Munira Dinle, Liis Erissaar and Sofia Partala

Childhood Obesity and Parental Guidance

A Descriptive Literature Review

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Author(s)	Munira Dinle, Liis Erissaar and Sofia Partala
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Childhood obesity cases have multiplied within the past few decades. Obesity occurring in childhood poses a significant risk of long-term health consequences and is likely to continue into adulthood, causing both physical and mental health problems. Concentrating on the prevention of weight gain from an early age is crucial in terms of reducing the prevalence, which can be accomplished through comprehensive health promotion. Parents and caregivers have a central role in the prevention of weight gain in children, as they are highly dependable on adults.

The study purpose was to describe the reasons behind why childhood obesity occurs, and how the condition can be detected early on. The aim was to spread awareness of the issue to nurses and nursing students, who may then utilize their knowledge to guide children's parents (or other caretakers) on early obesity prevention. This would benefit children's individual health, as well as save health sector expenses in the long run.

This descriptive literature review used qualitative methods: the data came from twelve quality studies published between 2017-2022 and was collected from the databases CINAHL, MEDLINE and Medic. The data was retrieved via conductive content analysis.

Childhood obesity poses both psychosocial and physiological health consequences, which frequently carry from adolescence into adulthood with a severely negative effects on quality of life and can even lead to premature death. It is vital that childhood obesity treatment focuses on early prevention and intervention, as the disease is difficult to manage once developed. Childhood obesity is caused by multiple factors, many which work as early predictors. It is vital that nursing staff receive adequate training on how to respond to cases of child overweight.

Collaboration between nurses, children and their families is essential for childhood obesity prevention to succeed. Children and their families benefit from the health promotion which nurses can provide in the long-term. Nurses need to provide parental guidance as parents are responsible for children's nutrition and lifestyles and can model and engage in these alongside them.

Key Words	childhood obesity, parental guidance, education, health promotion

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Lapsuusiän obesiteetti eli lihavuus on lisääntynyt maailmanlaajuisesti lähivuosikymmenten aikana. Lapsuusiän lihavuus lisää pitkäaikaisten, suurella todennäköisyydellä myös aikuisiällä jatkuvien psyykkisten ja fyysisten terveysongelmien riskiä. Lihavuuden varhainen ennaltaehkäisy on avainasemassa esiintyvyyden alentamisessa, mikä voidaan aikaansaada kokonaisvaltaisella terveyden edistämisellä. Vanhemmilla ja muilla huoltajilla on keskeinen rooli lasten lihavuuden ennaltaehkäisyssä.

Tämän opinnäytetyön tarkoituksena oli kuvata lapsuusiän lihavuuden aiheuttavia tekijöitä, ja miten kyseinen terveystila voidaan havaita sen varhaisvaiheessa. Opinnäytetyön tavoitteena oli levittää tietoa sairaanhoitajille sekä sairaanhoito-opiskelijoille, jotka voivat hyödyntää opittua tietoa opastamalla lasten vanhempia tai muita huoltajia lapsuusiän lihavuuden ennaltaehkäisyssä. Näin voidaan edistää lasten yksilöllistä terveyttä sekä säästää terveydenhoitokuluja pitkällä tähtäimellä.

Tämä kuvaileva kirjallisuuskatsaus on tehty kvalitatiivisin menetelmin: aineisto kerättiin vuosien 2017–2022 aikana julkaistuista kahdestatoista alkuperäistutkimuksesta, jotka löytyivät joko CINAHL, MEDLINE -tai Medic-tietokannoista. Aineistolle tehtiin induktiivinen sisältöanalyysi.

Lapsuusiän lihavuus on sekä psykososiaalinen että fysiologinen riski terveydelle, joka usein jatkuu lapsuudesta aikuisuuteen erittäin haitallisin seurauksin voiden jopa aiheuttaa ennenaikaisen kuoleman. On tärkeää, että lapsuusiän lihavuuden hoito keskittyy aikaisen vaiheen ennaltaehkäisyyn ja interventioihin, sillä tautia on vaikea hoitaa sen muodostuttua. Lapsuusiän lihavuutta aiheuttavat monenlaiset tekijät, joista useampi toimii lihavuuden varhaisena ennusmerkkinä. Hoitohenkilökunnan laadukas kouluttaminen on kriittistä oikeiden toimintatapojen varmistamiseksi lapsuusiän lihavuuden tapauksissa.

Yhteistyö hoitajien sekä lasten ja heidän perheidensä välillä on ratkaisevaa pysyväluonteisen lihavuuden ennaltaehkäisyn takaamisessa. Lapset ja heidän perheensä hyötyvät hoitohenkilökunnan tarjoamasta terveyden edistämisestä; vanhemmat saavat paremmat edellytykset tarjota lapsilleen terveellisempää ravintoa ja terveyttä edistäviä toimintatapoja.

Avainsanat	lasten ylipaino, vanhempien ohjaus, koulutus, terveyden edistäminen

Contents

1 Introduction

When compared to previous records, rates of childhood obesity have multiplied within the past few decades, rapidly evolving into a common health concern on a global scale. Research shows that while child obesity prevalence has increased overall, especially ethnic minorities and those with a lower socioeconomic status are at a higher risk of being affected (Tucker & Lanningham-Foster, 2015: 450). Obesity occurring in childhood also poses a significant risk of long term health consequences and is likely to continue into adulthood, causing both physical and mental health problems: cardiovascular diseases, hypertension and diabetes type 2, low self-esteem, social isolation, and various comorbid conditions are directly associated issues. As such, treatment of child obesity's health consequences is not only likely to be expensive, but a lifelong burden. (Thomas & Courtney, 2018: 124.)

Child obesity rates are believed to only continue to increase worldwide. *The World Health Organization* (WHO) had estimated that by 2020, "more than 60% of the global disease burden will be a result of obesity related disorders" (Kelishadi & Azizi-Soleiman, 2014: 993). Having established childhood obesity as a serious health concern which is difficult to get rid of once developed, the best way to tackle this increasingly common condition and lessen its prevalence is by prevention and early intervention. Obesity prevention has been widely researched, and some interventions have been shown to be an effective way to combat obesity in children and young people and promote better health. With school aged, prepubescent children, the involvement of family and parents or caretakers is especially essential, as they are a significant influence in a child's life and often provide a specific lifestyle model and mindset towards health: if the home environment does not promote healthy lifestyle choices, such as regular physical activity and lesser sedentary screentime, and if parents/caretakers are not conscious of what constitutes for a healthy diet, any health interventions attempted by medical professionals (such as school nurses) are unlikely to make a long lasting difference to a child's health. (Kelishadi et al. 2014: 994, 996-997, 999, 1004.) For reasons such as these, cooperation, and understanding from children's families regarding any preventative or interventional measures is crucial.

This thesis work will look at childhood obesity from a nursing perspective and describe it as a phenomenon: what the underlying reasons are to its growing prevalence in the 21st century, what its risk factors are, and why it is more common among some groups

and populations than others (Tucker et al. 2015: 451). As children's families play a vital role in their health, the study will also describe the ways in which parents and caretakers can best be integrated as a part of a child's care. Child obesity can be a sensitive and difficult subject but educating and informing parents about its serious health consequences (particularly in the case of an overweight or obese child) is an important part of a nurse's job. Knowing how to navigate the obesity conversation with children's families in a respectful, motivating, and non-blaming way is, therefore, a worthwhile nursing endeavour. The purpose of this thesis is to describe why childhood obesity occurs and how it can be prevented, and the aim is to spread awareness to nursing students and nursing staff who may then utilize this knowledge in guiding parents and caretakers in childhood obesity prevention in their own work.

2 Background

Obesity is defined as a condition in which the accumulation of excess fat happens as a consequence of consuming more calories than one's body requires to produce energy (Oxford Concise Medical Dictionary, 2020). Furthermore, the relevance of genetic factors has also been determined to contribute to obesity (Strovik-Sydänmaa, Tervajärvi & Hammar, 2019: 44). Childhood obesity concerns children worldwide. According to the World Health Organization, overweight and obesity has been on a tremendous rise amongst the children, and the prevalence has almost tripled during the last 40 years. Childhood obesity is not considered as a nutritional disorder in only Western societies anymore, but it has also become more common in third world countries. (World Health Organization, 2021.)

