Perceptions of the social and physical environment of adolescents’ dietary behaviour in neighbourhoods of different socioeconomic position

Hanne Hennig Havdal a,*, Elisabeth Fosse b, Mekdes Kebede Gebremariam a, Jeroen Lakerveld c, Onyebuchi A. Arah d, Karien Stronks e, Nanna Lien a

a Department of Nutrition, Institute of Basic Medical Sciences, University of Oslo, PO Box 1046 Blindern, 0317, Oslo, Norway
b Department of Health Promotion and Development, University of Bergen, PO Box 7807, 5020, Bergen, Norway
c Department of Epidemiology and Biostatistics, Amsterdam Public Health Research Institute, Amsterdam UMC, Location VUMc, PO Box 7057, 1007MB, Amsterdam, the Netherlands
d Department of Epidemiology, UCLA Fielding School of Public Health, 650 Charles E. Young Drive South, PO Box 951772, Los Angeles, CA, 90095, USA
e Department of Public and Occupational Health, Amsterdam UMC, University of Amsterdam, PO Box 22660, 1100DD, Amsterdam, the Netherlands

A higher proportion of adolescents from families in a lower socioeconomic position (SEP) tends to have more unhealthy dietary behaviours, and overweight and obesity, than their counterparts in higher SEPs. More research is needed to understand the causes of these differences, in particular the influence of the neighbourhood environment, which has been explored less. The presented qualitative study explores how adolescents and their parents from higher and lower SEP neighbourhoods perceive the social and physical environment influencing adolescents’ dietary behaviours. We conducted 6 semi-structured focus groups with 35 13–14 year olds and 8 interviews with some of their parents. The interviewees were recruited from one higher and two lower SEP neighbourhoods in Oslo, Norway. Theme-based inductive coding was used for analysis, and the results discussed in light of an ecological framework.

The results indicate that all the adolescents experience several barriers to healthy dietary behaviours. For adolescents in the lower SEP neighbourhood, one or both parents desired their cultural cuisine served at home, whereas the adolescents wanted and often consumed western dishes. Fast-food restaurants or hanging out at the mall was perceived as the preferred social arena, often due to lack of involvement in either leisure-time physical activities or youth clubs as a safe, engaging option. The adolescents in the higher SEP neighbourhood perceived social norms which accentuated healthy dietary choices. When more possibilities for activities were present and the adolescents expressed being highly engaged in leisure-time physical activity, this also seemed to facilitate healthier dietary behaviours. These findings indicate how several factors simultaneously can influence dietary behaviour. Use of a multi-layered approach when exploring the environmental influences could increase knowledge about tackling social inequalities in dietary behaviours among adolescents.

1. Introduction

The number of adolescents having overweight and obesity and the associated health problems is a rising global public health concern (Norwegian Institute of Public Health, 2017; Wang & Lim, 2012; World Health Organization, 2018). High-income countries tend to have an environment in which sedentary behaviour and high-energy intake are promoted, as the default behavioural options, thus compromising the fulfilment of recommended dietary and physical activity guidelines (Norwegian Institute of Public Health, 2018; World Health Organization, 2016; World Health Organization, 2018). In Norway, around 20% of 9 year olds and 17% of 15 year olds have overweight or obesity (Norwegian Institute of Public Health, 2017), and adolescents consume more saturated fat and sugar, and less fruit, vegetables and fish, than recommended (Hansen, Myhre, Johansen, Paulsen, & Andersen, 2016).

The proportion of adolescents with obesity is higher in families with

Abbreviations: SEP, Socioeconomic Position.
* Corresponding author. Department of Nutrition, P.O Box 1046 Blindern, 0317, Oslo, Norway.
E-mail addresses: h.h.havdal@medisin.uio.no (H.H. Havdal), Elisabeth.Fosse@uib.no (E. Fosse), Mekdes.gebremariam@medisin.uio.no (M.K. Gebremariam), j.lakerveld@amsterdamumc.nl (J. Lakerveld), arah@ucla.edu (O.A. Arah), k.stronks@amsterdamumc.nl (K. Stronks), Nanna.lien@medisin.uio.no (N. Lien).
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a lower socioeconomic position (SEP) (World Health Organization, 2017). They also tend to have more unhealthy dietary behaviour than their higher SEP counterparts, with a lower intake of fruit and vegetables and a higher consumption of snacks and sugar-sweetened beverages (Dahl, Bergli, & Wel, 2014; Fisman et al., 2016; Hanson & Chen, 2007; Samdal et al., 2016; Skardal, Western, Ask, & Overby, 2014; Sleddens et al., 2015; Zarnowiecki, Dollman, & Parletta, 2014). The SEP is usually measured by educational level, occupation and income (Dahl et al., 2014; The Directorate of Health and Social Affairs, 2005), and is associated with health outcomes and life expectancy through a social gradient: the higher the position, the better the health (The Directorate of Health and Social Affairs, 2005). Even though the Norwegian population has overall improved its health over the last few decades, the group at the top of the socioeconomic hierarchy has improved their health more rapidly (Dahl et al., 2014). Thus, it is essential to identify modifiable determinants that could clarify the mechanisms contributing to inequalities in adolescents’ dietary behaviours (van Ansem, Schrijvers, Rodenburg, & van de Mheen, 2014).

