Borup IK, Andersen A, Holstein BE. Re-visit to the school nurse and adolescents' medicine use. *Health Educ J* 2011;70:274–84.
- Skarstein S, Rosvold EO, Helseth S, *et al.* High-frequency use of over-the-counter analgesics among adolescents: reflection of an emerging difficult life, a cross-sectional study. *Scand J Caring Sci* 2014;28:49–56.
- Malterud K. Qualitative research: standards, challenges and guidelines. *Lancet* 2001;358:483–8.