2.1 Causes and clinical consequences of childhood obesity

As mentioned in the previous paragraph, overweight and obesity is a result of excess calories combined with insufficient physical activity. Children in modern times spend much more time inside playing computer games and watching television. (James, Nelson & Aswill, 2014: 143.) The consumption of excessive fats and sugars has been said to be increasing in the 21st century (Glasper, 2018: 904). A study conducted throughout the years 2011-2014 in the US has also found a relevant link between the higher level of education of a household and a decrease in childhood obesity. This statement brings out the impact of the parents' education on their children's wellbeing, which affirms the issue being more complex to resolve. (Ogden, Carroll & Fakhouri 2018: 188.) A significant relation has also been found between low-income households and children growing up

obese. Ethnic minority households are determined to be at a disadvantage, and therefore their children are more likely to become obese. (Glasper, 2018: 904.)

As is known to many, overweight and obesity has many clinical consequences on one's body and mind. The impact excess weight has on children does not differ much from adults. It increases the risk of cardiovascular diseases such as hyperlipidaemia, high blood pressure and type 2 diabetes which may add to the risk of premature mortality. (Lambrinou, Androutsos & Karaglani, 2020: 2.) Furthermore, sleep apnea and orthopaedic problems such as back pains and knee injuries are easily developed (James et al. 2014: 143). In addition to physical health issues, obesity damages a child's psychosocial wellbeing by increasing the risk of depression, addiction, and anxiety. The child may become a target of bullying resulting in low self-esteem and possible self-harming behaviour. (Preventing Bullying Through Science, Policy, and Practice. 2016: 125.)

2.2 Prevention of childhood obesity

Despite the high numbers of obesity in children, it is important to understand that the condition is preventable (Gooey, Skouteris & Betts, 2022: 1). Successful prevention of childhood overweight and obesity starts already when one is born (James et al. 2014:64), and several effective methods for accomplishing this can be through a structured assessment of children's growth, evaluation of adequate nutritional intake as well as sufficient daily physical activity.

Growth is considered as one of the greatest indicators of physical wellbeing, therefore a regular assessment of height and weight of the children is said to be an excellent technique to detect weight gain from early on (James et al. 2014:64). This helps the healthcare personnel and parents to react in time and the possible increase of weight can be put to a stop before any major consequences. Nutritious food is essential forany growing organism. Children need to constantly consume a sufficient supply of nutrients to assure normal physical as well as cognitive development. (James et al. 2014: 54.) The dietary guidelines published by the U.S. Department of Health and Human Services suggest that the food groups containing high numbers of added sugars, solid fats, salt, and cholesterol should be limited. Children should rather be offered nutrient-dense foods such as whole grains, fruits, and vegetables as well as milk products along with eggs and lean meat. (James et al. 2014: 72.)

Alongside with dietary intake, physical activity is one of the most important aspects in maintaining a healthy weight. Therefore, children should be encouraged to participate in

daily physical exercise which can be done through fun activities such as games and sport. (James et al. 2014: 73.)

2.3 Parental guidance

Reducing the prevalence of the issue can be done through comprehensive health promotion (Gooey et al. 2022: 1). Health promotion refers to maintaining the public's health and wellbeing on the best possible level, which in turn increases quality of life (Oxford Concise Medical Dictionary, 2020). Promoting healthy habits is a part of every healthcare provider's work duty, and it is important that the healthcare staff engages children and their parents in their own care by providing accurate patient education on the matter (Gooey et al. 2022: 1).

Parents and caregivers have a central role in the prevention of weight gain in children due to children being highly dependable on adults. Based on factors such as monetary income and the time available to them, parents and other caretakers provide their children with what is possible. They are the providers and are therefore responsible for constructing children's meal routines as well as their habits of physical activity. (Strovik-Sydänmaa et al. 2019: 44.) Parents' lack of knowledge on the importance of a healthy diet is reflected in unhealthy meals which put children at risk for developing the same dietary habits in their adulthood. Families must be encouraged to include a variety of nutrient rich foods to their menu as well as to combine foods from different food groups to their everyday life. The education of parents on healthy habits is essential in terms of constructing family behaviours which contribute to supporting a child's optimistic attitude regarding healthy diet and exercise. Parents must act as a support system to their children for more positive outcomes in the elimination of childhood obesity. (James et al. 2014: 143-144.)

3 Purpose, aims and research questions

The purpose of this bachelor's thesis is to describe the reasons behind why childhood obesity occurs, and how the condition can be detected early on. The aim is to spread awareness of the issue to nurses and nursing students, who may then utilize their knowledge to guide children's parents (or other caretakers) on early obesity prevention. This would benefit children's individual health, as well as save health sector expenses in the long run.

The research questions of this thesis are:

1. What kind of contributing factors can be found behind childhood obesity?

2. How can parents be guided by nurses to prevent childhood obesity?

4 Methodology and methods

Qualitative research uses non-numerical data to collect information, as well as to obtain data through open-ended, conversational communication. It focuses on understanding emotion, perception, or experiences. It may use text, audio, or video to gain a deeper understanding on a matter. (Bhandari, 2020.) Qualitative methods focus on “what’’ and “why” people think in a specific manner, therefore looking at the underlying reasons to gain a deeper understanding of an individual’s or a group’s opinions (University of Utah Health, 2022).

4.1 Data collection method

Literature review is a process where the reviewer examines different chosen literary topics. It must meet certain criteria for the examiner to classify the research as literature research: according to Susan W. Buchholz & Kirsten A. Dickins (2022: 11), there are two criteria. The first criterion is to start the research using primary studies or database reports. The second criteria is to offer descriptions, summaries, evaluations, clarification, and integration of those sources. The main steps for conducting a literature review are to determine the purpose of the study and whom it relates to, who will benefit from the study, types of data collection that will be utilized, management of data such as classification, frame of data collection and ethical issues. (Hart, 2005: 45.)

During the process of undertaking a literature review, it is important to focus on defining the purpose of the review. If the review is too broad and unspecific, encountering difficulties will be likely, which will lead to further problems in finding the right articles to review. (Coughlan & Cronin, 2021: 3.) It is important to know before writing a literature review that the research is moving from the known to the unknown, combining different sources of information to gain new insight into a topic, thus providing new information that makes the writing unique (Aveyard, 2019: 16). A literature review's main aim is to uncover the best available evidence on a given topic generated by research studies,

which could potentially improve clinical practice and patient outcomes (Wood & Haber 2017: 55).

4.2 Data search and selection

The PICO table focuses on providing an effective format for helping students to develop clinical questions, helping to formulate search strategies and identify main key concepts. This assists in specifying what information is being sought in relation to each of the table's four sections to develop a well-articulated question (Eriksen & Frandsen, 2018). The authors examined which criteria would be most suited for the review, proceeding to identify different types of patient groups, interventions, comparisons, and outcomes.

Table 1. PICO.

P	Nurses
I	Parental guidance/guidance
C	Childhood obesity
O	Prevention of childhood obesity

In the process of collecting data, search terms and sentences were used to find the correct articles by using academic databases such as CINAHL, MEDLINE and Medic. The search terms used in this thesis' database search are the following: (Childhood obesity AND Obese children) OR Parents, (Childhood obesity OR Overweight children) AND health promotion, (Childhood obesity OR obese children) AND prevention.

Table 2. Database search.

Database	Search terms	Limiters	Number of hits	Selected based on title	Selected based on abstract	Selected based on whole text
CINAHL	Childhood obesity AND Obese children OR Parents	Reference available. English Language. Abstract available. Published Date 2017-2022. Peer Reviewed.	489	19	15	4
MEDLINE	Childhood obesity OR overweight children AND health promotion	Abstract available. Full text available. Free full text available. Clinical study. Clinical trial. English Language Published date 2017-2022. Child: 6-12 years. Adolescent: 12-18 years.	163	31	20	6
MEDIC	Childhood obesity OR obese children AND prevention	Reference available. English Language. Abstract available. Published date 2017-2022.	187	16	5	2

Using Boolean techniques, the research was successfully narrowed. The Boolean technique helps to define relationships between words or groups that will make the search more useful and relatable to search questions. Boolean techniques dictate the relationship between words and concepts such as “AND”, “OR”, and “NOT”. (Wood et al. 2014: 68.) All searches were carried out by having limiters. The research articles had to be

published between 2017 to 2022. All the articles had to be peer reviewed and available in full abstract. Furthermore, only research articles that were based on children between 2 to 18 years old. All articles had been written in either English or Finnish language. Selected articles have been based on childhood obesity, health promotion and guidance. Manual searching has produced the knowledge about childhood obesity. The data selected in this review was utilized according to the inclusion and exclusion criteria.