The web of determinants that could influence adolescents’ dietary behaviour fits with the ecological model often used in health promotion (Richard, Gauvin, & Raine, 2011; Sallis, Owen, & Fisher, 2008). Story et al. (Story, Kaphingst, Robinson-O'Kennedy, & Glanz, 2008) have developed an ecological framework used to systematise and understand factors influencing adolescents’ dietary behaviours (Story, Neumark-Sztainer, & French, 2002). In qualitative research, the framework has also been used to consider community influence and dietary behaviour (Belon, Nieuwendyk, Vallianatos, & Nykiforuk, 2016). The framework describes four interacting layers. The individual factors level, or the intrapersonal level, includes factors such as income, gender, preferences, knowledge, values and lifestyle, and psychological constructs such as motivation and self-efficacy. The next level, the social environment, or the interpersonal level, includes influential factors like family, friends and peers through their role modelling, social support and the social norms. The physical environment layer, or community settings, is the third layer and describes how the home, school, neighbourhood and community, restaurants, supermarkets and outlets influence behaviour through access, availability, barriers and opportunities. The outermost layer of the model is the macro-level environment or societal level. At this level, the food industry, marketing and media, government and political structure, and health-care systems are some of the influencers through policies, actions and legislation (Story et al., 2002, 2008). The literature on social inequalities and dietary behaviour of adolescents has mainly focused on the individual and social levels (Draper, Grobler, Micklefield, & Norris, 2015; Sleddens et al., 2015; Zarnowiecki et al., 2014), and many gaps in knowledge remain in research on the influence of the food environment on children’s and adolescents’ behaviour (Engler-Stringer, Le, Gerrard, & Muhajarine, 2014).

Several studies have focused on only one or a few aspects of the food environment, but this reductionist approach captures only a fraction of true exposure (Larson, Story, & Nelson, 2009). Access to fast-food outlets or grocery stores located near schools has been associated with unhealthy dietary behaviour in some cross-sectional studies (He, Tucker, Gilliland, et al., 2012; He, Tucker, Irwin, et al., 2012; Virtanen et al., 2015), but the home environment and parental factors can also be relevant (Michels et al., 2018). Qualitative articles have investigated how dietary behaviour can be a status marker in influencing adolescents (Bugge, 2015; Fielding-Singh, 2018), and how social norms can categorise food as cool or un-cool in different neighbourhoods (Anselma, Chinapaw, & Altenburg, 2018). Challenges to eat healthily, reported by adolescents in a multicultural neighbourhood, in a qualitative study from Sweden, were high availability of unhealthy food such as fast-food and sweets, and the desire to buy inexpensive food (Jonsson, Larsson, Berg, Korp, & Lindgren, 2017). But, this could be a challenge for adolescents in other areas or settings, as well.

Neighbourhoods differ considerably across and within countries with regard to available resources and facilities, e.g., how close the inhabitants live, the quality of social services, outdoor facilities and volunteer activities (Brattbakk & Andersen, 2017). Oslo, the capital of Norway, is often referred to as the divided city because the west and east areas differ in their SEP neighbourhoods (Berntsen, 2013; Ljunggren, 2017). In western boroughs, life expectancy for men is 7.5 years higher than in eastern boroughs. The percentage of people with lower educational levels is 36% in the western boroughs and 73% in the eastern ones, and mean income differences are over NOK400,000 (~US$40,000) (Berntsen, 2013; Norwegian Institute of Public Health, 2018). In the urban districts of Norway both schools and leisure-time physical activities are localized in the neighbourhoods where the adolescents live, and adolescents, therefore, tend to spend most of their time in their local neighbourhoods (Brattbakk & Andersen, 2017). Exploring how they interact with their neighbourhood and whether this could contribute to understanding the socioeconomic differences are, therefore, important (Brattbakk & Andersen, 2017; Dahl et al., 2014).

Given that the environmental influence on adolescents’ dietary behaviour and the impact of the SEP neighbourhood are unclear, a qualitative approach can provide new knowledge. Hence, this qualitative study aims to explore how adolescents and their parents from higher and lower SEP neighbourhoods in Oslo perceive the social and physical environment influencing adolescents’ dietary behaviours. More precisely, the present study explores what barriers and facilitators that influence adolescents healthy dietary behaviour, and whether these perceptions of barriers and facilitators differ by the neighbourhood SEP. The study uses an inductive approach. For a better interpretation of the findings, the results and discussions are presented in light of an ecological framework. Since much of the literature on social inequalities and dietary behaviour of adolescents has focused on factors at the individual level, this study will primarily focus on the social and physical environment.

2. Methods

Before any data was collected in this project, the Norwegian Centre for Research Data (NSD) approved the project’s data protection procedures, and ensured this was in line with the General Data Protection Regulation (GDPR) (General Data Protection Regulation, 2016). Adolescent participation required signed informed consent from the parents, and the participating parents signed an informed consent form for the personal interviews. All focus groups and interviews with parents started with a presentation of the project and the main topics, the ethical principles followed in the project (i.e. confidentiality, the interviewees’ rights and possibilities to leave the interview without any questions asked), and opening for questions (Health Research Act, 2008; Malterud, 2003b).

2.1. Recruitment of participants

Oslo municipality has assembled and published a large amount of public statistical data from surveys and time series providing information about inhabitants, including for example education level, average income, occupations, youth participation in leisure-time physical activity, schooling and health (Oslo Municipality, 2018). The data on sociodemographic characteristics were explored to select diverse boroughs from which neighbourhoods could be included. Prioritised criteria were educational level, mean income and adolescents’ participation in organisations. Lower educational level included primary and lower secondary school (10 years), upper secondary school (13 years) and vocational training. Higher educational level included university and university college (Bachelor’s, Master’s or higher). Based on this, three areas were chosen (Table 1).

In the 3 selected areas, 32 lower secondary schools were located (Oslo Municipality, 2019). Through the use of Google maps, the schools’ surroundings, purchasing opportunities for food and activity facilities
were examined, in addition to the criteria in Table 1. Twelve schools were chosen as the first choice for contact as they all had food and activity facilities present in walking distance (~30 min) in the neighbourhood surrounding the school. Out of twelve contacted schools, three responded positively to participation – one located in the northeast of Oslo, one in the southeast and one on the west side. At two schools, the researcher (HHH) informed and handed out written information letters with consent forms to all 8th-grade students interested in participating – one for the parents and an age-appropriate letter for the adolescents. At the third school, the teachers distributed the information. Parents were informed and asked to participate in personal interviews via a letter attached to the information document about the adolescents’ focus groups. 