Table 3. Inclusion and exclusion criteria.

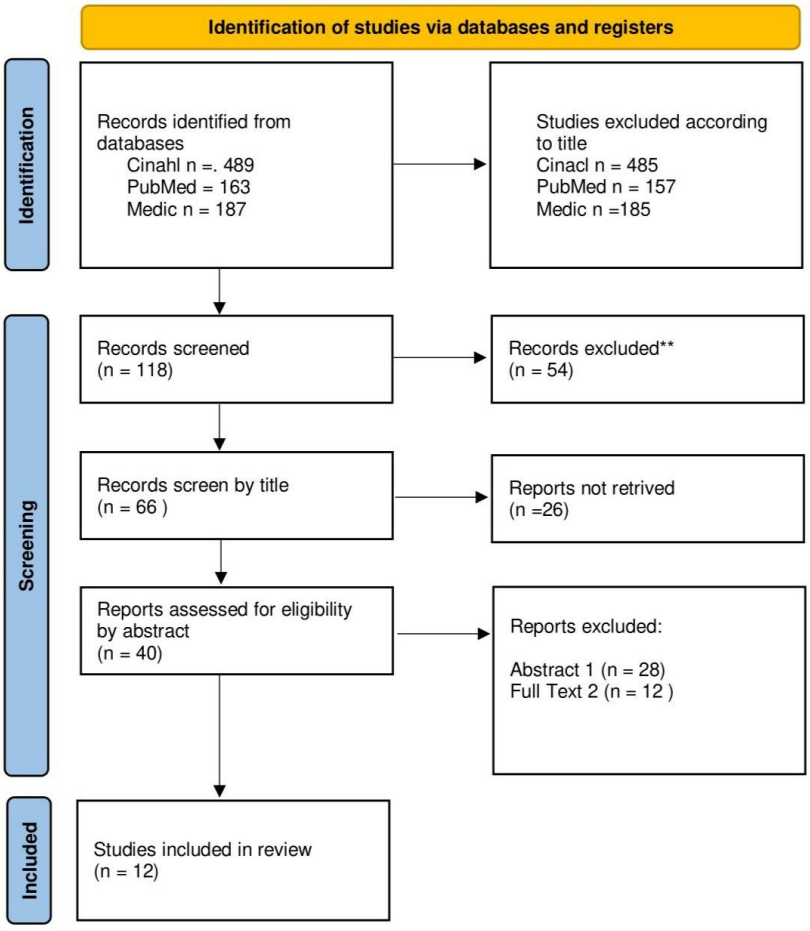
Inclusion Criteria	**Exclusion Criteria**
Peer reviewed	Not peer reviewed
English and Finnish language	Language other than English and Finnish
Abstract	No abstract
Published within the last 6 years	Older than 6 years
Children between 2 to 18 years old	Infants and neonates

Access to a full abstract was important to provide an overall idea of the study. The language of the articles according to the limiters was English or Finnish and making sure it is peer-reviewed in order to assess the quality and validity of the articles. The articles had to be no more than 6 years old, and the age group were children between 2 to 17 years of age. The exclusion criteria consist of all materials that were published before 2017. Also, neonates and infants were excluded from this database. To prevent the studies from being utilized as trustworthy sources of information, one of the exclusion criteria included the absence of peer review. These inclusion and exclusion limiters were enforced to meet the validity and reliability of the studies.

It must be mentioned that the manual database search had to be reconducted in the middle of the thesis writing process. During the initial database search, the number of final studies which were supposed to be included in review, was 8. Unfortunately, two of the articles did not eventually end up being original research after all thus they did not fill the criteria of being acceptable as data for a descriptive literature review. Therefore, a new manual database search was conducted only in MEDLINE since fortunately, these two articles were both from the mentioned database. The new manual search ended up being successful and 6 new research articles were included to this thesis, which left the authors with 12 original studies in total.

To show the process of the database search, the authors of this thesis have conducted a Prisma flow chart, which displays the process in numbers. The researcher selected the articles based on their key terms. Afterward, certain articles were excluded based on their abstract, as they did not meet the criteria. In Figure 1. PRISMA chart, the articles that were selected were based on the study questions, making sure that the articles were providing relevant information regarding to the topic. The study discussed the contributing factors that can be found in childhood obesity and how parents can be guided by nurses to prevent childhood obesity. The articles that were chosen had to meet the inclusion and exclusion criteria.

Figure 1. PRISMA chart.



4.3 Data analysis method

Inductive content analysis was used in this descriptive literature review. Inductive content analysis is a qualitative method that helps the researcher to create a theory and identify themes by extracting documents, recordings, or other materials. The inductive approach allows one to identify themes based on the research question, helping them by reducing

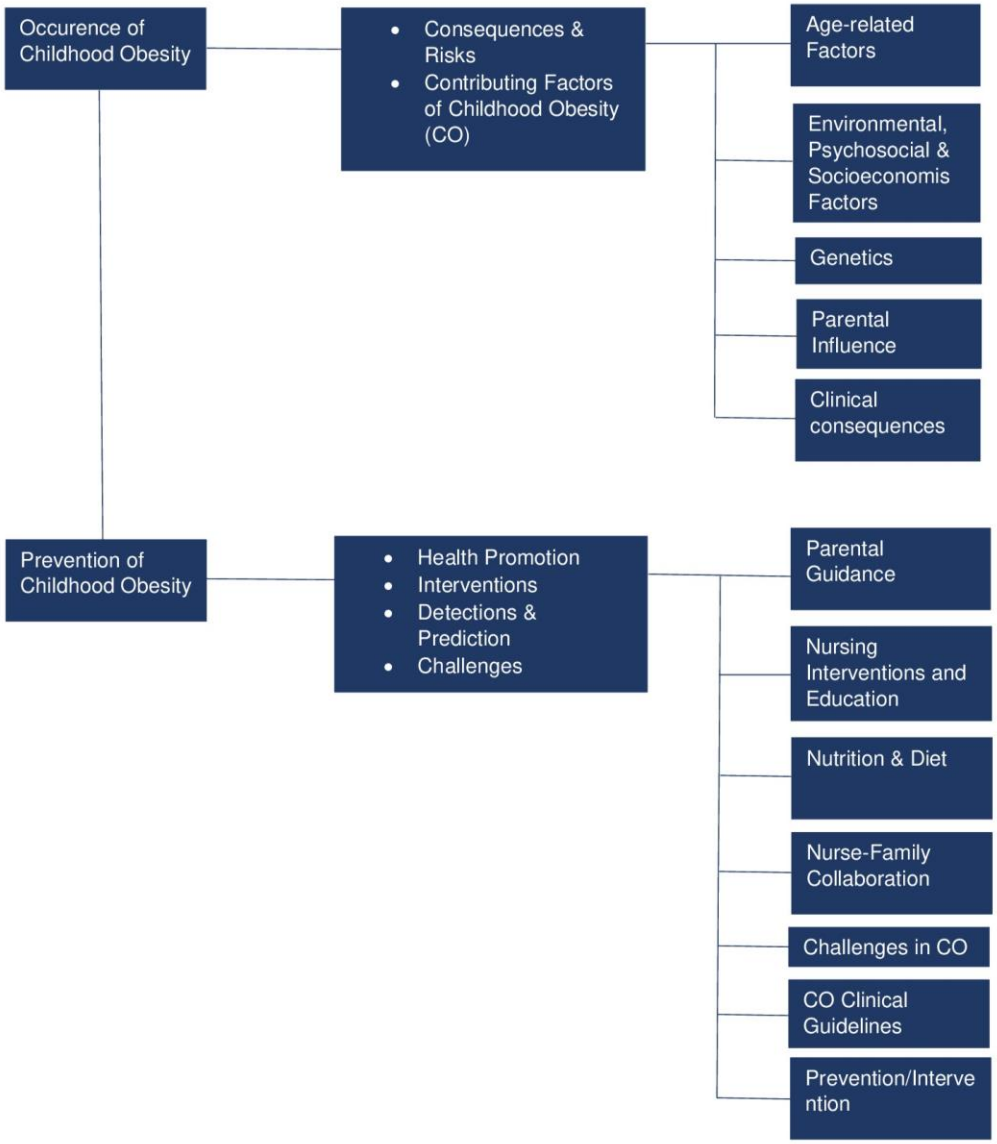
the materials to set themes or categories. (Contributor, 2021.) Inductive content analysis is mainly suitable when the previous study has not covered all the knowledge and content of a particular topic. Also, it is used when prior knowledge is fragmented. The role of this thesis' authors was to collect, organize and integrate information by forming categories, concepts, and themes to help find missing pieces of information and by carefully comparing the similarities and differences between data points. Furthermore, the goal of this thesis was to generate new data that will summarize the main information, themes, and provide possible indications of potential theoretical relationships. (Kyngäs et al. 2019: 14.)

The process of the inductive content analysis began with first separating the two chosen study questions: ''What kind of contributing factors can be found behind childhood obesity?'' and ''How can parents be guided by nurses to prevent childhood obesity?''. These questions in mind, selected statements were then coded and broken down into sub-, generic- and main categories. This makes it simpler to compare found data between different studies and arrange the results most effectively regarding the research questions. This analysis process enabled the authors to separate relevant data from the irrelevant, making the results more accurate as well as comprehensive. The process has been brought out in the form of a diagram, under the name "Figure 2. Data analysis". Additionally, the summary table of the chosen reviewed articles was made to organize used data, which helps to bring out key elements of each study and determine the relevancy of selected research articles regarding this thesis' topic.

5 Results

Twelve original research articles were chosen for analysis in this descriptive literature review, the results of which are presented in "Figure 2. Data Analysis" and referenced here. The inductive content analysis was conducted to answer the research questions "1. What kind of contributing factors can be found behind childhood obesity?" and "2. How can parents be guided by nurses to prevent childhood obesity?" The studies were from the United States of America (4), England (2), Finland (2) Germany (1), Brazil (1), Sweden (1) and Norway (1). Seven of these used qualitative methods in their research, two used quantitative methods, and three were conducted with mixed methods.

Figure 2. Data analysis.



5.1 Contributing Factors of Childhood Obesity

The analysed data provided similar aligned answers throughout, from genetics, psychosocial matters, socioeconomic background, and environmental factors all being contributors to childhood obesity. The results can be seen supporting previously conducted studies about the issue, which enabled earlier research to be referenced in the introduction and background chapters of this thesis.

5.1.1 Genetic factors

Genetics contribute to the likelihood of a child's overweight or obesity the earliest out of all the factors. A child's weight can be predicted even prenatally, as the expectant mother's weight status prior to pregnancy has been shown to affect the weight of the baby: if the mother's BMI falls into the overweight or obese range, this has similar implications for the child's weight development as well. High birth weight is also associated with obesity in adulthood. (Häkkänen, 2020: 13, 24, 32, 111.)

The risk of childhood overweight and obesity increases further if both parents have excess weight. The mother's dietary pattern during pregnancy, possible substance use, and potential history of gestational diabetes are likewise early contributors. (Häkkänen, 2020: 24, 30, 32, 112). Biological sex is another genetic factor, as boys are overall shown to be more likely to develop childhood overweight and obesity when compared to girls, both nationally and globally. But for girls, the development of excess weight starts already during the earlier years of age, in contrast to boys. (Häkkänen, 2020: 12, 20-22). Certain ethnicities are also more likely to suffer from childhood overweight and obesity, particularly minority groups, such as those of Hispanic and African American descent in North America (Thomas et al, 2018: 124-125; Häkkänen, 2020: 26). It is believed that the weight gain within adolescents with the background of migration is connected to acculturation and therefore changes in everyday lifestyle patterns. The traditional dietary is given up and new food habits are adopted. Also, a better accessibility to screen media can be seen as an operating factor. (Kobel et al. 2017: 254.)

5.1.2 Environmental and socioeconomic factors

Many aspects of the environment and socioeconomic background factor into childhood obesity. Geographical location is shown to affect the development of childhood obesity in two distinct ways: parents' high socioeconomic status is a contributor in developing countries whereas low socioeconomic status contributes in developed countries, as both a lack of access to healthy, nutrient-rich foods (in case of low socioeconomic status) and having the chance to overeat (in case of high socioeconomic status) can both lead to the same outcome of excess weight. In developed countries, childhood overweight and obesity is less common in urban environments compared to rural areas (Häkkänen. 2020: 21, 32.) However, while the child obesity phenomenon has plateaued in countries with high income, it continues to rise particularly in lower income countries (Ezzati et al. 2017: 2627, 2640). Additionally, children from low-income setting are more vulnerable to urban

violence which is described as a barrier of getting involved with sports (Cecchetto, Pena & Pellanda. 2017: 203).

The structure of modern society also enables the increase of childhood obesity, as children have commonly adopted more sedentary lifestyles (Hanssen-Bauer et al. 2017: 2; Häkkänen, 2020: 22). Rapid digital development has caused sedentary behaviour to start at a younger age, as children have swapped daily exercising for a few exercise sessions per week. This affects children's weight trajectories, and nurses perceive societal attitudes to not take a stance against the matter. (Gothilander et al. 2021: 5.)

Children's home environment factors largely into overweight and obesity due to parental influences: already in infancy, children who are not breastfed by their mothers develop a higher risk for overweight. Similarly, the education level of parents, especially the mother's, is shown to be associated with a child's weight development so that a low level of education poses a risk factor. (Häkkänen, 2020: 14, 24, 33). In addition, aspects of lifestyle, such as irregular mealtimes or indoor smoke exposure are shown to correlate with children being overweight and obese, also in adulthood (Viljakainen-Diop, 2020: 4; Häkkänen, 2020: 22, 38).

5.1.3 Psychosocial factors

It is noteworthy that children are shown to suffer more from the psychosocial consequences of obesity, as opposed to the metabolic aspects which grow more pronounced in obese adults. However, this does not mean obesity does not cause physiological health issues also during childhood. (Häkkänen, 2020: 31.) Various psychosocial issues contribute to the prevalence of children's overweight and obesity. Events in early life are particularly important predictors of weight development, and multiple stressors increase the likelihood of overweight and obesity development (Häkkänen, 2020: 13, 33).

Various problems within the home and parents' stress levels can affect children's weight, though there are differences among genders and age groups as to how this manifest. Younger children experiencing emotional neglect are more often overweight or obese, whereas older children were more likely to have excess weight if there were financial challenges or health issues within the family. Some children may try to cope with difficult circumstances at home by consuming caloric rich foods. (Häkkänen, 2020: 33.) Research has also pointed to the importance of family structures, as children from single-

parent households seem more likely to have excess weight. Overweight and obese children are also commonly faced with adverse psychosocial consequences among their peers, such as bullying and social ostracization. Children of all ages who are obese commonly experience more bullying than those of normal weight, and high weight status by itself can make a child the target of cruel treatment among other children. (Häkkänen, 2020: 34-35.) In turn, these difficulties are associated with many mental health problems, such as depression, anxiety, body image issues and patterns of social isolation (Hanssen-Bauer, 2017: 5-6; Häkkänen, 2020: 22, 36). Additionally, these psychosocial consequences often hinder children's academic success (Ezzati et al. 2017: 2628).

5.1.4 Consequences and challenges of childhood obesity

Overweight and obesity, particularly in childhood, causes an increased risk of numerous psychological and physiological health issues in the long term. Conditions such as lipid disorders, hypertension, and an earlier onset of diabetes type 2 are directly tied to excessive weight gain in one's early life. (Ezzati et al. 2017: 2628; Thomas et al. 2018: 124.) Similarly, a high childhood weight status is a risk factor for either developing serious health issues in adulthood, or having chronic conditions follow into adulthood. Both cardiometabolic and cardiovascular conditions, such as high LDL and low HDL cholesterol levels, and the development of coronary heart disease can be caused by excess weight in childhood and affect a child later in life (Häkkänen, 2020: 31-32).