Before conducting any interviews or focus groups, the researcher walked around in the three included neighbourhoods to obtain a better understanding of the context, recognition of places that could be mentioned by the interviewees and be prepared for follow-up questions during the interviews. As an example, participants could be asked whether other local shops or eating facilities were visited if only one was mentioned. In the present study, a neighbourhood is defined as the area surrounding the adolescents’ school and home (walking distance ~30 min).

2.1.1. Focus groups with adolescents

In total, 35 adolescents, aged 13–14 years, agreed to participate – resulting in two focus groups at each school. Parents reported their educational level in the consent form by ticking off the highest achieved educational level; primary school/lower secondary school, upper secondary school, vocational training or university/university college. These were grouped into categories of lower and higher educational level (Table 2). The education level of the adolescents’ parents mirrored the overall area statistics shown in Table 1. No systematic data were collected on the adolescents’ country of origin or ethnic background.

2.1.2. Interviews with parents

The final data were based on eight individual parental interviews: two males and six females, five with higher education and three with lower education, age range 40–65 years (Table 3). Seven parents were recruited through their children participating in the focus groups. In addition, one mother from the south-east neighbourhood was recruited through snowballing, because she had a daughter in 8th grade at the chosen school who did not participate in the focus groups. Snowballing was also tested in the north-east neighbourhood, but did not provide any new participants. It was only in the west neighbourhood that additional parents wanted to participate, all being more highly educated. No systematic data were collected on the parents’ country of origin or ethnic background.

### Table 1

| Areas in Oslo                      | Life expectancy (men) | Lower educational level* (-13 years) | Mean income NOK** | Organisation participation - lower secondary school*** (%)
|-----------------------------------|-----------------------|--------------------------------------|-------------------|---------------------------------------------------------|
| Northeast (three boroughs)        | 77.4–80.2             | 67.73                                | 361 000–384 000   | 43–48                                                   |
| Southeast (two boroughs)          | 80.8–81               | 50.56                                | 381 000–472 000   | 54–62                                                   |
| West (three boroughs)             | 82.4–83.6             | 36–38                                | 583 000–791 000   | 73–78                                                   |

* 2016–2017.
** Mean income in Oslo municipality, 507 000.
*** 2017.
**** Organisations, clubs, teams or associations.

### Table 2

| Area         | Participants | Parental education level* |
|--------------|--------------|---------------------------|
| Northeast 1  | 4 boys       | 9 lower 3 higher          |
| Northeast 2  | 2 boys 4 girls | 8 lower 4 higher          |
| Southeast 3  | 2 boys 4 girls | 4 lower 7 higher          |
| Southeast 4  | 3 girls      | 5 lower 1 higher          |
| West 5       | 2 boys 4 girls | 2 lower 9 higher          |
| West 6       | 2 boys 4 girls | 2 lower 10 higher         |

* Lower educational level includes primary and lower secondary school (10 years), upper secondary school (13 years) and vocational training. Higher educational level includes university and university college (Bachelor’s, Master’s or higher).

### Table 3

| Area          | Participants | Age | Parental education level* | Adolescent      |
|---------------|--------------|-----|---------------------------|-----------------|
| Northeast     | Mother 1     | 40  | Lower                     | Daughter        |
|               | Father 1     | 61  | Higher                    | Son             |
| Southeast     | Mother 2     | 41  | Higher                    | Daughter        |
|               | Mother 3     | 49  | Lower                     | Daughter        |
|               | Mother 4     | 51  | Lower                     | Daughter        |
| West          | Mother 5     | 46  | Higher                    | Son             |
|               | Mother 6     | 42  | Higher                    | Daughter        |
|               | Father 2     | 65  | Higher                    | Daughter        |

* Lower educational level includes primary and lower secondary school (10 years), upper secondary school (13 years) and vocational training. Higher educational level includes university and university college (Bachelor’s, Master’s or higher).

** Not a participant in the focus groups.

2.2. Materials

When planning focus groups with young adolescents, a too open-ended interview-style could be challenging for the adolescents to respond to. A semi-structured interview guide could work better as it allows the list of topics and questions to arise naturally and provide the moderator with some flexibility (Horner, 2000). A semi-structured interview guide was developed for the focus groups and pre-tested on a group of five 8th graders for clarity, inputs and length. The main topics related to dietary behaviour included questions about places to buy and eat food in the neighbourhood, buying food on their way to and home from school, and their thoughts associated with these and their use. Other questions were what they perceived to influence their choices and questions related to why adolescents eat what they eat and their views about barriers to and facilitators of healthy eating in their neighbourhood. All interviews started with a question the adolescents easily could talk about: ‘Let us imagine I recently moved to this neighbourhood, and I am 13 years old. Could you tell me about the places where they sell food or where you eat food that you or other adolescents use?’ The semi-structured interview guide for the parents was based on the questions asked to the adolescents in the focus groups, and parents were asked to reflect on adolescents’ behaviour. An example of the wording of a question to the parents is: ‘What are your thoughts on how one could influence adolescents’ choices of what to eat in this neighbourhood? Physical activity, leisure time...
and screen time were other topics covered during the interview, but these are not included in this study and will be reported elsewhere.

2.3. Procedure

The focus groups with the adolescents were conducted at their school during school hours in March and April 2019. Interviews with the parents were conducted at a place and time of their choice in May 2019. The same moderator facilitated both types of interviews, which ran for approximately 1 h and were audiotaped.