Despite of having a rather thorough understanding of childhood obesity, the matter still seems to be a growing issue in the healthcare field and reducing the prevalence has proven to be exceptionally difficult. In addition to various underlying contributing factors, several other background elements have been determined to impede tackling childhood overweight effectively in time. Healthcare professionals must take these elements into consideration. By increasing the knowledge of the challenges in childhood obesity prevention, it becomes possible to recognize potential obstacles in treatment early on and perhaps avoid them altogether. Although school has been determined to be a great setting for promoting a healthy lifestyle amongst adolescents due to its infrastructure and accessibility to children (Kobel et al. 2017: 254-255), there are no up-to-date clinical guidelines regarding practice interventions to prevent overweight amongst children (Thomas et al. 2018: 125). There is also no effective communication tools for school nurses (and other healthcare practitioners) to use when faced with the disease (Häkkänen, 2020: 45). Insufficient guidelines can be seen as a reason behind inadequate

treatment, simply due to a lack of awareness of recommendations. Providers lack training on how to deal with the issue and there is no specific outcome expectancy, which is then reflected on both nurses and physicians' beliefs in their capacity to provide accurate care. This puts healthcare providers in a rather uncomfortable position when they are needed to act as advisors on the matter. In fact, the results show physicians being dissatisfied with their own counselling on weight management, saying it felt ineffective. Therefore, clinical practice guidelines are extremely important and beneficial to have as their task is to give healthcare practitioners tools to confront childhood obesity as well as improve the quality of care overall. (Thomas et al. 2018: 126-127.) Also, school and public healthcare staff seemed to recognize obesity effectively, but for some unknown reason diagnoses are rarely set, or treatment plans made. Health interventions are more directed at already obese children despite of EASO (the European Association for the Study of Obesity) recommendations to emphasize the importance of early detection and intervention, therefore treating also overweight children. (Häkkänen, 2020: 98, 102.) The results show the need for improving training strategies of the staff to improve children's obesity care in general. Unfortunately, evidence-based guidelines have not been entirely developed, which jeopardizes the prevention of childhood obesity as a whole.

5.1.5 Early detection and prediction of childhood obesity

Once one has already reached obesity, to cure or even alleviate the disease is exceptionally complicated (Kobel et al. 2017: 254). The avoidance of excess weight gain from an early age reduces the probability of development of childhood obesity. Therefore, prevention holds a key in decreasing the prevalence of the matter, as also mentioned throughout this thesis. (Thomas et al. 2018: 124; Garden, Pallan & Clarke, 2020: 2.) To be able to prevent the disease successfully, nurses must be aware of the factors behind the development of childhood obesity as well as the early signs indicating the potentially rising issue. Learning the underlaying factors allows nurses to predict the looming disease with the goal of the healthcare personnel responding promptly by applying various health interventions both on individual as well as social levels (Viljakainen-Diop, 2020: 16).

The background elements of developing childhood obesity vary amongst gender and age. It is determined that girls are more prone to weight gain in an earlier age than boys, however boys are more likely to stay obese throughout primary years once overweight has been reached. Since the primary weight gain happens between the ages of 2 to 6 years, the excess weight gained throughout toddler years will presumably be one of the

indicators of later childhood obesity. Additionally, adulthood obesity can also be predicted from one's adolescent years, especially overweight after 12 years of age. Therefore, the ages between 10 to 12 are decisive in terms of later weight gain. (Häkkänen, 2020: 12, 20-21, 97.)

In addition to gender and age-specific factors, a connection between parental influence and children's weight gain has also been found. Many studies suggest that children from families with lower level of socioeconomical status, education, and financial problems, are more vulnerable to childhood obesity. While unconfirmed, the reason behind it is believed to be related to lack of resources such as time and money to invest in nutrient-dense foods and regular physical activity, as well as inadequacy in parental knowledge of the benefits of healthy interventions and consequences of childhood overweight. In fact, children of obese parents are more prone to become obese themselves, which implies the possibility of predicting childhood obesity based on parents' weight. Exposure to indoor smoke at an early age similarly increases the risk of weight gain in children, confirming home environment being one of the prognostic factors of the disease. The structure of the family also seems to have a role in the issue: children that are raised by a single parent are increasingly prone to overweight, with girls being especially affected, according to several studies. (Häkkänen, 2020: 22, 30, 97.)

5.2 Parental guidance

Parental guidance is essential, as it encourages children to start eating healthy foods from a young age to help prevent childhood obesity. Early modification in children's habits can promote quality of life and reduce the risk factors associated with obesity. It has been shown that once children are overweight, it is severely difficult to treat or reverse the condition (Kobel et al. 2017: 1). Parents can help their children by providing a balanced diet and managing their eating times: this can be put to practice with scheduled family mealtimes, which also serve as a way to help children achieve a healthy relationship with food. This increases the likelihood of children adopting these healthy habits for the long-term. Overall, parents and caretakers need to be aware of the impact they have on their children, as they are identified as change agents for improving obesogenic home environments (Huffman et al. 2018: 10).

Studies highlight the importance of nutrition as the primary interaction between parents and children already during the first year of a child's life. During this early stage of life, parents and children have a vital attachment bond. Parents' role includes introducing children to different types of food and explaining their nutritional value. Parents also need

to be aware of the impact they have on developing their children's eating habits, since learning about nutritional balance needs to start at home. During the first years of life, parents hold the responsibility in demonstrating a balanced dietary routine to children, as they undergo a rapid physiological and psychological development. Parents should encourage children to choose healthy snacks instead of those high in salts, sugars, and fats. It is imperative to have plenty of fruits, vegetables, and other healthy beverages available, motivating children to eat at home instead of regularly indulging in fast food. These healthy eating habits are influenced by parental permissiveness. (Viljakainen-Diop, 2020: 14.)

Aggressive commentary or behaviour should be avoided by parents and other caretakers, as it can have a negative influence on children's reactions to food and physical activity and trigger psychosocial adverse effects. Similarly, overly strict authoritarian parenting and overt restriction of unhealthier yet palatable foods piques children's interest of such foods, which increases their intake as well as children's weight outcomes. (Langer, Seburg & Jaka. 2017: 2.) The same concept also applies to physical activity: levels of physical activity are shown to be much higher amongst at-risk adolescents in families where authoritative parenting style is combined with a warm environment and monitoring health behaviours is applied, pointing towards this being a more beneficial parenting style (Huffman et al. 2018: 6). Additionally, parental monitoring can be seen being positively associated with children's consumption of fibre, fruits, and vegetables. In conclusion, an authoritative parenting style is associated with lower BMI amongst adolescents (Langer et al. 2017: 2-3, 8.), as "warm and supportive family environments have been positively associated with youth health behaviour." (Huffman et al. 2018: 2).

5.2.1 Health Promotion and intervention

Childhood obesity is a worldwide pandemic, which can have adverse short or long-term physical, psychological, social, and economic consequences that persist into adulthood (Garden et al. 2020: 1; Häkkänen, 2020: 32). Health promotion helps children and their families to tackle childhood obesity, helping individuals to maintain their health. In addition to better physical health outcomes, promoting health also helps children to increase their self-image and self-esteem. A strong connection between a parent and a healthcare professional positively affects childhood obesity. Parents should seek out help when they are concerned about their child's weight. (Gothilander et al. 2021: 2).

Seeking professional help is advised and encouraged to support the prevention of childhood obesity. Firstly, there should be an active relationship, built on trust for the child to receive the benefits of outside help. The benefits of professional help can be vast; healthcare professionals can help to guide parents at home, suggesting day-to-day changes in the child's or the entire family's routine. On the other hand, parental involvement can additionally be a potential barrier in dealing with childhood obesity treatment. Namely, parents are shown to often feel provoked, offended, and criticised when being told their child is overweight, and these defensive attitudes may jeopardize moving forward with a child's treatment. (Gothilander, 2021: 2; Hanssen-Bauer et al. 2017: 6.) Parents not being frequently involved with weight-related appointments along with their children has also been seen as an issue, as this causes co-operation with families to be insufficient. Studies show school healthcare staff often feel as though families are not committed to following through with the professional advice given (Häkkänen, 2020: 45, 98.) Therefore, nurses must use a tactful approach when advising parents about children's weight, as this helps to lower the risk of being misinterpreted.

A tactful approach is classified as the ability to tell the truth in a manner that considers other people's feelings. It enables the delivery of challenging feedback or private information and choosing the appropriate words to keep a connection intact. A tactful approach helps nurses to deliver the message in a respectful form. It includes using empowering words, providing educational material, and supporting the treatment by having regular follow-ups with the family. (Häkkänen, 2020: 45; Lambrinou et al. 2020: 16.) Parents who are unable to attend appointments with their children remain a barrier for adopting better clinical guidelines. Previous studies have found that parental involvement in childhood obesity treatment can affect and decrease children's dietary intake and promote a healthier lifestyle. Parents are children's role models, and participating in appointments can positively impact a child's life (Häkkänen, 2021: 46).

Furthermore, health professionals must be provided with adequate training that focuses on weight management (Thomas et al. 2018: 2). This is an excellent way to tackle childhood obesity and promote better health. Nurses are required to understand the importance of childhood obesity, so that families are efficiently provided with proper instructions and have support from well-trained professionals. (Thomas et al. 2018: 4.) Having enough knowledge helps to deliver the message with more confidence. The higher the knowledge and understanding of the issue, the more impactful advice families receive.

As mentioned previously, schools are great in terms of promoting health to adolescents of different ages (Kobel et al. 2017: 254-255; Garden et al. 2020: 2; Cecchetto et al. 2017: 201) since they spend a significant amount of time there with a purpose of receiving education. Therefore, schools should be encouraged to offer more information on healthy eating and the benefits of physical activity, considering it is determined to have a positive influence on children's BMI. According to Garden et al. (2020), schools' curriculums seem to be more focused on promoting physical activity but not a healthy diet. One of the possible methods to present dietary versatility to children is to change school food regulations, offering students the accessibility and introducing them to a variety of foods. This makes the issue more complex, as the changes must first happen on a systematic level which can be only done with the help of the government. To emphasize on the importance of school even more, research conducted by Cecchetto et al. (2017) studied the impact of playful after-school workshops on children's knowledge and body weight. The trial showed playful activities focusing on health topics being effective in increasing the levels of physical activity as well as overall knowledge about healthy habits. The increase of knowledge on the topic was also seen amongst teachers. Therefore, performing simple playful educational activities with children helps improve the level of understanding the issue to improve self-care, and can be used as one of the preventive methods in the future.

6 Discussion

The purpose of this thesis was to describe why childhood obesity occurs, and what its contributing factors are from which the disease can be predicted and detected early on. According to this thesis' results, the background factors vary from genetics to socioeconomics, which displays the complexity of the issue. It is determined that the risk of childhood obesity increases if both parents' BMI fall into the overweight or obese range. Especially high BMI of the mother during pregnancy is associated with a child's weight later in life. Also, biological sex can be seen having a rather significant role in the development of childhood obesity, as boys are more prone to gaining excess weight compared to girls. Weight gain amongst girls, on the other hand, begins from an earlier age. In addition to genetics, environmental, socioeconomic, and psychosocial factors are greatly related to childhood obesity, especially low-income families and ethnical minorities being more affected. Surprisingly, also one's location can lead to overweight in children, particularly youth from developed countries living in rural areas. The phenomenon of childhood obesity is less visible in urban environments. Interestingly, the pattern is the opposite in developing countries where the children of parents with high socioeconomic status are

commonly more overweight. This is possibly due to better accessibility of variety to food items including meals high in fats, salts, and sugar. Various psychosocial issues including parents' stress levels and emotional neglect in early life can contribute to the development of obesity, using overeating (also called emotional eating) as a coping mechanism. Overweight or obese adolescents are often bullied by their peers which results in different mental health problems, such as depression and low self-esteem.

The results of this thesis reflect the harmful consequences of excessive weight in children on both physiological and psychological level. The best method to tackle the problem is to prevent it altogether, which is simpler in theory than in practice. To be able to prevent the pandemic of childhood obesity, its causes must first be understood, together with the signs from which the problem can be predicted from and what the interventions are. Healthcare providers can then utilize this knowledge to stop the increase of the prevalence. The importance of parental involvement has been emphasized throughout the thesis, as parents create their children's behavioural patterns from the very beginning. It is crucial for parents and caretakers to understand the severity of the issue for an actual change in children's life to occur. The previous findings present the significance of patient education on which the successfulness of the care outcomes lean on. Understanding the importance of self-care and being aware of different healthy interventions as well as the impact these have on one's health, improves well-being of children in the long-term and can help reduce the prevalence of the disease. Once the change has been made on an individual level, it also must be dealt with on a systematic level, meaning improving the clinical guidelines, developing appropriate intervention tools, and even getting schools more involved by e.g., providing finer education on healthy lifestyle and introducing children to bigger variety of healthy foods by actually serving them. Such a high-level changes often need government's support, but to gain visibility on a larger platform, the full involvement of all participants is needed, and the issue must be discussed frequently and openly.

6.1 Ethics and validity

Ethics is a part of philosophy which investigates people's behaviour both on a societal and personal level. Ethics has a great role in research work, because only by following ethically acceptable principles, can we guarantee the reliability and accuracy of the results of the studies. This is called responsible conduct of research, which is considered as a basis of every trustworthy scientific research. (TENK, 2021.) When explaining the principles of ethics, we are referring to autonomy, justice, confidentiality, and privacy as well as non-maleficence.

Autonomy is defined as an individual's ability to make their own decision on participating in the study and on what they agree to. This must be respected by the researcher without any attempt of influence. Researchers conducting a study are obligated to promote the wellbeing of others and not to cause any harm, which is called non-maleficence. Since the most typical way to gather data is by interviewing or observing, which may result in participants being identified and losing anonymity, these principles are set in place to protect the rights of the people undergoing research. (Coughlan & Cronin, 2021: 88, 94.)

Responsible conduct of research such as honesty, reliability, and accuracy have been followed by each author throughout the planning process (Hyvä tieteellinen käytäntö, 2021), while also considering the risks of conducting online research. The database search has been done according to the guidelines given by Metropolia University of Applied Sciences, and the thesis was done under the supervision of an academic lecturer of nursing science which allowed for seeking guidance if questions arose.

While writing a literature review, other authors' works are utilized throughout the research. When using someone else's study as a source, it is essential to give the original author(s) credit in a correct manner and list out all the references both within text as well as at the end of the paper. Plagiarism, which refers to using someone else's work as your own, is highly forbidden and breaks ethical principles. (TENK, 2021.) During the database search, articles were chosen based on the relevancy to the thesis' aims and purposes. It was determined that the results of the references matched the research questions. (Hempel, 2019.) Material used in the research proposal has not been copy pasted but incorporated into the theoretical knowledge, therefore, the content of this thesis proposal is plagiarism free. The research proposal has been done with appropriate references to each author as well as the sources used, making the reference list available for everyone to repeat the data search and to retrieve the same outcomes (Cronin, Ryan & Coughlan, 2008). Studies used in the authors' thesis proposal are all peer reviewed and found from reliable databases for healthcare and social services such as CINAHL, Medic and MEDLINE. In addition to international sources, several domestic ones were also used, such as *Lapsen ja perheen hoitotyö* or *Sanoma Pro* to help investigate the background. Many references used to support the research have been conducted by several authors from either the same or different field of specialty.

Validity is another key element in a reliable literature review. Validity in research is defined as an instrument accurately measuring the aspect of a given concept. Therefore, choosing a valid instrument for a study makes the measurement also reliable. (Lo-Biondo-Wood & Haber, 2014: 292.) The validity of sources used have been evaluated

by each author throughout the thesis planning process. It has been ensured that the sources used to answer the research questions are up to date. In terms of validity problems regarding descriptive literature reviews, no original studies will be separately conducted, and so the work's validity is fully dependable on the validity of the references used.