2.4. Data analysis

All interviews were transcribed verbatim using the program f4transkript and were checked multiple times for accuracy and verification. The analysis was performed using theme-based inductive coding, based on a modified analysis method that presents four analytical steps: 1) obtaining an overall impression, 2) identifying meaning units, 3) abstracting the content in the meaning units and 4) summarising the overall meaning (Malterud, 2001a; Malterud, 2012). The interviews from the parents and focus groups with adolescents were analysed separately using the same analytical method. In the first step, all transcribed interviews were read thoroughly, looking at themes that emerged from the text, and these were noted as preliminary themes. In the second step, the interviews were read more systematically, and meaning units were identified and coded bearing the research questions in mind. Related meaning units were elaborated into code groups, one example being “culture in the neighbourhood – safety/crime”. In the third step, meaning units were systematised and highlighted, and critically considered in light of the research questions. This step, in particular, focused on re-contextualisation, and included continually returning to the original empirical materials for assurance and verifications. During the last step, the results were discussed and considered in light of an ecological view. HHH and EF read all interviews and had thorough discussions during all four steps.

3. Results

The results are presented as barriers and facilitators related to the levels in the ecological model (Story et al., 2008) with a primary focus on the social and physical environment. As the two eastern neighbourhoods showed similarities, these are presented together as ‘east’ in the rest of this manuscript. As neighbourhoods differ between and within countries a short presentation of the included neighbourhood will be given to place the results into a context.

The brief observations made by the researcher before conducting the interviews showed that both lower SEP neighbourhoods in the east were well connected with public transport. Apartment buildings and terraced houses dominated, but the neighbourhoods did also have areas with detached houses. Grassy open spaces or football fields surrounded the two schools. Nearby shopping malls contained several of the big fast-food chains, eating facilities, grocery stores and smaller outlets selling snacks as complementary items. The higher SEP neighbourhood in the west was dominated by detached houses, often accompanied by extensive gardens. The neighbourhood was well connected with public transport and near the chosen school were several grocery stores, bakeries and two smaller fast-food outlets.

3.1. The social environment barriers to and facilitators of healthy dietary behaviour

In the present study, all the adolescents, regardless of their neighbourhood, expressed a preference for unhealthy food and described the importance of purchasing tasty food at a low cost without parental approval. This is a fundamental barrier that could drive several other dietary behaviours. When asked about the type of unhealthy food, items such as slush, sweet buns and candy were mentioned. Even though the adolescents knew these items should not be part of an everyday healthy diet, they thought they deserved to spend their money on what they liked and not on what was best for them.

It’s not healthy to eat candy on weekdays, that’s why it’s called Saturday or something. It’s the day to eat candy. But nobody follows that rule...if you could call it a rule. Everybody just buys it when they feel like it.

(Boy 2, focus group 3 – East)

The parents indicated awareness of their child’s dietary behaviours with friends and the longing for unhealthy food, even though they wanted their child to have a healthy diet and were aware of the dietary recommendations.

When asked about their home-based food, the ethnic diversity dominating the eastern lower SEP neighbourhoods was reflected in the adolescents’ descriptions. Several described a culturally conditioned diet, represented by their parents’ ethnic background. These diets were defined as healthy and described in detail with what was perceived as warmth, enthusiasm and engagement. Still, several of the adolescents explained that they regularly requested and consumed food such as lasagne, pizza or fast-food at home. Several also described eating dinner at other places in the neighbourhood with friends, instead of at home, or buying take-away fast-food to eat at home.

My mum says I should eat more at home, but it’s because I shouldn’t spend that much money. I feel it is a bit unhealthier to eat out than it is to eat at home if my mum is cooking. […] But, if they make something I don’t like. Then I say ‘ahh, Mum I don’t like that. I will just eat somewhere else’. And I’ll just eat something from the mall.

(Girl 2, focus group 4 - East)

We eat, or we young ones tend to make, for example, taco sometimes or fast food, but sometimes slices of bread and stuff like that, while my parents eat more like Pakistani.

(Boy 1, focus group 3 - East)

These descriptions did also appear in the parental interviews in these neighbourhoods, and several expressed conflicts and dilemmas over the home-based diet. Often one or both parents desired that their cultural cuisine be served at home, whereas the children wanted a western diet. This generation and cultural segregation could result in family dinners being split into several dishes or the children not eating at home at all. An adaptation was expressed by several parents through either making different dishes or giving in to their children’s desire to eat outside the home. One example is a father establishing a dislike of this phenomenon, but at the same time showing an adaptation by having ‘two budgets’.

You know, my kids are typically Norwegian. They were born here. We actually make two types of food. We have some Moroccan food that is various, but my son wants it differently. Burger, sausages or fries … that silly stuff. So really, you could say we have two budgets. They never eat the food we eat. Even when we travel to Morocco, they go to Burger King or McDonalds, or pizza.

(Father 1, higher education – East)

In the higher SEP neighbourhood in the west, the parents expressed a need to facilitate healthy food habits for the family and their adolescents. Both parents and adolescents were united in their description of their home-based diet as an attempt to eat healthily during the week, allowing more unhealthy dishes at weekends. The adolescents described home cooking as healthy and parentally decided, making several of them admit to making an effort to ‘work around’ the rules and eat unhealthily outside the home and away from parental control.
With friends, it is often like junk food, the easiest you could find. But at home, the parents are usually there to oversee what you eat, because they are pretty dedicated about that. No parents want their kids to eat candy at every meal, so, naturally, you are a bit more thoughtful about what you eat when you’re with your parents. With friends, you eat candy, and with your parents, you eat what they serve.

(Girl 1, focus group 6 – West)

Neither parents nor adolescents from the higher SEP neighbourhood mentioned any culinary segregation, but one boy described a hectic everyday life influencing the opportunities for a joint meal. Even so, his mother would have made food for the family to eat. Other adolescents described similar hectic weekdays where leisure-time physical activity dominated, but did not reflect on whether it affected their meals.

In the weekdays we are never home at the same time because someone is exercising, someone is picking up others at the exercise, and some are at work. There is never time for it. So you come home, and, for example, mum then cooks, and it is on the stove. So when you come home, you can eat. But at the weekends, we eat together every night.

(Boy 2, focus group 6 – West)

In Norway, the typical school lunch is a pre-packed meal brought from home, consisting of whole-grain bread with spreads, often eaten together with fruit or vegetables and sometimes milk from a subscription programme (The Research Council of Norway, 2018). The adolescents did not reflect extensively on their school lunch when asked, but the parents all thought this was an important topic. All parents described the traditional Norwegian lunch with whole-grain bread as healthy and an essential part of the adolescents’ school day, including the parents from the multicultural, lower SEP neighbourhoods in the east.

The parents in the higher SEP neighbourhood and the more highly educated mother from the east described however their struggle to facilitate the perfect homemade lunch for their child that would be not just healthy, but also include filling, tempting and colourful food items. They were also trying to find a substitute for the traditional whole-grain slices of bread, which they often found boring or not so fresh. This facilitation was not mentioned by parents from the lower SEP neighbourhood. One mother from the west described a variety of food items that could be included in her son’s lunch:

There is always either a bread slice or preferably dinner leftovers. And then I tend to pick up some vegetables or fruit, salad and often a dairy product. Or a protein milkshake. And it is both due to variation, and not to get bored. Having three slices of bread with brown cheese does not bring any food-joy or much inspiration to eat. Maybe not as good energy either. I think it should be tempting. And filling.

(Mother 5, higher education – West)

Social norms emerged as an essential theme through the parents’ reflections in the higher SEP neighbourhood. They described a homogeneous neighbourhood where a lot of people focus on image and wealth, which several of the parents had ambivalent feelings. They described the typical family as active and portrays a healthy image, and such, it is a pretty nice environment. The adolescents liked where they lived and expressed unity. The neighbourhood? The adolescents longed for independence, value for money and the price of food were important topics. Money was mentioned as received from their parents and often spent at a local grocery store on supplementary food items for their lunch or after school. Several of the adolescents had recently started to use public transport without adults for short trips to areas close by. These trips were, in the higher socio-economic area in the west, used to attend leisure-time physical activities or, as in all the neighbourhoods, to visit cafés or a fast-food place like McDonalds or Burger King with friends.

A lot of the mentioned barriers in the physical environment were the same in all the neighbourhoods, e.g. healthy food being too expensive and unhealthy food being too highly available. Often unhealthy choices such as sugar-containing beverages, sweets or baked goods were chosen – mostly due to convenience and a cheap deal like five sweet buns for NOK20 (~US$2). Both parents and adolescents thought that healthy food items should be more affordable, and that they should be able to buy food that is both tasty and healthy.

It is interesting that the barriers seemed to be easier to talk about for the interviewees, and it was hard to hear of facilitating factors in the neighbourhoods with regard to healthy dietary behaviour. When asked if they had suggestions for changes that could promote healthy
behaviour in their neighbourhood, both parents and adolescents found this a difficult question to answer.

Although price and availability were mentioned in both the higher and the lower SEP neighbourhoods, several of the parents in the higher SEP neighbourhood expressed how their adolescents liked fruit and vegetables. They assumed they occasionally chose a smoothie, vegetable snack or salad, especially if it was promoted as a snack. Some of the girls in this neighbourhood described a wish to buy healthy filling food in the grocery stores, such as fruit and vegetables, but were often hindered by the price and availability.

I really like cucumber and watermelon and stuff like that, so like 2 weeks ago me and Girl 3 went to the store after school and just bought a big melon and strawberries because I really like them. But the melon cost about NOK60 (~US$6) and the strawberries cost NOK40 (~US$4). So I kind of lost that money and I could have bought something that I like just as much for NOK20 (~US$2) instead.

(Girl 1, focus group 1 – West)

Fast-food restaurants, especially the bigger chains like McDonalds and Burger King, were key places for all the interviewed adolescents. They perceived them as places to eat inexpensive, small snacks such as French fries and milkshakes, often shared, and, moreover, as a place to hang out and meet friends, either prearranged or on impulse. They all expressed awareness of the unhealthiness of the food served. Phrases like ‘you cannot eat it every day’, ‘it’s not real food’, ‘you get hungry quite fast after a fast-food meal’ and ‘the body gets inactivated’ were mentioned in all focus group discussions.

In the lower SEP neighbourhoods, fast-food chain restaurants were located centrally and at a short distance from the schools. Several of the adolescents valued the fast-food restaurant as a social place after school and described going there several days a week.

Girl 1: There is always someone we know there. Or as I pass by, there is almost always someone sitting there whom I know.

Interviewer: When do you typically visit Burger King?

Girl 2: Like, right after school. Sometimes I do buy things, but generally just to sit and talk.

Girl 3: They say like if you don’t buy anything, you have to leave.

Girl 1: Most people buy like drinks, milkshakes or small things. Not burger or anything like that, just fries or chilli cheese. Something small, suitable right after school.

Girl 2: And ice cream. Because, if you have bought something small, it is easier to share even if you are many people. For example, a large French fries, everyone can share it, and you are allowed to sit there because you have paid.

(Focus group 2, Southeast)

In these neighbourhoods, youth clubs do exist, but several of the adolescents felt insecure or too young to spend time there. The feeling of insecurity was supported by parents saying that the police were always present and expressing ambivalence about letting their child visit these youth clubs.

Interviewer: The adolescents talked about a youth club where they had “girls’ nights” and served food. Is this something your daughter is going to?