6.2 Strengths and limitations

In order to reassure rigour, the concept of credibility and dependability were applied (Cronin et al. 2008). This work has adhered to the ethical standards outlined in Chapter 6.1. The strength of this study includes different sources of study information to assess childhood obesity on a global scale, as well as interventions that contribute to tackling childhood obesity. The use of a qualitative approach for data collection allowed access to many studies regarding childhood obesity and parental guidance. Exploring the challenges of childhood obesity, its consequences, early detection and prediction, health promotion and intervention, and parental guidance. Unlike the previously analysed studies, this thesis combines these main aspects in detail to prevent childhood obesity globally. Several limitations of this study need to be noted, however. A limited data search includes no more than six years of study: as a result, authors may have missed high-quality research information from earlier years. Some of the studies in this research have used self-reporting methods when gathering information. The usage of this self-reporting can cause a threat to the credibility and validity of the study since self-reported weight can often be underestimated and height, on the other hand, overestimated (Viljakainen-Diop, 2020: 15). Another limitation is that the results of this thesis work are not actually tested, and they are completely based on other studies, thus resulting in misleading conclusions.

6.3 Recommendations for further obesity prevention

Analysing the topic from several different perspectives has given a clear picture of different preventive methods that can be utilized in reducing the prevalence of the issue. When starting from the very basics, health promotion regarding healthy dietary habits and sufficient levels of physical activity must be continuously carried out to increase adolescents' knowledge of the benefits of healthy lifestyle habits, and the consequences of overweight and obesity from an early age. (Mäki, Hedman & Levälahti, 2019: 8; Stough et al. 2017: 453.) Parents and other caregivers cannot be forgotten as they have a significant role in

children's development and hold the main responsibility of guiding them through childhood (Strovik-Sydänmaa et al. 2019: 44). Schools provide an excellent environment to start early monitoring of children's wellbeing and grants a platform for teachers and healthcare personnel to work together in hopes of achieving the goal. Children's parents are easier to reach through this environment, therefore helping to solve the health issue in co-operation with one's family. (Kobel et al. 2017: 254-255; Lambrinou, 2020: 2.) Health organizations together with the government must focus on developing concrete clinical guidelines, effective communication tools discussing the matter and better methods to promote a healthy lifestyle amongst children and their families in hopes of tackling the prevalence of the problem. The task is challenging but agencies and professionals are required to work together to fight this disease damaging children worldwide (Glasper, 2018: 205).

6.4 Conclusion

The purpose of this bachelor's thesis was to describe why childhood obesity occurs and how nurses can guide parents to prevent childhood obesity. Meanwhile, the aim was to spread awareness of this health condition to nurses and nursing students, who may utilize their knowledge to guide parents (or other caretakers) on early obesity prevention. As detailed in previous chapters, twelve original research articles were chosen for this thesis, on which inductive content analysis was performed. The studies chosen varied in their methodology, so that data was derived from both qualitative, quantitative as well as mixed method studies.

As described throughout this thesis, childhood obesity has dramatically increased in recent decades on a global scale, with statistics continuing to rise. Childhood obesity poses numerous severe health consequences, both psychosocial and physiological, that frequently carry from adolescence into adulthood with an intensely negative effect on quality of life, and the comorbid health conditions of childhood obesity can even lead to premature death. As a disease that is severely difficult to treat once developed, it is vital that childhood obesity treatment focuses on early prevention and intervention of the condition, before overweight transitions into obesity. Childhood obesity is caused by multiple factors, and many of these work as early predictors of excessive weight development. Conducting nursing interventions early on is, therefore, a realistic goal, provided that nursing staff receive adequate education and training on how to respond to cases of overweight in children.

However, nursing interventions are not enough by themselves: collaboration between nurses, children and their families are essential for childhood obesity prevention to succeed. Children and their families benefit from the health promotion which nurses can provide, and while collaboration with children's parents has challenges, it is vital to ensure that children benefit from nursing interventions in the long term. Nurses need to provide parental guidance, as parents are responsible for children's nutrition and lifestyles, and can model and engage in these alongside them. Having parents be well-informed may also prevent children from developing overweight or obesity altogether. Nurses can provide information about the importance of routine, daily exercise, and a well-rounded diet to parents and their children, so the families can put these measures into practice. For this to be accomplished, nurses must use a tactful approach when communicating with parents about what is often a sensitive and even difficult subject, taking care to present facts while remaining empathetic and respectful.

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Appendices

Table 4. Summary of chosen articles.

Authors, publication year & country	Study aims and purpose	Methodology & study design, sample size/participants	Main outcomes/results
1 Cecchetto, F & Pena, D. 2017. Brazil	The aim of this study was to find out the impact of playful workshops on children's, knowledge, self-care, and body weight. This study has designed a low- cost educational intervention based on playful worship for children.	Randomized study. The participants were 79 students, aged 7-11 years. The study design consists of 2 questionnaires and 4 interventions. The intervention consisted of eight playful workshops.	The main outcome of this study focused on children that were classified as less active. The knowledge score results show that before and after the education intervention, students had good knowledge before the intervention.
2 Ezzati, M. et al. 2017. England	The aim was to estimate global trends in BMI and a comprehensive set of BMI categories from underweight to obesity in children and adolescents, and to compare trends with those of adults. The purpose of the study was to conduct a global analysis of mean BMI among children and adolescents aged 5–19 years, and comparatively adults.	Quantitative method. Data pooling. Statistical analysis which used Bayesian hierarchical model. Sample size of 2416 population-based studies.	BMI of children aged 5-19 has increased in many high-income countries and accelerated in parts of Asia, with trends no longer correlated with those of adults.

3 Garden, E & Pallan, M. 2020. England	The aim of this study was to investigate the relationship between the nutrition and physical activity environment in elementary schools and the anthropometric data, healthy diet and physical activity of children. The purpose was to assess the school food and physical activity promoting environments may not give a true representation of the extent to which school promotes health.	1392 pupils who participated in the WAVES and healthy eating in school children childhood obesity prevention trial. The setting was in a state primary school in the West Midlands region, UK. This study has used school-level data obtained at trail baseline and participant outcome data obtained at baseline and two subsequent time out points.	Children in 10 schools with healthy eating and physical activity supportive environments have a higher physical activity energy expenditure than those in 22 schools with less supportive healthy eating activity. Children in school with supportive physical activity environments have a lower body mass index z-score than those in schools with less supportive healthy eating/ physical activity environments. School food and physical activity promoting environments were not significantly associated with dietary outcomes. School environments that support healthy food and physical activity behaviours may positively influence physical activity and childhood obesity.
4 Gothilander, J.& Johansson, H. 2021. Sweden	Aim of the study was to describe school nurses' experiences and challenges of working with childhood obesity. The purpose to report on how school nurses in northern Sweden work with cases of childhood obesity.	Qualitative method. Data was collected through focus-group discussions (FGD) and semi-structured individual inter-	Obesity stigmatization is a widespread challenge for school nurses. Evidence-based guidelines, increased knowledge, time for reflections and peer support could potentially empower them, while reducing frustration and improving the quality and equality in childhood obesity treatment.

		views and analysed inductively using manifest qualitative content analysis. Qualitative descriptive design. Participants were ten female school nurses (all over 25 years old, work experience 2-15 years).	
5 Hassen-Bauer, M. W. & Knutsen, I. R. 2017. Norway, Oslo	The aim is to examine parents' perceptions, thoughts and experiences when told that their child is overweight.	A qualitative study where the participants were interviewed using Giorgi's method. The participants involved six mothers of overweight children aged 4 to 9 years old.	The parents of overweight children contacted by the public health nurse have conflicting emotions regarding to the matter and it is a sensitive topic for the parents. Discussing child's overweight was often seen as a criticism and parents felt like their parenting skills were questioned. An obvious need to protect the child emerged and parents were concerned for their children developing negative body image and possibly even an eating disorder. Several parents deal with overweight themselves and they found it difficult to help their child with an issue they could not completely deal with themselves. Health care staff must be delicate and sensitive when discussing the matter and also to involve families in decision making for more positive outcomes.
	The study aims to clarify relationships between parenting styles and	Participates were 148 African American families with	Overweight or obese adolescents have fewer positive attitudes towards moderate-to-vigorous physical activity