Mother 3: No. She is too young, I think. It’s on the other side of the centre, so they walk …. It’s too early. She does not go to any youth clubs. I do not like, there is so much going on around there, you have heard so much.

In addition, the adolescents in the eastern neighbourhoods described how many adolescents in their neighbourhood, particularly girls, did not participate in any leisure-time physical activities. Together with the inadequacy of these two alternative leisure activities, this made hanging out with friends at the mall or the fast-food restaurants frequent after-school activities and as one boy in the Southeast said, ‘Most people just hang with friends and walk around’.

In the higher SEP neighbourhood in the west, only smaller, independent, fast-food outlets were located close to the school. A few of the interviewed adolescents visited these during the lunch hour, but, when asked, they said it was not every week. The use of fast-food chain restaurants was as a valued place to visit with friends, but expressed as part of, for example, shopping trips over the weekend. When asked about their activities in their spare time, the adolescents described how almost everyone at school was involved in one or several leisure-time physical activities and one boy said: ‘I can’t think of anybody who doesn’t do any physical activity’. They attended these up to five days a week and had tournaments or matches during weekends, and almost everybody went home or directly to leisure activities immediately after school hours.

4. Discussion

The present qualitative study provides perceptions from both adolescents and some of their parents from diverse SEP neighbourhoods with regard to what, in their neighbourhood, they perceive as barriers to and facilitators for adolescents’ healthy dietary behaviour. The discussion is structured according to the aims and the social and physical levels in the ecological model. The macro-level was not included in the present study, but we still give a few reflections at this level.

Several themes emerged from the results and will be discussed hereunder. At the social level, identified themes were: home-based meals as a possible barrier for healthy dietary behaviour in those from lower SEP neighbourhoods, and parental facilitation of healthy dietary behaviour through family meals, the pre-packed school lunch and social norms in those from the higher SEP neighbourhoods. The themes that emerged on the physical level were: price, the use of the neighbourhood and especially fast-food restaurants, youth clubs and leisure-time physical activities which differs between the neighbourhoods and can be considered to be barriers and facilitators for healthy dietary behaviour for adolescents.

All the adolescents, regardless of their neighbourhood, craved unhealthy food, typically high in salt, sugar and saturated fat. They all wanted to eat and share food with friends at fast-food restaurants, and to be more independent of their parents. This is not unique to this study, and adolescents aged 13–14 years are often impulsive, drawn to friends, and long for detachment from their home and parents (Skreden et al., 2019). Other studies have also shown that quality, satiety and getting value for money are essential for adolescents’ dietary choices, and often correlate with unhealthy food items (Jonsson et al., 2017; Krolner et al., 2011). It is, therefore, necessary to discuss why adolescents tend to make different choices despite similar preferences for unhealthy food.

4.1. The social environment barriers and facilitators

The interviewees in all the neighbourhoods reported several social level barriers for healthy dietary behaviour. Still, the adolescents and
parents in the higher SEP neighbourhood in the west expressed facilitators in addition to barriers.

Even at an age where independence is crucial, parents’ reaction, knowledge and modelling are essential (Draper et al., 2015; Sleddens et al., 2015; Zarnowiecki et al., 2014). The conflict and lack of a united opinion with regard to home-based food, as in the lower SEP and ethnically diverse neighbourhoods, could be interpreted as a barrier to the adolescents because they get opportunities to act on their desires for unhealthy food. Family meals have shown positive results for adolescents in terms of nutritional value. Still, a family meal may vary a lot between families both in terms of ethnicity (Neumark-Sztainer, Story, Ackard, Moë, & Perry, 2000), context, frequency and routines (Neumark-Sztainer et al., 2000; Neumark-Sztainer, Larson, Pulkownik, Eisenberg, & Story, 2010). The role of culture, ethnicity, difference between migration groups, SEP and how this influence adolescents’ dietary behaviour is still in need of more research (Kleiser, Mensink, Neuhauer, Schenk, & Kurth, 2010; Rouche et al., 2019).

In the higher SEP neighbourhood in the west, healthy dinner options for the whole family were facilitated by parents, even when everyone is not home at the same time. Although these adolescents have a desire to eating unhealthy with friends outside the home, it did not seem to involve bigger meals like dinner. These were described as home based and healthy.

It has been found that a ‘too controlling feeding practice can lead to a stronger preference for restricted food’ and lower SEP parents tend to do this more (Zarnowiecki et al., 2014). In the present study, all the adolescents seemed to have a preference for restricted food. It is therefore interesting to look into other meals and dietary behaviour that involved the parents, for example, the typical Norwegian pre-packed lunch of whole-grain bread with spreads brought from home (The Research Council of Norway, 2018). The perceptions around the prepacked school lunch showed that the adolescents barely reflected on this topic, but all the interviewed parents, on the other hand, described the typical pre-packed school lunch as healthy, in line with the expectations and, therefore, the obvious choice to make for their child, regardless of their neighbourhood or ethnic background. Skuland (Skuland, 2019) described, in her qualitative survey, how immigrants in Oslo have adapted Norwegian dietary habits such as the school lunch, and the impression is similar in this study. It is the parental facilitation, on the other hand, that differs. The parents in the higher SEP neighbourhood seemed to facilitate healthy choices for their family through both the school lunch in addition to other meals throughout the day. These parents indicated a desire to provide their children not just with slices of whole-grain bread as the healthy lunch. They described a struggle to facilitate for an even better lunch for their children by adding different food items or dinner leftovers, reflecting both healthy options but also providing a lunch which could induce food enjoyment as well.