6 Huffman, L. E. et al. 2018. USA	practices with motivation for physical activity in overweight African American adolescents by evaluating the association between these two.	overweight or obese adolescent between ages 11-16 years old and their caretaker. Adolescents' height and weight were measured by the staff and for both parents and adolescent, physical activity (PA) levels were measured using 7-day Actical accelerometery. Different matters of the research were measured using self-report surveys, Likert scales, 3-item adolescent-report scale and parent-reported checklist. Qualitative method. The statistical analysis was conducted using a square-root transformation, hierarchical regression and by comparing leverage, Cook's distance, and DFFITS values.	(MVPA). Reported high levels of body, social and support-related barriers to MVPA. Insecurity related to their appearance and skill. Positive relationship between higher levels of light PA and authoritative parenting style in obese Afro-American children. Parenting styles have more influence on PA than parenting practices. Positive association between higher levels of light PA and tangible environmental support. Motivation turns out to be a greatest positive predictor in more intensive PA (MVPA). Surprisingly, emotional support had a negative impact on children's MVPA and LPA, especially amongst males. Availability of home physical activity equipment (such as stairs, trampoline, swimming pool, yard etc.) impacts one's level of light PA. Authoritative parenting style combined with warm environment, monitoring health behaviours, and providing resources for PA is determined to increase the levels of physical activity amongst at-risk adolescents.
7 Häkkänen, P. 2021. Finland, Helsinki	The aims of the study were to analyse the development of overweight children during the primary school years and to recognize possible psychosocial factors in childhood obesity. In additions, the competence of	The study was conducted by using mixed methods. Categorical data was presented as percentages, counts and continuous variables (e.g., study II). In	Obesity as well as overweight had often developed already before school age in primary school children, and they were more unlikely to move into *Normal Weight* category during primary school. In both genders, family crises and being bullied were a contributing factor seen in children affected by obesity,

	school nurses and physicians was evaluated in identifying obesity and recommending adequate interventions related to overweight. Also, a pattern of obesity development was investigated in children in the similar age groups.	study I, the differences in categorical variables were evaluated using the statistical hypothesis test Chi-square. Study III utilized the latent class mixed model (LCMM), Fisher's exact test as well as the non-parametric Kruskall-Wallis test. Study IV, therefore, was researched using the Markov multi-state models (MSM) and the univariate and multivariable proportional intensities models. The median age of the participants was 7.2 years at the beginning and 12.6 at the end. The ages were calculated from the median follow-up time which was about 5.4 years. Altogether, 1852 children's weight category was determined.	especially in boys. Adolescents with obesity were also determined to have special needs in studying. An association between obesity in girls living with a single or divorced parents was found. In addition, girls living in non-native families, tended to be more overweight. It was determined that school healthcare staff were successful in identifying obesity, although seldomly diagnoses and long-term care plans were made. Children identified as overweight, attended most of the nurse's/physician's appointments alone and seldomly parents/caretakers were involved. Overall, boys have more tendencies to be obese than girls, classified by BMI SDS. Research states that the ages 10 to 11 years old are decisive for later obesity development.
8 Kobel, S & Lämmle, C. 2017. Germany	The aim of this article was to investigate 1 year of intervention focusing on increasing physical activity towards children with migration background as they are at a risk of devel-	SPSS statistics were performed. Descriptive statistics were calculated. Fisher exact test was used to detect group differences at baseline for categorical	Children with migration background have consumed around 32,6% sugar sweetened beverages at least once per week.

	oping obesity. By providing early intervention will help to avoid health issues in the later stage of life. During this 1 year of intervention, children's fruit, and vegetable intake, decreasing screen time and monitoring soft drink were being monitored. The purpose of this study was to evaluate the effectiveness of a low threshold, teachers-assisted health promotion over one year among elementary school children with an immigrant background.	data. Logistics regression was used to determine odds ratios for all health outcomes to control the age, baseline, weight status and parent education level.	Children with the migration background group have shown significant higher screen media use than those in the control group. After the intervention, the number of hours of screen time for children with migration background has reduced to 20,8% of boys and 17,2% of girls. Overall, the evaluation of a very low-threshold teacher centred health promotion programme has shown that it can notably increase fruit and vegetable intake in children with migration background as well tendencies in other targeted areas, more physical activity and reduced screen time.
9 Langer, S. L. et al. 2018. USA	The aim of the study was to examine the influence of general parenting styles (authoritative, authoritarian, and permissive) and two feeding practices (restriction and monitoring) on child's dietary intake.	The participants were children aged 5-10 years in the BMI range of overweight or obese and their caretaker. Different assessments were done by measuring children's weight and height, using the parenting styles and dimensions questionnaire (PSDQ), the child feeding questionnaire (CFQ) and	Permissive parenting style caused a decrease in the consumption of fruits and vegetables. Monitoring parental practice decreased the consumption of sugar-sweetened beverages (SSB). The children of parents high in authoritarianism consumed the greatest amount of SSBs. Although this study did not find a concrete connection between the restrictive parenting practice and child's dietary intake, previous studies have determined an increase in child's intake and interest in appetizing foods

		the data of daily dietary intake was recorded by the multi-pass 24-hour recall method. Qualitative method. Analysis of gathered data was done by the SAS 9.3 software.	when being restricted. Restriction, but also pressure have been studied to increase child weight. Authoritative parenting style is associated to lower BMI among children and higher consumption of fruits and veggies.
10 Stough, C. et al, 2017. USA.	The study aims to compare the dietary intake, activity, and sleep behaviours of pre-schoolers with obesity with national health behaviour recommendations in a family-based behavioural weight control trial.	Methodology used was mixed methods: Randomized Control Trial or RCT (quantitative) and motivational interviewing (qualitative) are both used. The study design was an RCT with motivational interviewing and questionnaires incorporated, and secondary analysis was the analysis method. Sample size consisted of 151 pre-schoolers with obesity, who took part in a Randomized Control Trial (RCT), specifically a family-based behavioural weight control trial.	In total 70% of participants exceeded daily caloric recommendations. For fruit and vegetable intakes 10% and 5% met recommendations respectively, and only 30% met recommendation of consuming non-sweetened drinks. The majority met the daily recommendations for 60 minutes of moderate or vigorous activity (80%), less than 2 hours of screen time (68%) and sleep duration (70%).

11 Thomas, G & Courtney, M. 2018. United States of America	The aims are to find new strategies so recommended guidelines to preventing, assessing, and treating obesity among children are implemented. The purpose is to determine how provider adherence to childhood obesity guidelines was influenced by a three-phase practice intervention, based on a Practice Improvement Model (PIM).	Mixed Methods (quasi-experimental). Comparative data analysis conducted pre- and post-intervention, using Assessment Diagnosis Intervention (ADI) Audit Tool, and GAP analysis. Quasi-experimental design. Sample size consisted of two independent pre-intervention and post-intervention groups of 70 randomly selected well child visits of Hispanic children aged 6-12 (140 total sample size).	The study's Practice Improvement Model helped to increase provider adherence to childhood obesity clinical practice guidelines, shown by statistically significant increases in guideline adherence scores post-intervention as opposed to pre-intervention.
12 Viljakainen-Diop, J. 2020 Finland, Helsinki	The aim of the study is to investigate a possible link between eating habits, body mass and saliva microbiota among Finnish adolescents. The main research questions included ''1. Can eating habits be identified among Finnish adolescents (study I)? 2. Do eating habits associate with body mass (study II)? 3. Are eating	A cross-sectional study conducted by using a quantitative method. The study data stem originates from Fin-HIT cohort which assesses children between ages 9-14-years old long-term body mass changes. This research consisted of pilot study	Adolescents eating breakfast irregularly, were associated with being overweight or obese. Children of the parents with a higher level of education, regularly ate breakfast. Link is found between unhealthy eating habits and a low socio-economic status. Among overweight/obese adolescents, a low diversity in the microbiota of the saliva was determined. Parental feeding behaviours are associated with child's food intake and their BMI.

	habits associated with the saliva microbial diversity and composition (study III)?	and a main study conducted throughout the years 2011-2014. The overall response rate of the participants was 30% and 11 407 adolescents in total participated. Study I and II consisted of 10 569 participants in total, between the ages of 9 to 14-years old. Study III, therefore, has participants from the age of 11 to 14 years old. 1000 adolescents were randomly selected, out of which 842 participants filled the criterium and eventually took part of the third study. The measurement was done by several questionnaires filled out by children as well as one of their parents. Each participant's height and weight were recorded. Addition to that, saliva examples were gathered from adolescents participating in the study III.	