Social differences in dietary behaviour are often described referring to Bourdieu’s portrayal of the French upper class use of lifestyle choices, such as food habits, to distinguish themselves from the working class (Bourdieu, 1984). In the present study, the defined social norm of the perfect healthy image expressed by the parents in the higher SEP neighbourhood has similarities to Bourdieu’s theories. The social influence on eating is based on with whom we identify ourselves and share expectations within a group (Higgs, 2015; Suzanne Higgs & Thomas, 2016), and a social norm is often created when individuals share an identity with the referent group (Higgs, 2015). In the present study, the neighbourhood and the people living there share an identity. The results indicate that the social norm in the higher SEP neighbourhood provides adolescents with fewer opportunities for unhealthy dietary behaviour by not being served unhealthy food at home, often due to ‘facade and how things should be’. The adolescents themselves did not reflect on the topic, which could mean that it is a natural part of their everyday life. As everybody in their neighbourhood is facing the same kind of ideal, it becomes their identity. The absence of a common social norm description in the lower SEP neighbourhoods driving healthy behaviour could be thought of as a barrier.

4.2. The physical environment’s barriers and facilitators

The physical environment of the neighbourhood could influence adolescents (Bratbak & Andersen, 2017; Dahl et al., 2014), but, when asked to reflect on barriers and facilitators in their neighbourhood, this was considered challenging by the interviewees to answer. Both adolescents and parents mentioned price and availability at the local grocery stores and fast-food restaurants, and the results showed that barriers to healthy dietary behaviour were mentioned in all neighbourhoods.

In the lower SEP neighbourhoods in the east, fewer adolescents, especially girls, were engaged in leisure-time physical activities and, thus, hanging out with friends, going to the mall, walking around in the neighbourhood or visiting a fast-food outlet was their primary leisure activity. Studies from the USA have described the position of fast-food restaurants in adolescents’ lives because they offer tempting food and welcome this age group as customers (Story et al., 2002). The description of the fast-food restaurants by the adolescents in our study in the lower SEP neighbourhoods could attract parallels to a version of a youth club. In Oslo, there are around 50 youth clubs run by the municipality, most of them located at the east side of the city. Adolescents from 8th graders up to age 18 years are allowed to visit, but opening hours vary, and several are not open every day and may not be open over weekends (Oslo Municipality, 2020). The adolescents and their parents described their neighbourhoods as having criminal activity. Several adolescents felt unsafe or uncomfortable being at the youth clubs, and parents did not want their children to spend time there. When youth clubs were not considered a safe or preferred place to meet friends, it seems likely that fast-food restaurants and malls became the ideal social arena.

In the present study, leisure-time physical activities provided the adolescents in the higher SEP neighbourhood with a context to meet friends and something to do after school for up to 5 days a week. Leisure-time physical activities could also engage the adolescents in their spare time in this neighbourhood and facilitate healthy dietary behaviour through encouraging adolescents to eat more at home after school before practice, and preventing them from having the time to visit, for example, fast-food restaurants regularly. In the lower SEP neighbourhoods, the adolescents said that less than half the adolescents in their neighbourhood were involved in leisure-time physical activity. In contrast, the adolescents in the higher SEP neighbourhood felt as though everyone was involved in at least one activity.

These findings illustrate that, even though the location of a fast-food restaurant, grocery stores or malls, in itself could influence the probability of higher consumption of unhealthy food (He, Tucker, Gilliland, et al., 2012; He, Tucker, Irwin, et al., 2012; Virtanen et al., 2015), several other factors could affect the reason behind use of these places. These results provide entry points to the macro-level in an ecological model, because it becomes a political and municipality issue when the safe or preferred place to meet friends for the adolescents is the fast-food restaurants or the mall in a neighbourhood, and not the facilities provided by the municipality. The results illustrate an explanatory weakness of the phenomenon if one lacks focus on several factors simultaneously or the focus is primarily on individual factors (Richard et al., 2011; Sleddens et al., 2015). Only measuring, for example, fast-food restaurant density of an area as an indicator of availability ignores the social factors and profound explanations driving the youth to these places. The present study illustrates how these places also provide a social arena for a lot of adolescents, the possibility of getting a tasty good deal and how the norms in the neighbourhood could be an influence. Also it shows how parental facilitation at home, as well as options for leisure-time physical activity or safe youth clubs in the neighbourhood, can affect behaviour.

The findings of this study could also be used to develop interventions and hypothesis for quantitative research that could make it possible to
research the identified themes in a representative population. Furthermore, they may inspire policy actions aiming at promoting and facilitating healthy dietary behaviour for adolescents in different SEP neighbourhoods. The results indicate that the use of a multi-layered approach, when exploring the environmental influences and perceptions, could be a key to new knowledge about social inequalities in dietary behaviours among adolescents living in different neighbourhoods. The findings also indicate several themes worth further research, for example how different cultural background or several factors like possibilities for leisure-time physical activity or the social norm in a neighbourhood might influence adolescents’ healthy dietary behaviours.

4.3. Strengths and limitations

A strength of this qualitative study is the inclusion of both male and female adolescents and parents from diverse neighbourhoods, contributing to new insight into and knowledge about a complex issue. Most Norwegian 13 year olds reside with one or both their parents (Statistics Norway, 2018), making parents an essential part of their lives. The parents provide richer reflections on topics the adolescents raise, and the parental point of view gives depth to the data. One could assume that the perceptions of the neighbourhood would differ between the parents and the adolescents, but the parents showed good knowledge of their adolescents’ activities and desires. Focus group with adolescents at age 11–14 years are considered valuable when topics target their personal experience (Horner, 2000), and most of the included adolescents talked eagerly and had more to say than time was given.

The study achieved the inclusion of diversity among the interviewed adolescents and parents, as well as the parents’ educational level. Education is a widely used indicator for SEP, presumed to reveal a person’s cognitive knowledge and the ability to capture health information. It is also likely to influence both occupation and income (Dahl et al., 2014; Norwegian Institute of Public Health, 2018). Whereas income and occupation could change through the life course, education is considered to be stable (Shrewsbury & Wardle, 2008). Considering the included adolescents and their parents’ education level, these mirrored satisfactorily the population in the area where they lived. Still, the presence of a few more parents with lower educational levels could have provided the study with richer data.

Two focus groups were conducted in the west and four in the east. Data saturation, described by Malterud (2012), was considered met because there was an overlap in the information between the groups within each neighbourhood. Data saturation was also considered to have been met with the interviewed parents in the lower SEP neighbourhoods. In the higher SEP neighbourhood, the data from the three interviewed parents overlapped, but, on the other hand, no parents with lower educational level were interviewed in this neighbourhood, representing a limitation of the data.

In general, it could be questioned whether only the involved and engaged interviewees participated. In qualitative research, people with higher education and people who want to tell their stories and perception of a phenomenon and are more often willing to participate (Thaagaard, 2018). These are common challenges in quantitative studies as well, where people with lower SEP, more unhealthy dietary behaviour and poorer health are often less willing to participate (Langhammer, Kroksmad, Romundstad, Hegland, & Holmen, 2012; Totland et al., 2012). One could also question whether the interviewees’ expressed behaviour and perceptions are their actual behaviour or whether they behave differently than expressed during interviews. Another limitation is that only one moderator was present at each focus group. Even though one moderator and one assistant are recommended (Halcum, Gholizadeh, DiGiacomo, Phillips, & Davidson, 2007; Morgan, Scannell, & Krueger, 1998), the project did not have the resources for this. To make sure as much information as possible was captured, the moderator described all non-verbal body language verbally during the interviews: ‘you two are nodding’, ‘you are laughing’. In addition, a detailed field note of the interview was written immediately after finishing the interviews.

5. Conclusion

The results of this qualitative study illustrate that several factors seem to simultaneously influence the adolescents’ dietary behaviour and the probability of higher consumption of unhealthy food, not just the location or density of places for buying food in a neighbourhood. All the adolescents faced several barriers to healthy dietary behaviours in their neighbourhood. For the adolescents in the lower SEP neighbourhoods, the culturally home-based diet competed with more unhealthy food. Hanging out at the mall, or fast-food restaurants, were perceived as the preferred social arena, often due to not having youth clubs as a safe or engaging option or lack of involvement in leisure-time physical activities.

The adolescents in the higher SEP neighbourhood perceived social norms which accentuating healthy dietary behaviours. Additionally, possibilities for leisure-time physical activities for both girls and boys and being highly engaged in leisure-time physical activities seemed to facilitate healthy dietary behaviours. These findings indicate several themes worth further research and could be used to develop interventions and hypothesis for quantitative research and policy actions aiming at promoting and facilitating healthy dietary behaviour for adolescents. Engaging leisure time activities for all and safe places to hang out after school in the neighbourhood could influence dietary behaviour and thus, something more than just having a place to meet friends. These places should, therefore, be of high focus in the neighbourhood. The results from the present qualitative study indicate that the use of a multi-layered approach, when exploring the environmental influences and perceptions, could increase knowledge in understanding social inequalities in dietary behaviours among adolescents living in different neighbourhoods.

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Ethical statement

The qualitative data presented in the submitted research article entitled ‘Perceptions of the social and physical environment of adolescents’ dietary behaviour in neighbourhoods of different socioeconomic position’ was approved by The Norwegian Centre for Research Data (NSD).

NSD approved the project’s data protection with regard to the process of personal data before data collection. Reference number 773563.

Authorship

MKG and NL designed the TACKLE project together with EF, OA, KS and JL.

HHH, NL, EF and MKG designed and planned the presented sub-project. HHH elaborated the interview guides, planned and organised the data collection. HHH moderated and facilitated all the interviews, transcribed the interviews verbally and did the analysis. NL and EF supervised the study and assisted in the elaboration of the interview guides, and the analysis and interpretation of the empirical data. All authors critically reviewed drafts of the manuscript. All authors read and approved the final manuscript.
Ethics approval and consent to participate

The Norwegian Centre for Research Data (NSD) approved the project data protection procedure and that this was in line with the General Data Protection Regulation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appet.2020.105070.

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Corrigendum to ‘Perceptions of the social and physical environment of adolescents’ dietary behaviour in neighbourhoods of different socioeconomic position’ [Appetite, Volume 159, 1 April 2021/105070]

Hanne Hennig Havdal a,*, Elisabeth Fosse b, Mekdes Kebede Gebremariam a, Jeroen Lakerveld c, Onyebuchi A. Arah d, Karien Stronks e, Nanna Lien a

The authors regret to inform that a typing error in Table 2 was noticed. The published table included only 33 of the 35 interviewed adolescents.

The typing error did not affect the analysis, the results, or the paper’s conclusion.

The authors would like to apologise for any inconvenience caused.

The Table 2 should read as below:

| Area       | Participants | Parental educational level |
|------------|--------------|----------------------------|
|             |              |                            |
| Northeast 1| 4 boys       | 3 girls                    | 9 lower | 3 higher |
| Northeast 2| 2 boys       | 4 girls                    | 8 lower | 4 higher |
| Southeast 3| 2 boys       | 4 girls                    | 4 lower | 7 higher |
| Southeast 4| 3 girls      |                            | 5 lower | 1 higher |
| West 5      | 2 boys       | 4 girls                    | 2 lower | 9 higher |
| West 6      | 2 boys       | 5 girls                    | 2 lower | 12 higher |

*a* Lower educational level includes having completed primary and lower secondary school (10 years), upper secondary school (13 years) or vocational training. Higher educational level includes attending university or university college (Bachelor’s, Master’s or higher).

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* Corresponding author.

E-mail address: h.h.havdal@medisin.uio.no (H.H. Havdal).

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